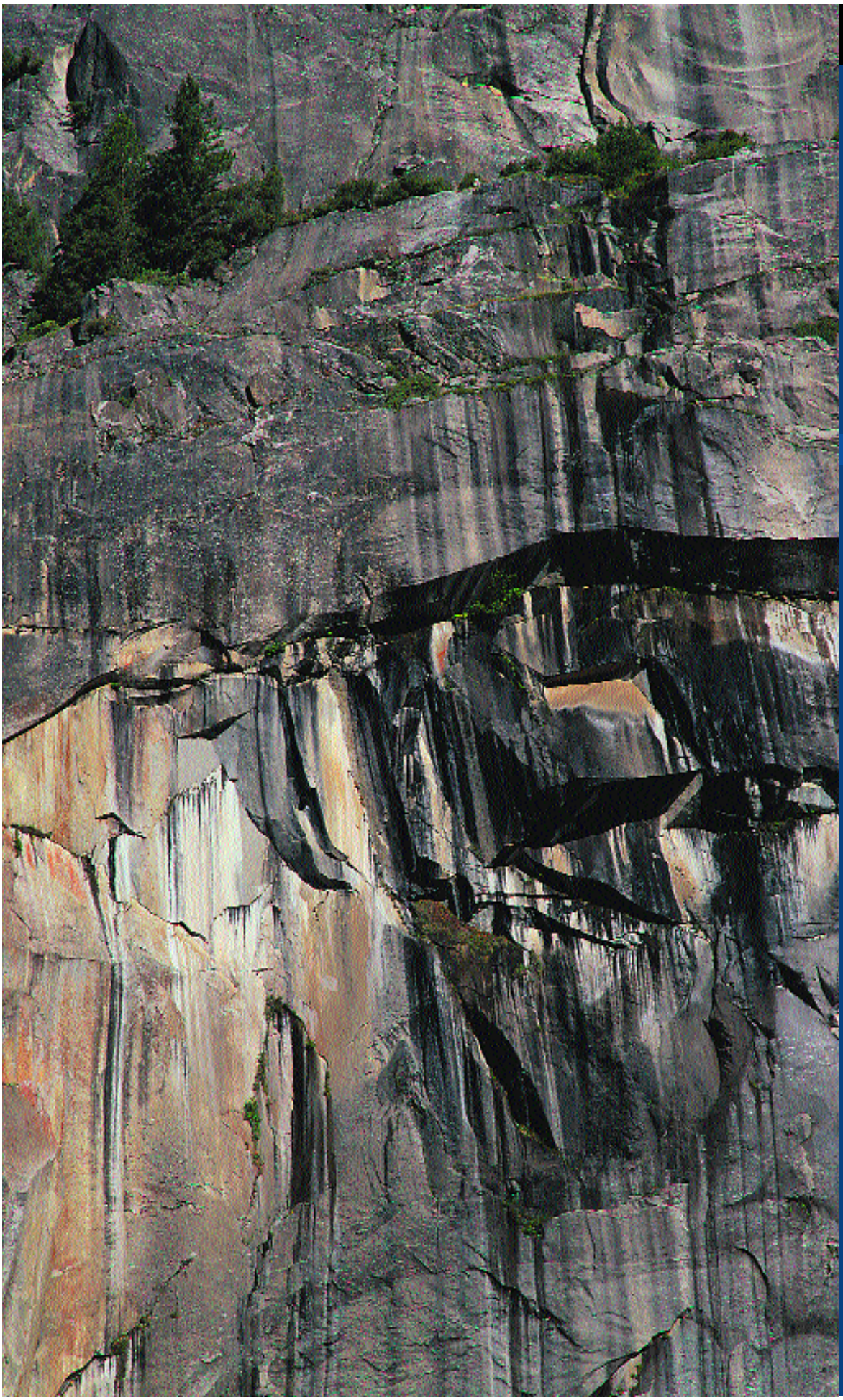

Final

YOSEMITE VALLEY PLAN

Supplemental Environmental Impact Statement

volume Ib

Environmental Consequences

Part 2

National Park Service
Yosemite National Park
California

United States Department of the Interior

Final

YOSEMITE VALLEY PLAN

Supplemental Environmental Impact Statement

Volume Ib

Part 2

November 2000

National Park Service
Yosemite National Park
California 95389
(209) 372-0201

Yosemite National Park • California

United States Department of the Interior

Scot Miller

The cover photographs for all volumes of this document were taken by nature and scenic photographer Scot Miller. Since his first visit to Yosemite in 1990, Miller has tried to capture the magnificence and grandeur of the park. Through his photography he hopes to inspire others to have an appreciation and understanding of Yosemite's uniqueness, along with its value as a national treasure worth preserving for future generations. He currently lives in Carrollton, Texas.

Lawrence Ormsby

The illustrations in this document were drawn in pencil and pen and ink by Lawrence Ormsby, partner in Ormsby and Thickstun Interpretive Design. For more than two decades, Ormsby has worked with National Park Service interpreters and historians to prepare illustrations for interpretive publications and exhibits. This year he received the National Park Service Director's Award for his illustration and cartography work in *A Land in Motion: California's San Andreas Fault*. He currently lives in Cave Creek, Arizona.

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Cover photos by Scot Miller

Yosemite Falls, Yosemite Valley (front cover)

El Capitan and Yosemite Valley (back cover)

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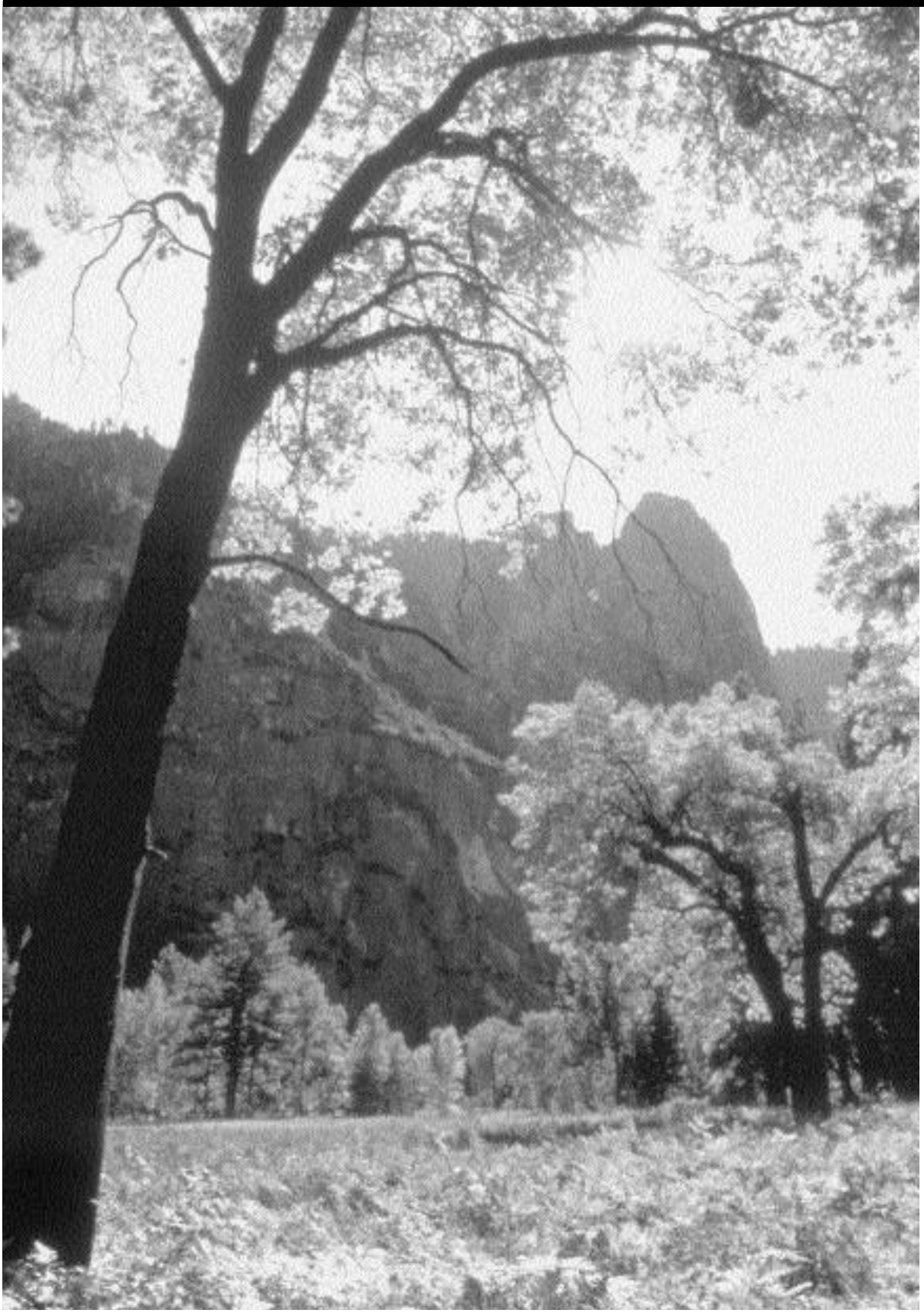


Alternative 3

Taft Toe Parking

No Out-of-Valley Parking

Final Yosemite Valley Plan

Supplemental EIS

NPS Photo on previous page by Michael Floyd

California black oak in Cook's Meadow with Sentinel Rock in background, autumn 1991.

ALTERNATIVE 3
TAFT TOE PARKING (NO OUT-OF-VALLEY PARKING)

The analysis of potential impacts from actions implemented under Alternative 3, Taft Toe Parking (No Out-of-Valley Parking), are presented in this section.

Water Resources

This section analyzes impacts on water resources: hydrology, including floodplain values, and water quality. Impacts on water resources are described by area (i.e., Yosemite Valley, El Portal, Wawona, and out-of-Valley parking locations) and are characterized as long-term alterations or restoration of hydrologic processes (e.g., water flow and flood regime) or water quality (e.g., turbidity, and non-point source pollution from vehicles or recreational use).

YOSEMITE VALLEY HYDROLOGY

Actions to implement the River Protection Overlay include the removal of development within 150 feet of the river. These actions would restore the river to more natural geomorphologic conditions through restoration of stream banks (i.e., stream bank stability) and the 100-year floodplain. The River Protection Overlay would allow natural processes to prevail in the river and floodplain and minimize the alterations of the floodplain due to existing and future facilities. Further, removal of development from the River Protection Overlay would potentially reduce visitor degradation of stream banks and the river channel by concentrating visitor use away from the river. Examples of these areas include Housekeeping Camp, certain meadow roads and turnouts, and riverside campgrounds. Removal of facilities from the River Protection Overlay would allow natural floodplain alterations and lateral movement of the river channel (i.e., meandering), and increase opportunities for restoration of riparian vegetation, which would reduce unnatural erosion and deposition. Ultimately, the implementation of the River Protection Overlay would result in a regional, long-term, major, and beneficial impact on hydrology and floodplain values.

Camp 6 would be restored between Northside Drive and the Merced River, allowing for restoration of some of the oxbows and cut-off channels that once existed in the area. Changes to the existing river dynamics through restoration of oxbows and braided streams could, over time, become more locally pronounced and eventually contribute to restoration of natural stream flow conditions downstream of the area. Restoration actions at Camp 6 would result in localized, long-term, major, and beneficial impacts on hydrology and the floodplain values.

The construction of a parking facility and transit center at Taft Toe would alter surface hydrology by the removal of vegetation and replacement with an impervious surface. In addition, riverbank instability (soils compaction and vegetation loss) could be the result of radiating impacts associated with the increased concentration of visitors. As a result of these alterations to hydrology, there would be a localized, minor, long-term, adverse impact on hydrology.

The parking facility and transit center at Taft Toe would be constructed largely outside of the 100-year floodplain, but the concentration of visitors would have radiating impacts to the river and its hydrologic processes. This would be a long-term, minor, adverse impact.

At Yosemite Lodge, Northside Drive would be rerouted to the edge of the 100-year floodplain and parking would be reconfigured, but would remain in the 100-year floodplain. This would result in a long-term, minor, adverse impact on hydrology because flood flow would be altered.

The removal of three structures at Ahwahnee Row that are located in the 100-year floodplain would have a localized, long-term, minor, beneficial impact on floodplain values by removing impediments to flood flow (particularly pooling in this area).

Restoration areas include the portions of Yosemite Lodge (including motel units that impede flood flow and the former cabins area), Upper and Lower River Campgrounds, North Pines Campground, and roads from Stoneman and Ahwahnee Meadows that are in the 100-year floodplains. Removal of these facilities and restoration would restore the hydrologic process of flooding, and would be a long-term, moderate, beneficial impact on hydrology.

The presence of a bridge as a fixed structure within a river course can cause alterations in river flow and result in localized morphologic changes to the beds and banks of the river. Morphologic changes attributable to bridge placement, and that are most readily observable, would include scour holes on the downstream side of the abutment, formation of deposition bars downstream of the scour holes, bank instability, unnatural erosion and deposition, changes in flow velocity, and localized channel widening. Removal of these fixed structures would provide for restoration of natural erosion and deposition processes; allow the river to meander and naturally alter course; and reduce flooding potential by removing flow impediments. The impacts of bridge removal would be noticeable as the scour holes and downstream deposition bars caused by their in-river abutments diminish and the riverbank is reestablished by natural flow patterns. Bridge removal would continue to improve natural river flow dynamics along extended reaches of the river, and the impacts would be observable for years to come.

Sugar Pine Bridge constricts the river severely, largely because this bend of the river immediately downstream of the Tenaya Creek confluence has always been dynamic. The approach road that connects Ahwahnee Bridge to Sugar Pine Bridge eliminated the numerous small cutoff channels that existed prior to construction in 1929. The loss of the numerous small cutoff channels, combined with the constriction of the river by Sugar Pine Bridge, has forced the creation of a single large cutoff channel immediately adjacent and parallel to the approach road. Removal of Sugar Pine Bridge and the approach road and restoration of the riverbank (vegetation, bank slope, channel width) would be a localized, long-term, major, beneficial impact on the Merced River's hydrology, by reducing unnatural erosion and scouring, by reducing unnatural deposition downstream of the bridge, and by allowing the river to meander.

Stoneman Bridge constricts the river severely, causing increased velocities during high flow and the resultant formation of a downstream scour pool and mid-channel bar. The presence of the bar has caused erosion rates to increase unnaturally along the left (southern) bank. The constricted channel width has also had upstream impacts, with flood waters backed up behind the bridge causing erosion on both banks. Removal of Stoneman Bridge and restoration of the riverbank

(vegetation, bank slope, and channel width) would be a localized, long-term, major, and beneficial impact on the Merced River's hydrology, by reducing scouring and unnatural erosion both upstream and downstream of the bridge, by reducing unnatural deposition downstream of the bridge, and by allowing the river to meander.

Housekeeping Bridge moderately constricts the river and has three center piers in the river channel that cause increased velocities, formation of three scour holes at the bridge, and downstream erosion (particularly at the left bank). Removal of Housekeeping Bridge and restoration of the riverbank (vegetation, bank slope, and channel width) would be a localized, long-term, moderate, beneficial impact on the Merced River's hydrology by reducing scouring and unnatural erosion.

Superintendent's Bridge minimally constricts the river, but has center piers in the river channel that interfere with transport of large, woody debris. Removal of Superintendent's Bridge would be a localized, long-term, minor, beneficial impact on the Merced River's hydrology by allowing free movement of large, woody debris.

Removal of these four bridges would also be a localized, long-term, major, beneficial impact on floodplain values by removing impediments to flood flow, particularly large flood events such as the January 1997 flood event. Local, short-term, minor, adverse impacts may occur during bridge removal due to deconstruction activities in the main river channel.

At Yosemite Creek, the human built rock rubble pile blocking the western channel would be removed, as would the pedestrian bridge and its abutments immediately upstream of the Yosemite Creek Bridge (vehicle). Removal of these impediments would restore hydrologic processes such as annual spring runoff, particularly restoration of flow to the western channel of the braided stream network, and would be a long-term, minor, beneficial impact on hydrology. Local, short-term, negligible, adverse impacts to hydrology may occur during removal due to the deconstruction activities in the western channel during low water.

A new vehicle bridge would be constructed downstream of the existing Yosemite Creek Bridge. The abutments of the new bridge would be outside of ordinary high water and would minimally impact hydrologic processes. This would result in a long-term, minor, adverse impact on hydrology. Local, short-term, minor, adverse impacts to hydrology may occur during bridge construction due to construction activities in the main channel.

Cascades Diversion Dam was constructed in 1917 to impound water for the intake structure that diverted river flows to a downstream powerhouse. Use of the powerhouse to generate hydroelectric power was discontinued in 1985, as was the diversion of river flows. The dam is located at a natural breakpoint in the channel gradients: upstream of the dam the gradient is .01 feet/feet; downstream of the dam the gradient is .06 feet/feet. The pool and backwater created by the dam extend upstream from the dam about 550 feet. The dam is in danger of failure: outside of spring snowmelt runoff and rain-on-snow winter floods, water flows under the dam instead of through the spillway or over the dam. Failure of the dam would result in unmitigated release of the sediment trapped behind the dam, and materials that comprise the dam. Removal of the dam would have a localized, long-term, major, beneficial impact on the Merced River's hydrology by preventing the adverse impacts of dam failure and restoring the free-flowing condition of the

river: sediment transport would be unimpeded; natural low-water and flood flow would be restored; and riparian vegetation currently displaced by the pool and backwater would be restored on the riverbanks.

Removal of Cascades Diversion Dam would also be a localized, long-term, major, beneficial impact on floodplain values by removing a substantial impediment to flood flow: both annual spring runoff, and large flood events such as the January 1997 flood event.

Reconstruction of the El Portal Road between the Cascades Diversion Dam and Pohono Bridge could have a beneficial impact on hydrology if the footprint of the existing bank stabilization in the river is reduced, or could have an adverse impact on hydrology if the footprint of the existing bank stabilization in the river is increased. Additional environmental compliance, including a Wild and Scenic River Section 7 determination, would be necessary before this segment of road can be reconstructed.

YOSEMITE VALLEY WATER QUALITY

Actions to implement the River Protection Overlay would remove sources of pollutants and reduce erosion and sedimentation by removing facilities and limiting activities associated with facility use and maintenance. These activities include vehicle maintenance, roadwork, and construction projects. Additionally, the possible realignment or relocation of roads, trails, and visitor facilities could reduce the introduction of refuse and bacteria by visitors. The removal of the concessioner stable and the Swinging Bridge Picnic Area and restoration to natural conditions would reduce a source of nutrients, coliform, turbidity, and other water pollutants from the Merced River. Actions to implement the River Protection Overlay would limit or remove development that is immediately adjacent to the river, thereby providing a buffer to impede the migration of non-point source pollutants from discharge areas to the Merced River.

The removal of parking spaces from Curry Orchard, Yosemite Falls, the concessioner stable, Camp 6, and roadside areas throughout the Yosemite Valley would substantially reduce the potential sources of non-point source pollution that are inherent in areas with heavy, concentrated vehicular use. Vehicles can release pollutants onto pavement, including asbestos, heavy metals, petroleum-based products, and other chemicals such as ethylene glycol. Some fraction of these chemicals can be carried by surface-water runoff to streams, and eventually the Merced River. A formalized parking facility would be established at Taft Toe, with stormwater pollution controls incorporated into its design (possible treatment methods include sand filters, underground water collection and treatment tanks, or oil/water separators). Replacing existing parking areas listed above with a formalized parking facility at Taft Toe would reduce non-point source pollution from stormwater runoff from large, paved surfaces, resulting in a regional, long-term, moderate, beneficial impact on water quality.

The increased use of shuttle buses would reduce the number of vehicle miles traveled in the Valley and allow the removal of some roads (e.g., roads through Stoneman and Ahwahnee Meadows). This would have long-term, minor, beneficial impact on water quality by reducing non-point source pollution.

EL PORTAL HYDROLOGY

As a result of a U.S. Army Corps of Engineers study (1998), the flood protection levee (hereafter, "levee") in the Hennessey's Ranch area would need to be raised and extended in order to protect employee housing, the impacts of which would be two-fold.

First, the levee would limit and possibly redirect natural river flow through a localized reach of the river during a 100-year flood event, reducing channel width and increasing flows or eddies depending on floodwater velocity and height. The levee is above the normal high water line and would not affect the river flow during normal spring runoff periods. Increasing the length and height of the levee would be a localized, long-term, minor, adverse impact on the river's hydrology because this reach of river has low susceptibility to bank scour, erosion, and slope instability.

Secondly, any structure intended to prevent flooding has the potential to limit the natural formation and function of that river's floodplain. Most of the Merced River in El Portal is confined within a bedrock gorge channel, and the floodplain is narrow due to the river gradient and resistant bedrock. Consequently, the majority of the floodplain is more resilient and less susceptible to adverse impacts of altered river flow. The area at Hennessey's Ranch is one of the few flat, alluvial floodplain sections adjacent to the Merced River at El Portal. The alluviated area was formed through years of river sediment deposition. After construction of the existing flood protection levee, this area was isolated from further sediment deposition because the levee height prevented inundation by large flood flow such as the January 1997 flood event, which was the largest flood event in the 80+ years of stream gauge data at the Pohono gauging station. When compared to the impact of the existing flood protection levee in the No Action Alternative, increasing the length and height of the levee would be a localized, long-term, minor, adverse impact on floodplain values because only flood flow greater than the January 1997 flood event would be affected.

Removal of housing from the River Protection Overlay at Hennessey's Ranch and restoration of the area would have long-term, minor, beneficial impacts on hydrology by restoring river-related communities and hydrologic processes.

Construction of new housing in the 100-year floodplain but outside of the River Protection Overlay would require the modification of the levee (discussed above), and would result in radiating impacts to the river bank due to increased employees living in the area. These radiating impacts would have a long-term, minor, adverse impact.

Two pedestrian bridges would be constructed in the vicinity of Hennessey's Ranch. The bridges and their abutments would be designed to not interfere with the free-flowing condition of the river, and the banks of this river reach are relatively stable and resilient. The two pedestrian bridges would have localized, long-term, minor, adverse impacts on the river's hydrology and floodplain values. Local, short-term, minor, and adverse impacts to hydrology during construction due to construction activities in the main channel.

El Portal Water Quality

Actions to implement the River Protection Overlay would reduce discharge of non-point source pollutants into the river by providing a buffer area where development is removed (e.g., at Hennessey's Ranch) and future development is constrained (e.g., at Village Center and Railroad Flat). Water quality could be adversely impacted at Village Center by runoff associated with increased parking spaces for both visitors and employees, although this impact would be mitigated by non-point source pollution controls at large paved areas. The increase in employees living in El Portal would likely result in increased recreational use of the river and subsequent increase in fecal coliform and bacteria levels, resulting in a regional, long-term, minor, adverse impact on water quality. Wastewater from all new buildings (e.g., housing, park headquarters, etc.) would be connected to the existing sanitary sewage system and would meet all applicable water treatment requirements. The impacts of this alternative on water quality in El Portal would be localized, long-term, minor, and adverse due to increased non-point source pollution resulting from increased development.

Foresta Hydrology and Water Quality

The project site at Foresta is approximately three-quarters of a mile from Crane Creek, but has no rivers, streams or other hydrologic features, and surface runoff is the only pertinent hydrologic process. A parking facility, Volunteers-in-Parks campground, 14 houses, and a new National Park Service stable at McCauley Ranch (depending on the outcome of the wilderness feasibility study) would be constructed in the Foresta area. These actions would have a localized, long-term, negligible, adverse impact on hydrology resulting from reduced ground cover and potentially increased runoff. These actions would result in increased non-point source pollution, which would be mitigated through stormwater pollution controls at the parking facility, and have a localized, long-term, minor, adverse impact on water quality.

Big Oak Flat, Tioga Pass, and South Entrance Hydrology and Water Quality

The locations of these entrance stations have no major rivers, streams, or other hydrologic features. Surface-water runoff is the only pertinent hydrologic process. A visitor center and associated visitor service facilities would be constructed, resulting in reduced ground cover and potentially increased runoff. These actions would have a localized, long-term, negligible, adverse impact on surface water hydrology. These actions would have a localized, long-term, negligible, adverse impact on water quality resulting from increased non-point source pollution associated with development.

Conclusion

The collective actions of this alternative have regional, long-term, moderate, and beneficial impacts on the hydrology and water quality, largely due to the removal of facilities in Yosemite Valley from the River Protection Overlay and the 100-year floodplain and removal of the bulk fuel storage facility in El Portal. The beneficial impacts of removing three bridges, Cascades Dam, campsites, Housekeeping Camp units, etc., have been weighed against the adverse impacts on hydrology and water quality in El Portal due to increased development near the river.

CUMULATIVE IMPACTS

This section assesses the impacts of past, present, and reasonably foreseeable actions to water resources. The actions identified below have generally occur within the watershed of the Merced River—both main stem and South Fork.

Past Actions

The water resources of the Merced River have been historically affected by a variety of actions within the floodplain since Euro-American settlement. In Yosemite Valley, the transportation network interferes with flooding and surface-water flow, and lodging, campgrounds, and other structures have been constructed in and immediately adjacent to the river channel. In El Portal, a large portion of the riverbank has been artificially stabilized to protect primary roads and buildings immediately adjacent to the river. Because artificial stabilization of the riverbank began in the 1800s, the Merced River has been separated for decades from substantial portions of its floodplain. During spring runoff floods, this riprap serves to keep the channel from moving, and quickly conveys the water downstream. During winter floods, artificial bank stabilization prevents damage to dwellings and roads in the best-protected sections, but increases bank destruction where there is little or no artificial bank stabilization.

Present Actions

The El Portal Road Improvement Project (NPS) is currently under way from the park boundary to the Cascades Diversion Dam, and affects river-related communities of the Merced River immediately adjacent to the roadway. Natural resources are protected during construction by implementation of a compliance monitoring program, erosion and sediment controls, hazardous materials controls, revegetation and reclamation, and excluding construction from sensitive habitats. Between El Portal and Yosemite Valley, riprap has been placed in some locations along the north bank of the Merced River to protect the reconstructed El Portal Road, altering the overall flow regime of the river.

Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions proposed in the region are separated below into four general categories: (1) projects expected to have a net beneficial impact; (2) projects expected to have both beneficial and adverse impacts; (3) projects expected to have a net adverse impact; and (4) projects that have no impact relative to the actions of this alternative.

Reasonably foreseeable future projects that could have a net beneficial impact to water resources of the Merced River include:

- The Merced River at Eagle Creek Ecological Restoration Project (NPS)
- Merced Wild and Scenic River Comprehensive Management Plan (NPS)
- Yosemite Wilderness Management Plan Update (NPS), which will address land management issues within the wilderness
- Fire Management Plan Update (NPS)

- Potential Land Use and Management on Lands Adjacent to Yosemite National Park (Sierra Nevada Framework for Conservation and Collaboration).
- Several transportation-related projects (e.g., Yosemite Area Regional Transportation System [YARTS]), which have the general goals of increasing transportation options and reducing reliance on automobiles in the area
- Replacement/Rehabilitation of Yosemite Valley Sewer Line (NPS)
- South Fork Merced River Bridges Replacement (NPS)
- Bridalveil Horse Camp Rehabilitation (NPS)
- Yosemite Creek Campground Restoration (NPS)
- Wawona Campground Rehabilitation (NPS)

These projects would have net beneficial impacts on water resources through improved coordination of resource management activities and restoration, although there might be site-specific or short-term, adverse impacts.

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

- Merced River Canyon Trail Acquisition (BLM)
- Mariposa Grove Roadway Improvement and Giant Sequoia Restoration (NPS), which would remove parking from the Lower Mariposa Grove of Giant Sequoias, restore the area, and realign the intersection at the South Entrance Station.
- Rogge – Ackerson Fire Reforestation (Tuolumne Co.), which would improve slope stability and reduce sedimentation by reforesting 5,000 acres; however, activities could also adversely impact water quality by burning, tilling, and herbicide application.
- A-Rock Reforestation (USFS, Stanislaus), which would improve slope stability and reduce sedimentation by reforesting 4,500 acres; however, activities could also adversely impact water quality by burning, tilling, and herbicide application.

These projects would have beneficial impacts on water resources by removal of facilities, restoration, and slope stabilization, and adverse impacts on water resources through increased non-point source water pollution.

Reasonably foreseeable projects that could have a net adverse impact to water resources include:

- The Yosemite View Parcel Land Exchange, El Portal (NPS)
- Merced River Canyon Trail Acquisition (BLM)
- Yosemite Motels Expansion, El Portal (Mariposa Co.)

These projects would have adverse impacts to water resources through increased use and facility development, which could result in stream bank instability and increased non-point source water pollution.

Beneficial impacts to water resources of past, present, and reasonably foreseeable future projects on the Merced River watershed would be related to removal of facilities from the river banks and

floodplain, restoration of previously developed areas and areas significantly impacted or altered by visitor use, removal of channel obstructions, and reduced human-related impacts. Adverse impacts of these projects on the Merced River watershed would be related to increased use and facility development, which could result in stream bank erosion, soil compaction, loss of vegetation, refuse accumulation, non-point source pollution generation, and degradation of stream characteristics and water quality in the Merced River. Overall, the past, present, and reasonably foreseeable future projects would have a long-term, minor, beneficial impact on water resources. The actions of this alternative would have a long-term, minor, beneficial impact on water resources. The actions of this alternative, in combination with past, current, and reasonably foreseeable future projects, would have a long-term, minor, beneficial impact on water resources.

Floodplains

This evaluation identifies non-exempted[1] actions within the floodplain that could increase or decrease risk to human life and property by adding or removing housing and facilities from floodplains. The proposed removal and addition of non-exempted facilities from the floodplain are listed below by area and summarized in table 4-58; all impacts would be long term unless otherwise noted (see plate E for Yosemite Valley flood extent). For related effects on floodplain values and hydrology, see the Water Resources section in this chapter.

YOSEMITE VALLEY

Cascades Diversion Dam

Dam safety engineers have classified the Cascades Diversion Dam as a “high hazard potential structure” and assigned a Safety of Dams condition of “unsatisfactory.” This classification requires immediate corrective action. The removal of the dam would be a long-term, localized, major, beneficial impact to human health and safety.

Concessioner Stable Area

A moderate, beneficial impact would result from the removal of houses and test cabins (49 employee beds) and the concessioner stable from the floodplain. This beneficial impact would be related to reduced risk to both human life and property during a flood event. The removal of the kennel from the floodplain would result in a negligible, beneficial impact because potential property damage due to flooding would be reduced.

Housekeeping Camp

The removal of 212 housekeeping units and retention of 36 units in the 100-year floodplain would result in a moderate, beneficial impact because overnight lodging within the 100-year floodplain would be reduced, decreasing flood-related risk to both human life and property.

[1] Non-exempted facilities are those that are not exempt from National Park Service *Floodplain Management Guideline*. These include Class I and Class II Actions, such as administrative, residential, warehouse and maintenance buildings, overnight parking facilities, schools, hospitals, fuel storage facilities, and emergency services. Exempt facilities include campgrounds, picnic areas, day-visitor parking, etc.

Compared to the No Action Alternative, the beneficial effect related to human life would be limited, however, because the units are not in use during the winter flood season.

Yosemite Village

Removal of the Concession Headquarters, Indian Creek employee housing (14 employee beds), and removal of three Ahwahnee Row houses (three employee beds) from the 100-year floodplain would result in an overall moderate, beneficial impact because fewer people would be living and working within the floodplain, and flood hazard related to human safety would be reduced. Redevelopment of this area would minimize placement of structures in the floodplain, and include mitigation measures to protect people during flood events. With mitigation, in accordance with National Park Service *Floodplain Management Guideline*, risk to both human safety and property would be a minor, adverse impact.

Table 4-58
Non-exempted Facilities in the Floodplain

Facility Location	Development Change In The Floodplain[1]	Impact Intensity/Type[2]
Yosemite Valley		
Cascades Diversion Dam	• Remove Cascades Diversion Dam	• Localized, Major, beneficial
Concessioner Stable Area	• Remove Stables and associated housing (49 employee beds) and restore area • Remove Kennel and restore area	• Moderate, beneficial • Negligible, beneficial
Housekeeping Camp	• Remove 212 lodging units out of the floodplain. Retain 36 lodging units in the floodplain and 16 lodging units out of the floodplain.	• Moderate, beneficial
Yosemite Village	• Remove 3 Ahwahnee Row houses (3 employee beds) • Remove Concession Headquarters • Redevelop Concession Headquarters as parking/visitor services • Remove Indian Creek employee housing (14 employee beds) • Redevelop Indian Creek employee housing area as parking/visitor services	• Moderate, beneficial • Moderate, beneficial • Minor, adverse • Moderate, beneficial • Minor, adverse
Yosemite Lodge Area	• Remove the Superintendent's House (Residence 1) and restore area • Remove 5 motel units • Relocate Wellness Center and nearby custodial cabins out of the floodplain • Develop new overnight parking	• Moderate, beneficial • Moderate, beneficial • Minor, beneficial • Negligible, adverse
El Portal		
Village Center	• Redevelop for necessary support facilities and commercial services • Adaptively reuse El Portal Hotel (remove 12 employee beds) and Yosemite Institute Office • Remove bulk fuel storage facility • Remove El Portal Motor Inn cabins (remove 24 employee beds)	• Negligible, adverse • Moderate, beneficial • Moderate, beneficial • Moderate, beneficial
Hennessey's Ranch	• Add 656 employee beds • Remove 68 employee beds at Trailer Village • Remove 4 employee beds at Abbieville	• Moderate, adverse • Moderate, beneficial • Moderate, beneficial

1. Development may be in or surrounded by the floodplain
2. Impact intensity listed is after implementation of mitigation. All impacts would be long-term unless otherwise noted.

Yosemite Lodge Area

Removal of the Superintendent's House (Residence 1) and five motel units from the floodplain would result in a moderate, beneficial impact because overnight lodging within the floodplain and

the associated risk to human safety and property would be reduced. Relocation of the Wellness Center and nearby custodial cabins outside the floodplain would also result in a minor, beneficial impact because the number of facilities and people working within the floodplain would be reduced, resulting in a reduction in the flood hazard related to human safety and property. New overnight parking would be developed that incorporates design standards to minimize the effect on flood flow and allow for runoff, resulting in a negligible, adverse impact. Adverse effects in the Yosemite Lodge area would be further reduced by designs that minimize impacts on natural flood processes and flood damage to structures, and by preparation of evacuation plans and routes (evacuation routes would be located outside the floodplain).

EL PORTAL

Village Center

Moderate, beneficial impacts at the Village Center would result from the adaptive reuse of El Portal Hotel (removal of 12 employee beds and relocation of Yosemite Institute Office), and the removal of the Motor Inn cabins (24 employee beds) because overnight occupation of the floodplain would be reduced. Removal of the bulk fuel storage facility would result in a moderate, beneficial impact on human safety because the number of people living and working within the floodplain would be reduced. Adaptive reuse of these facilities would include mitigation consistent with National Park Service *Floodplain Management Guideline* to reduce the risk of property damage due to flooding.

Parts of the Village Center area that would be redesigned to support commercial services and parking would be placed out of the floodplain where possible. For new structures constructed in the floodplain an evacuation and safety plan would be developed. With these mitigation measures in place, there would be a minor adverse impact.

Hennessey's Ranch

The construction of 656 new employee beds at Hennessey's Ranch would be a major, adverse impact on human safety because new employee beds would be constructed within the 100-year floodplain. However, because mitigation would be incorporated into the design to protect employees and structures during flood events (e.g., raising and extending the levee, evacuation planning), the overall impact would be reduced to moderate and adverse.

WAWONA

There would be no impact to the South Fork Merced River floodplain because the employee housing considered for Wawona would be outside the floodplain.

CONCLUSION

Beneficial impacts in Yosemite Valley would include removal from the floodplain of 212 housekeeping lodge units, the kennel, concessioners stables and associated housing (49 employee beds), the Superintendent's House (Residence 1), five Yosemite Lodge motel units, the Wellness Center and nearby custodial cabins, and 14 employee beds at Indian Creek. The Concession Headquarters and Indian Creek employee housing would be redeveloped as parking/visitor

services, and new overnight parking would be developed at Yosemite Lodge which would have a minor adverse impact on the floodplain. Overall, the aggregate impact of these actions, in combination with mitigation in Yosemite Valley, would be moderate and beneficial, because the flood-related risk to human safety and property would be reduced.

Actions in El Portal would include removal from the floodplain of 36 employee beds (moderate, beneficial) and the bulk fuel facility (moderate, beneficial), removal or adaptive reuse of El Portal Hotel (employee housing and Yosemite Institute Office; moderate, beneficial), 656 employee beds at Hennessey Ranch (moderate, adverse), and redevelopment of Village Center (minor, adverse). Beneficial impacts would be related to reduction in the flood-related hazard to human safety. Adverse effects to both human safety and property associated with new development or redevelopment/adaptive reuse within the floodplain would be minimized by mitigation (e.g., design and siting specifications, extending and raising existing levees, and a mandatory evacuation plan) resulting in a net minor, adverse impact.

The total net effect of Alternative 3 would be moderate and beneficial because the number of people working and overnight lodging/housing within the floodplain would be reduced (reducing flood-related risks to human safety), and mitigation would be implemented to reduce adverse effects on human safety and property associated with development/redevelopment within the floodplain.

CUMULATIVE IMPACTS

The impacts of past, present, and reasonably foreseeable actions to flood hazards discussed herein are based on analysis of past, present, and reasonably foreseeable future actions in the Merced River watershed from its source near the crest of the Sierra Nevada to Briceburg Bridge. The actions identified below include those projects that have the potential to affect the floodplain of the Merced River.

Past Actions

The Merced River has been historically affected by a variety of actions within the floodplain since Euro-American settlement. In El Portal, from the park boundary to Briceburg Bridge, a large portion of the riverbank has been artificially manipulated. Much of this manipulation is riprap used to stabilize the riverbanks by the California Department of Transportation to protect Highway 140. The National Park Service and Yosemite Motels also placed riprap in the Merced River channel to rebuild roads (e.g., Foresta Road) and protect buildings immediately adjacent to the river. Because stabilization of the riverbank began in the 1800s, the Merced River has been separated for decades from substantial portions of the floodplain in the Merced River Canyon. During spring runoff floods, this riprap serves to keep the channel from moving, and quickly conveys the water down to Lake McClure. During winter floods, bank stabilization prevents damage to dwellings and roads in the best-protected sections, but increases bank destruction where there is little or no bank stabilization.

Present Actions

No current actions are increasing or decreasing flood-related risk to human life. Between El Portal and Yosemite Valley, riprap has been placed in some locations along the north bank of the Merced River to protect the reconstructed El Portal Road. This riprap would have essentially no flood-related risk to life or property.

Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions that could have a potential cumulative beneficial or adverse effect on risk to human life and property during flood events are:

- El Portal, Trailer Village Closure (NPS)
- Yosemite Motels Expansion, El Portal (Mariposa Co.), (approximately 148 new hotel units)
- Yosemite View Parcel Land Exchange (NPS)

Cumulative effects of past, present, and reasonably foreseeable future actions would have both beneficial (e.g., implementation of the Trailer Village Closure Plan) and adverse (i.e., increased development of overnight lodging units and offices within the floodplain at El Portal) impacts on human life and property during flood events. In El Portal, approximately 59 employee trailers with 68 employee beds at Hennessey's Ranch (currently Trailer Village) would continue to be scheduled for removal from the 100-year floodplain. This action which occurs outside the scope of actions considered in the *Final Yosemite Valley Plan/SEIS*, is in accordance with the current provisions of the Trailer Village Closure Plan (NPS 1993b). Cumulative adverse impacts of these potential future projects on the floodplain hazard of the Merced River would be related to increased overnight use and facility development. In El Portal, potential overnight residents and hotel visitors would slowly increase from approximately 1,300 to about 1,600 beds because of the Yosemite Motel's expansion and the Yosemite View Parcel Land Exchange. This represents an increase of approximately 25% in the number of people potentially affected during a flood.

Overall, the past, present, and reasonably foreseeable future actions listed above would have a long-term, moderate, and adverse effect on risk to human life and property due to the amount and type of new development planned within the floodplain. The total net effect of Alternative 3 would be moderate and beneficial, because overnight lodging/housing within the floodplain would be reduced (reducing flood-related risk to human safety), and mitigation would be implemented to reduce adverse effects on human safety and property associated with development/redevelopment within the floodplain. Effects associated with this alternative, in conjunction with other past, present, and reasonably foreseeable future cumulative actions, would be long-term, minor, and adverse, because potential flood-related impacts to human safety and property from cumulative actions outside the scope of the *Final Yosemite Valley Plan/SEIS* (e.g., increased overnight lodging within the floodplain in El Portal would increase flood-related risk to human safety and property) would outweigh the beneficial impacts of this alternative.

Wetlands

Wetlands were evaluated in the following locations for Alternative 3: Yosemite Valley, El Portal, Foresta, South Entrance, and Tioga Pass Entrance. The Wawona and Big Oak Flat Entrance locations have no wetlands; these areas are not discussed below. No actions are proposed in South Landing, Henness Ridge, Hazel Green, or Badger Pass in this alternative.

SIZE

Yosemite Valley

Wetland impacts would take place in the wetland types shown in table 4-59. The numbers of acres of impacts are estimated based on geographic information system analysis of acres of meadow and riparian vegetation types from the Yosemite Valley vegetation map (NPS 1994e). In Yosemite Valley, about 156 acres of wetlands would be restored, seven acres of new development in wetlands would take place, and 10 acres of redevelopment in potential wetlands would occur under this alternative. Therefore, there would be a net gain of 139 acres of wetlands in the Valley. Overall, this would be a long-term, major, beneficial impact on the size of wetlands in Yosemite Valley.

Table 4-59
Summary of Impacts by Wetland Type in Yosemite Valley

Wetland Types	Restoration (Beneficial Impact) (acres)	New Development (Adverse Impact) (acres)	Redeveloped (Potential Adverse Impact) (acres)
Palustrine Emergent	55	0	3
Palustrine Scrub Shrub	47	4	1
Palustrine Forest	47	3	6
Riverine Upper and Lower Perennial	7	0	0
Total	**156**	**7**	**10**

Restoration would take place at former Upper and Lower River Campgrounds, Camp 6, North Pines Campground, the Yosemite Lodge cabin area, River Protection Overlay, and highly valued resource areas at Housekeeping Camp, part of Lower Pines Campground, Backpackers and Group Campgrounds, the Art Activity Center, and Swinging Bridge Picnic Area.

New development in wetlands could take place on up to seven acres. Wetland delineation would be completed prior to the planning and design phase for Curry Village, where potential wetlands have been identified to maximize opportunities for wetlands avoidance and minimization of adverse impacts. If wetlands are present in the area, adverse impacts would be avoided during site design and minimized through design modifications to the greatest extent practicable. If potential adverse impacts on wetlands are disclosed in subsequent planning efforts, additional compliance documentation would be completed as appropriate.

Potential impacts to wetlands would require a Wetland Statement of Findings to be prepared in accordance with Director's Order #77-1. Wetlands proposed for restoration by the *Final Yosemite Valley Plan/SEIS* would be counted toward the compensation of wetlands, if needed, in future compliance. A wetland delineation and a functional analysis would be included in each

Statement of Findings. A U.S. Army Corps of Engineers 404 permit would be prepared as required.

About 10 acres of redevelopment in wetlands could occur under Alternative 3 (see table 4-59). The larger areas of redeveloped wetland would occur at Sentinel Picnic Area and Upper Pines Campground. Wetland delineation has been completed for Upper Pines Campground (Kleinfelder 1998). Redevelopment within wetland boundaries would be avoided in the Upper Pines Campground area. Wetland delineation would be completed prior to the design phase for the proposed Sentinel Picnic Area.

Redeveloped wetlands may be considered an adverse impact if the sites still qualify as wetlands. Procedural Manual #77-1, Section 5.4 states that "development activities proposed for wetland sites that have been modified or degraded as a result of human activities" (but still meet the wetland definition) are considered "new actions" subject to Director's Order #77-1 and other statutes. Consequently, degraded wetlands should not be treated as preferred development sites simply because they are already in an impacted condition. Redevelopment in areas adjacent to wetlands would occur primarily at the former cabin area at Yosemite Lodge, the proposed road south of Yosemite Lodge, Yosemite Village, and Ahwahnee parking lot. There could be minor, beneficial effects on neighboring wetlands if water flows that sustain adjacent wetlands are improved in project design, and direct impacts would be minimized through site-specific design, resulting in negligible, adverse impacts.

Out-of-Valley Areas

No impact on the size of wetlands would occur in El Portal, Tioga Pass Entrance, South Entrance, or Foresta.

INTEGRITY

Yosemite Valley

The integrity of wetlands would be improved by actions proposed in Alternative 3 in terms of the ratio of non-native to native species in palustrine emergent wetlands, and with restoration of soils, hydrology, and native species, and along the Merced River. The removal of roads and utilities in low lying areas would likely improve water flows, and restore naturally high water tables that sustain wetland conditions. The River Protection Overlay and restoration of former campgrounds to natural conditions would decrease foot traffic along the Merced River and allow riverside vegetation to become reestablished.

Foot traffic in the vicinity of Taft Toe would increase in nearby wetlands along the Merced River resulting in major, adverse impacts to wetlands in this area. The elimination of guided trail rides (though not private stock use) could benefit wetlands by eliminating associated manure, which could flow into wetlands and result in unnaturally high levels of nutrients that could harm wetland functions.

Road- and trail-related activities that could benefit wetland integrity include the removal of roads through Stoneman Meadow and the south part of Ahwahnee Meadow and restoration of the area.

Road- and trail-related activities that could have adverse impacts on wetlands include widening Southside Drive from El Capitan crossover to Curry Village to accommodate two-way traffic, constructing a multi-use trail from Swinging Bridge to El Capitan crossover, realigning Northside Drive along the southern perimeter of Yosemite Lodge, and constructing a new bridge across Yosemite Creek. These new roads and trails would directly impact some riverine and palustrine forest and scrub shrub wetlands at Sentinel Creek and along the Merced River and Yosemite Creek. All new roads, multi-use paved trails, and road widening would be designed to accommodate natural water flow patterns to mitigate direct and indirect effects. Under Alternative 3, the removal of roads from meadows and the implementation of the River Protection Overlay would have a long-term, major, beneficial impact on the integrity of wetlands in Yosemite Valley.

Out-of-Valley Areas

In El Portal, implementation of the River Protection Overlay and protection of existing wetlands at Hennessey's Ranch through site design of new housing would minimize wetland impacts. Rebuilding the levee could have direct, adverse impacts on wetlands along the levee alignments, but impacts would be minimized by restoration of the riverine and palustrine forest wetlands between the levee and the river's edge. Should parking be constructed near the El Portal Community Hall, site design would protect the historic river channel of palustrine forest wetlands. Overall, impacts on wetlands in El Portal are expected to be long-term, minor, and adverse, and would not affect the overall viability of wetlands in the area.

No impacts on the integrity of wetlands would occur in Badger Pass and Hazel Green as no actions are proposed in these areas under this alternative. Impacts to wetland integrity could occur in Foresta, through increased use of the area with relocation of stable operations to McCauley Ranch and addition of 14 houses for employees with an increased potential for establishment of non-native species in palustrine emergent wetlands. Wetlands adjacent to McCauley Ranch would be avoided through site design, and radiating impacts from increased nutrients and potential introduction of non-native plant species from the stables would be minimized by aggressive management of stock and waste feed. Potential increased foot traffic would have minor impacts on wetlands near the Tioga Pass Entrance.

CONNECTIVITY

Yosemite Valley

Wetlands along the entire Merced River corridor in Yosemite Valley would be restored, reconnected, and protected from future degradation following removal of campgrounds and most facilities, including Upper and Lower Rivers, portions of Lower Pine, and sections of Housekeeping Camp, with major, beneficial impacts to riverine and palustrine forest and scrub shrub wetlands. Roads would be removed from or modified at Bridalveil, Stoneman, Ahwahnee, and Cook's Meadows. The actions proposed in Alternative 3 would connect palustrine emergent wetlands in the Valley from Stoneman and Royal Arch Meadows to Bridalveil Meadow. This would be a long-term, major, beneficial impact on wetland connectivity in Yosemite Valley.

Out-of-Valley Areas

No additional adverse impacts on wetland connectivity would occur in El Portal, Foresta, South Entrance, or Tioga Pass Entrance.

CONCLUSION

Under Alternative 3 there would be a 139-acre net gain in the size of wetlands. Implementation of the River Protection Overlay and the removal of roads in Stoneman and Ahwahnee Meadows would substantially enhance the integrity of existing palustrine emergent wetlands. Natural processes such as flood interactions between the main Merced River channel and riverine wetlands, riparian borders of palustrine forest and scrub shrub wetlands, and palustrine emergent wetlands that are necessary to sustain healthy wetlands would be improved substantially. Wetlands in the vicinity of Taft Toe would be impacted by increased visitor use. The actions that are proposed in Alternative 3 would have a long-term, major, beneficial impact on the size, integrity, and connectivity of wetlands in Yosemite Valley. Minor, adverse impacts to wetland integrity would occur to out-of-Valley areas at El Portal, Foresta, and Tioga Pass Entrance with implementation of mitigation measures.

CUMULATIVE IMPACTS

Past, present, and reasonably foreseeable future actions that could cumulatively impact wetlands are all considered to be long term.

Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS); U.S. Forest Service management plans for adjacent wilderness; the Wilderness Management Plan Update (NPS); and the Fire Management Plan Update (NPS) could provide benefits to the size, integrity, and connectivity of wetlands. Cooperation among land management agencies would increase the opportunity to share common objectives and improve resource protection. These plans could also increase knowledge of resources and recreational use; they have the potential to have long-term, moderate, beneficial impacts on wetlands, though the proposed management direction has not been finalized. The Merced Wild and Scenic River Comprehensive Management Plan would affect wetlands through zoning and management designed to protect the river system and adjacent wetlands, with long-term, major, beneficial impacts.

The Tuolumne Meadows Water and Wastewater Improvements (NPS) project and the Mariposa Creek Pedestrian/Bike Path (Mariposa Co.) project are in the early planning stages. Until the scope and design of these projects is determined it is not possible to determine the extent of impacts on wetlands in these areas.

Other projects approved or planned for construction that could have beneficial effects on wetlands include campground rehabilitation projects in Tamarack, Yosemite Creek, Bridalveil, and Hodgdon Meadows Campgrounds, and the Merced River at Eagle Creek Ecological Restoration Project (Yosemite Valley). Erosion control and mitigation as a result of these projects could enhance and strengthen palustrine forest and palustrine scrub shrub wetlands. The Eagle Creek project would revegetate currently denuded riverbanks with benefits to palustrine forest

and palustrine scrub shrub wetlands. The erosion control and restoration projects would have long-term, localized, and therefore minor, beneficial impacts on wetlands.

Projects approved or planned for construction that could have adverse effects on wetlands include the Yosemite View Parcel Land Exchange (NPS), University of California, Merced campus (Merced Co.), and the Hazel Green project. The Yosemite View Parcel Land Exchange could directly impact existing palustrine forest and palustrine emergent wetlands along the Merced River corridor. A wetland traverses the Hazel Green Ranch site, and could be impacted by radiating use, though proposed new development would not take place within the wetland corridor. The long-term direct impacts on wetlands would be moderate and adverse due to the relative rarity of undeveloped wetlands between the elevations of 1,000 and 3,000 feet and the relative importance of remaining wetland habitat in the Sierra Nevada. Foothill areas below about 3,300 feet appear to have the greatest loss of wetlands of any region in the Sierra Nevada (UC Davis 1996a) and are particularly important in terms of their productivity and diversity.

The actions that are proposed in Alternative 3 would amount to a net gain of 139 acres of wetlands in Yosemite Valley. Large-scale benefits to wetlands could take place as a result of regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and comprehensive restoration of wetlands within the River Protection Overlay of the Merced River Plan. Should substantial or full implementation of the actions included in these plans occur over time, long-term cumulative impacts on wetlands may, on balance, be moderate and beneficial. These regional plans are tempered by adverse impacts that include existing infrastructure that diverts water away from wetlands in Yosemite Valley, the potential direct loss of wetland habitat at the Yosemite View Parcel Land Exchange (NPS) at Hazel Green Ranch and at University of California, Merced campus (Merced Co.). When the impact of the past, present, and future actions are combined with the actions proposed in Alternative 3, there would be a moderate, beneficial impact on wetland size, integrity, and connectivity.

Soils

The following discussion identifies and characterizes the impacts to soils expected from implementation of Alternative 3. Impact intensities are based on the size, type, and disturbance history of the soil resources impacted. Soil resources are identified as highly valued resource (HVR), resilient (R) or other (O). The primary activities that would affect soil resources are discussed for each of the project areas. Generally, adverse impacts to soils would include a combination of soil removal, profile mixing, compaction, erosion, and contamination. Beneficial impacts would occur as a result of soil restoration. Construction-related impacts (such as compaction from equipment and erosion) would be expected to be short term and temporary, because they would be minimized through the use of Best Management Practices and would occur for a limited time. All other impacts are expected to be long term unless otherwise noted.

YOSEMITE VALLEY

Approximately 305 acres would be affected by actions proposed under Alternative 3. Of this acreage, 144 acres would be highly valued resource soils, 122 more resilient soil, and 38 other soil types. Of the total area affected, 206 acres would be restored, while 98 acres would be associated

with new development. Construction-related (short-term) impacts would be negligible to minor because Best Management Practices would be used to minimize erosion and to contain construction activities to the immediate area. Some minor discrepancies between acreages in the text and tables may occur due to rounding or differences in mapping sources, and because impacts less than 1 acre are not mentioned in the text. A summary of effects to soils is found in table 4-60.

Table 4-60
Summary of Soil Types Affected

Soil Type	Resource Type[1]	Development Limitations[2]	Affected Area (acres)	
			Restored	Developed
101 Riverwash, 0-2%	HVR	F (frequent), SBE, HWT	9	–
102 Riverwash, 1-4%	HVR	F (frequent), SBE, HWT	–	–
104 Aquandic Humaquepts, 0-2%	HVR	F (frequent), HWT	5	–
105 Histic Haploaquols	HVR	HWT	–	–
151 El Capitan fine sandy loam, 0-2%	HVR	F (occasional), SBE, HWT (moderate)	66	–
152 Vitrandic Haploxerolls, 0-3%	O	F (occasional), D, LOS	–	–
201 Leidig fine sandy loam, 0-2%	HVR	F (occasional), HWT (moderate)	59	–
301 Vitrandic Haploxerolls, coarse, loamy, 0-2%	HVR	F (rare), HWT, LOS	–	–
401 Sentinel loam, 0-2 %	R	F (rare), LOS	–	24
412 River course	HVR	F	2	–
501 Miwok complex, 1-5%	R	F (rare), SBE	46	51
502 Miwok sandy loam, 0-3%	O	F (rare), SBE	–	–
504 Mollic Xerofluvents, 1-5%	O	F (frequent), SBE	1	10
551 Miwok – Half Dome complex, 5-15%	O	SE, LOS, D, C, AC	11	7
552 Mollic Xerofluvents, 5-15%	O	F (frequent)	–	1
590 Terric Medisaprist, 0-3%	HVR	F (occasional), HWT, SBE	–	–
601 Half Dome complex, 25-60%	O	SE, LOS, D, AC	2	3
602 Half Dome extremely stony sandy loam, 10-25%	O	SE, LOS, D, AC	1	2
610 Rubble land – Half Dome complex, 25-60%	O	SE, D, AC	–	–
620 Half Dome complex, warm phase, 25-60%	O	SE, LOS, D, AC	–	–
630 Rubble land – Half Dome complex, warm phase, 25-60%	O	SE, LOS, D, AC	–	–
701 Vitrandic Haploxerolls, 4-30%	R	SE (moderate), LOS	1	–
702 Vitrandic Xerochrept, 4-30%	HVR	SE (moderate), LOS	3	–
900 Rock outcrop	O	B	–	–
Total Area Affected			**206**	**98**

1. HVR = Highly valued resource soil, R = Resilient soil, O = Other soil (non-HVR and non-Resilient)
2. F=Flooding, SBE=Stream Bank Erosion, SE=Slope Erosion, HWT=High Water Table, D=Doughty (low water holding capacity), LOS=Loss of Organic Surface, C=Compaction, AC=Active Colluvium, B=Bedrock
Source: Soil survey of Yosemite National Park, Yosemite, California (SCS 1991)

Curry Village

Approximately 33 acres would be impacted by actions proposed under Alternative 3: 17 of these acres would be restored (R = 5, O = 12); and 16 acres would be developed (R = 8, O = 8).

Alternative 3 would have relatively equal impacts with respect to restoration and development. Most of the beneficial impacts associated with the restoration would occur on other soil types (551 Miwok – Half Dome complex). No highly valued resource soils would be restored. Beneficial impacts were evaluated as moderate because no highly valued resource soils would be restored. Development and redevelopment of lodging units, campgrounds, and the development of a new picnic area would have adverse effects on 16 acres. Approximately half of those impacts would occur on other soil types (551 Miwok – Half Dome complex). Development effects were evaluated as minor and adverse. Overall, the beneficial effects slightly outweigh the adverse effects, with a net result of negligible, beneficial impacts in Curry Village.

Yosemite Lodge

Approximately 49 acres would be affected by actions proposed under Alternative 3: 46 of these acres would be restored (HVR = 23, R = 22, O = 1); and 3 acres would be developed (R = 2, HVR = 1). Nearly all of the impacts at Yosemite Lodge are related to restoration activities. Additionally, large portions of the soils to be restored (23 acres) are highly valued resource soils. Restoration activities would have a major, beneficial effect at Yosemite Lodge. The adverse impacts associated with building construction would affect only a small acreage of resilient soils; therefore, adverse effects were evaluated as negligible. The overall impact at Yosemite Lodge would be major and beneficial.

Yosemite Village

Just over 14 acres would be affected by actions proposed under Alternative 3: 14 of these acres would be restored (HVR = 12, R = 1, O = 1); and less than 1 acre would be developed. Essentially all of the impacts at Yosemite Village would be beneficial because the development activities would be focused on areas that are currently developed. The largest portion of the restoration would occur on highly valued resource soil type 151 El Capitan fine sandy loam (8 acres). Overall, the proposed activities at Yosemite Village would have a moderate, beneficial impact on soil resources.

West Valley

Approximately 54 acres would be developed by actions proposed under Alternative 3 (R = 42, O = 12). All of the activities proposed for west Valley would result in adverse impacts. Nearly all of these impacts would occur at Taft Toe as a result of parking facility construction. Resilient (401 Sentinel loams) and other soil resources would be primarily affected. Due to the relatively large area and type of soil resources affected, the overall impact would be moderate and adverse in the west Valley.

Campgrounds

A total of 151 acres would be impacted by actions proposed under Alternative 3: 128 of these acres would be beneficially affected (HVR = 109, R = 17, O = 2); and 24 acres would be developed (R = 23, O = 1). Beneficial impacts would be dominated by the restoration of highly valued resource soils. These effects are the direct result of the implementation of the River Protection Overlay, restoration of parts of the Lower Pines and North Pines Campgrounds,

restoration of Camp 6, and the removal of roads from Stoneman and Ahwahnee Meadows. Restoration activities would result in major, beneficial impacts. Adverse impacts would occur on resilient soil types that are generally suitable to the proposed use. Adverse impacts were evaluated as being minor and adverse due to their size. Overall, the proposed activities at the campground areas would result in major, beneficial impacts on soil resources.

Roads and Trails

Transportation corridors such as multi-use paved trails and roadways have the potential to affect multiple soil types. Generally, trail construction would occur adjacent to existing linear corridors such as roads or utilities, or would be upgrades of existing informal trails. The impact of new trail construction would be adverse; however, the impact would be minor because the impacts would primarily be in linear segments of previously disturbed soils. New trails would be constructed to accommodate surface and subsurface water flow. Additionally, upgrades to existing trails would decrease erosion in high-use areas. Overall, the construction of new roads and trails would have minor, adverse impacts.

OUT-OF-VALLEY

Soils information is limited for many of the out-of-Valley locations. The following discussion is based on the general soils information available or extrapolated from other local soil surveys. It is assumed that out-of-Valley impacts would likely occur on resilient soil resources, because the topographic features outside of the Valley tend to be less constricting than those in the Valley. Disturbance to highly valued resource soils would be avoided as practicable, to reduce the likelihood of impacts on highly valued resource soils. General Best Management Practices and design requirements would reduce potential impacts to other soils. The following discussion is based on the premise that the majority of adverse impacts would occur on resilient soil resources, where feasible.

El Portal

The adverse impacts at El Portal would be related to the construction of employee housing facilities. Impacts would be similar to, but less than those described for Alternative 2, because large-scale parking facilities would not be planned under Alternative 3. Overall, the proposed actions at El Portal would mostly impact soil resources categorized as other, with a net moderate and adverse impact.

Foresta

Impacts to soils in Foresta would occur if the National Park Service and concessioner stables are relocated to McCauley Ranch, and as a result of the reconstruction of employee beds destroyed in the 1990 A-Rock fire and the relocation of campsites for park-sponsored volunteer groups. However, impacts would be minor and adverse, because soils in these areas tend to be resilient and the area of impact would be relatively small.

Entrance Stations

Development and/or redevelopment of a visitor center near the existing entrance stations would result in adverse impacts to soil resources. The center would be developed adjacent to existing stations and, generally, would be located in areas that are suitable to the proposed use. The size of impact for each center would be relatively small in relation to the surrounding soil resources. The impact due to construction of visitor centers would be negligible and adverse.

CONCLUSION

Four out of the five areas evaluated would have overall beneficial impacts under Alternative 3, which proposes restoration of 206 acres and development of 98 acres. West Valley would have the largest adverse impact, largely due to construction of parking facilities at Taft Toe. This adverse impact is offset to a large extent by the restoration of 144 acres of highly valued resource soils, 47 acres of resilient soils and 15 acres of other soil resources. Additionally, the proposed developments are focused primarily on the use of resilient and other soil resources. Thus, the overall in-Valley impact of Alternative 3 would be moderate and beneficial.

The overall impact to out-of-Valley sites is relatively small under Alternative 3. The proposed activities are estimated to affect less than 40 acres, and would be focused on non-highly valued resource soils. The overall out-of-Valley impact would be negligible and adverse.

The actions under Alternative 3 would have moderate, beneficial impacts to soils in Yosemite Valley. Most of the adverse impacts would occur within the Valley and would be associated with the Taft Toe parking facility. The actions in Alternative 3 would focus restoration on highly valued resource soils and use primarily resilient soils for development. Actions out of Valley would have negligible, adverse impacts. Facility design and construction would use current technology and Best Management Practices to minimize development impacts. The sum of all impacts for Alternative 3 would be minor and beneficial.

CUMULATIVE IMPACTS

The impacts of past, present, and reasonably foreseeable future areawide projects outside of the area would be the same as described under Alternative 2, minor and adverse. In relation to the expected impacts resulting from areawide projects, the beneficial impacts related to restoration under this alternative would be substantial since they would be the primary beneficial impacts on soil resources that would occur in the region. Thus, this alternative would serve to offset some of the adverse cumulative effects of other projects in the vicinity of the park. Therefore the cumulative impact of Alternative 3, in conjunction with other areawide projects, would be negligible and beneficial.

Vegetation

All impacts on vegetation identified through this analysis are considered long-term unless otherwise noted. Short-term impacts would occur during construction or implementation of actions. Based on the mitigation measures to be taken (see Vol. IA, Chapter 2), all short-term impacts are expected to be negligible.

The plant communities within out-of-Valley areas do not directly relate to the grouped vegetation types defined for the Valley because of elevation, terrain, and species composition differences. For example, the dominant plant species within a riparian vegetation type in El Portal would not be the same as those found within a riparian vegetation type in the Valley. Therefore, the vegetation types in each of the distinct out-of-Valley locations analyzed for this section are described separately from the vegetation types described for the Valley.

YOSEMITE VALLEY

The actions proposed under Alternative 3 would result in a net gain in all vegetation types except upland and other (orchards, bare ground, lawns) plant communities. Table 4-61 summarizes the total area of each vegetation type that would be beneficially and adversely impacted by this alternative. Minor discrepancies in totals between table and text are due to rounding to the nearest acre. It should be noted that the size of the area affected was only one of the factors used to evaluate impact magnitude. The continuity, productivity, structure, and diversity of the vegetation type were also factors considered in this impact analysis.

Table 4-61
Summary of Vegetation Impacts

General Vegetation Types	Beneficial	Adverse
Upland	19	81
California black oak	31	7
Meadow	54	0
Riparian	101	7
Other	0	4
Totals	**+ 205**	**- 99**
Net Impact	**+ 106**	

Note: Acreages presented in this table do not include impacts due to linear features such as roads and trails. These impact types are discussed separately in the text.

Approximately 106 acres of existing developed or disturbed areas within the Valley would be restored to natural vegetation through actions described below. These would result in a major, long-term beneficial impact to the vegetation of Yosemite Valley.

Transportation corridors such as multi-use paved trails and roadways, due to their linear nature, would have the potential to affect multiple vegetation types. Therefore, rather than repeating this discussion under each vegetation type below, road and trail impacts are described here. Under this alternative, new paved trail segments would be constructed. Generally, these trails would either parallel existing linear corridors such as roads or utilities, or would be located within areas that have been previously disturbed by past actions or social trails. The purpose of these new trail segments would be to provide connections to existing trails, thus improving the overall paved trail network for alternative modes of transportation through the Valley, and would minimize the need for cars. The impact of new trail construction would be adverse to vegetation; however, the impact would be minor given the small amount of vegetation impacted (8 acres). Impacts would occur primarily in previously disturbed uplands (non-highly valued resource) and be designed to avoid as many mature trees as possible and accommodate surface and subsurface water flow. Similarly, the three segments of realigned roadway and the one widened roadway would also have minor, adverse impacts on vegetation (3 acres). The new bridge over Yosemite Creek would

affect a small area of California black oak vegetation (0.5 acres) adjacent to the existing bridge, resulting in a moderate, adverse impact.

Restoration of meadow (3 acres) and California black oak (0.5 acres) habitat would occur as a result of removing Northside Drive within Ahwahnee and Stoneman Meadows and the turnout lanes at Northside Drive through El Capitan Meadow and Southside Drive near Bridalveil Fall. The impact on these vegetation types would be moderate and beneficial because they are both high valued resource types.

Overall, the road and trail impacts would have a minor, adverse effect on vegetation. The adverse effects would generally be to previously disturbed, non-highly valued resource vegetation types. The beneficial effects would restore highly valued resources, compensating for some of the adverse effects, but some habitat would be permanently lost with additional pavement.

Upland Communities

Upland vegetation makes up the largest vegetation type within Yosemite Valley. Alternative 3 actions would result in the restoration of approximately 19 acres of uplands in the Valley and the development of roughly 81 acres of upland vegetation. The overall impact of this alternative on upland vegetation would be minor and adverse, with improved forest health in remaining stands.

Beneficial Impacts

The beneficial impacts would be scattered throughout the east Valley area but generally would be found within the floodplain of the Merced River. The main restoration sites would be at the Group and Backpackers Campgrounds (1 acre), Yosemite Lodge (6 acres), Yellow Pine Campground (1 acre), Ahwahnee utility area (3 acres), and the talus slope zone at Curry Village (8 acres).

Beneficial impacts to upland vegetation size and continuity would occur within the following areas:

- At the former Group and existing Backpackers Campgrounds, restoration would include small areas of upland mixed in with other high value vegetation types. This action would have a minor impact.
- In the area between the Yosemite Lodge and the Merced River, areas of restoration would provide a continuous California black oak and upland vegetation corridor, linking the upland areas to restored riparian and meadow areas. This impact would be moderate.
- At Yellow Pine Campground, areas of formerly open ponderosa pine would be restored by prescribed fire to redevelop more naturally open characteristics. This area was known historically for its outstandingly large individual ponderosa pines. This impact would be moderate and long term.
- In the Ahwahnee utility area (3 acres), the current utility area would be removed and restored to upland, thus restoring habitat continuity. This impact would be minor.
- At the talus slope zone of Curry Village (7 acres), the continuity of upland stands of canyon live oak would be improved by the removal of housing and restoration of the talus slopes. This impact would be moderate.

- At Yosemite Lodge, adjacent areas of ponderosa pine and California black oak would be restored. Areas of the former bank building at Yosemite Village would also be restored, creating a larger, more continuous area of potential California black oak woodland. These actions would result in a minor impact.

The beneficial impacts to natural structure, diversity, and productivity of upland vegetation types are listed below:

- The canyon live oak community at Yosemite Village would be made more continuous through the removal of outbuildings in the vicinity of the NPS Operations Building (Fort Yosemite), with restoration of these areas to natural vegetation cover resulting in improved habitat and decreased fragmentation. This impact would be moderate.
- The ability to manage many of the continuous, unnaturally dense stands of incense-cedar and ponderosa pine with fire would be increased. This would help slow or stop the spread of annosus root rot through many of the currently developed areas of the east Valley (such as the Upper and Lower River Campgrounds area), and would improve overall forest health. This impact would be major.
- The need to manage hazard trees within and around developed areas would be reduced due to the restoration of many current upland vegetation areas. Older individual trees and snags that would be retained provide important wildlife habitat. This impact would be minor.
- The productivity of smaller, more disjunct stands of upland coniferous vegetation would increase as a direct result of prescribed fire, reduction of stand densities, reduction in spread of annosus root rot (due to the reduction of stand densities), and establishment of understory herbaceous and shrub vegetation. This would result in a major impact.
- The understory integrity, diversity, and overall productivity of upland vegetation would continue to improve with the re-establishment of native understory, which would result from the reduction of trampling in developed zones in the east Valley. This impact would be moderate.
- Upland vegetation encroachment into meadows and oak communities would be reversed through the use of fire management. The upland community would be reduced in size under Alternative 3 due to the removal of various developments in the east Valley, which would facilitate the ability of National Park Service staff to manage these areas with prescribed fire and other management tools. This would have a moderate effect on upland communities.

Adverse Impacts

The new development in upland vegetation areas within the east Valley would generally be concentrated in areas of the new campgrounds (18 acres), new lodging at Curry Village (5 acres), and Yosemite Lodge (3 acres). The west Valley areas that would be impacted by new development include the Taft Toe area (53 acres) and the proposed North American Wall Picnic Area (2 acres).

The adverse impacts to size, continuity, productivity, diversity, and structure of upland communities would include the following:

- At Yosemite Lodge, the addition of lodging in the area north of the current Northside Drive and associated parking would cause minor adverse impacts to upland coniferous forest and canyon live oak communities due to the addition of new buildings, paved trails, and the need to trench underground to provide utilities to these structures. This area has been previously disturbed.
- At Upper and Lower River Campgrounds area, upland communities would also be converted from existing upland type back to a mosaic of California black oak, riparian, and meadow communities through the removal of fill material. This would have only a minor impact on upland communities because this area does not have an intact understory and was not originally upland vegetation.
- The new walk-in campgrounds in the Valley would have a moderate impact on upland communities due to trampling of the understory layer.
- The addition of South Camp and the new Backpackers Campground would result in moderate upland impacts due to trampling and loss of understory vegetation.
- New lodging at Curry Village would be constructed outside of the talus slope zone near the existing lodging. This impact would be minor because the area is currently impacted by trampling.
- The development of the Taft Toe Visitor/Transit Center and associated facilities, with needed utilities, trenching, and the lack of management fires, would directly impact upland trees (ponderosa pine, incense-cedar, white fir, Douglas-fir, and some California black oak). This development would increase stresses to the remaining surrounding trees through trenching, trampling, and lack of smoke that controls oak gall development and spread of mistletoe in California black oaks. Potential new irrigation in landscaped areas would also result in a serious decline in the health, vigor, and productivity of this mixed ponderosa pine/California black oak forest. This would result in a moderate impact**.**
- The Taft Toe Visitor/Transit Center facility would also cover a large existing annosus root rot center. The visitor/transit development facility could cause the rapid expansion of root rot and dramatically increase tree mortality (due to trenching, potential irrigation, significantly increased trampling impacts, and other increased stresses) in the mature trees in adjacent areas. This would result in a moderate impact.
- Radiating impacts from the Taft Toe Visitor/Transit Center to adjacent upland, California black oak, riparian, and meadow communities would result from increased trampling, soil compaction, loss of understory and herbaceous vegetation, and the increased potential for establishment of non-native plant species. This increased foot and vehicle traffic would result in a moderate, adverse impact to the upland vegetation as well as adjacent plant communities in what is currently a relatively undisturbed and productive area of the Valley.
- Construction of a multi-use paved trail adjacent to Southside Drive (from El Capitan crossover to Swinging Bridge) would create additional paved areas, with associated

impacts to drainage, a direct loss of vegetation, and an increased level of habitat fragmentation. These trails would have a minor impact to upland communities because of their placement adjacent to existing roads and the existing levels of disturbance along these corridors.

California Black Oak Communities

The California black oak vegetation type is considered a highly valued resource because of its transitional character between wet meadows and drier uplands as well as its links to wildlife and ethnographic resources. Under Alternative 3, the actions proposed would result in approximately 7 acres of adverse impact and about 30 acres of beneficial impacts to this vegetation community. Compared to Alternative 1, the overall impact of this alternative on California black oak would be major and beneficial.

Beneficial Impacts

The restored California black oak areas are primarily in campground areas (20 acres); Yosemite Lodge area (5 acres); the Curry, Lamon, and Hutchings Orchards (2 acres); Camp 6 (1 acre); the Ahwahnee tennis courts (1 acre); and the Superintendent's House (Residence 1) (1 acre).

Beneficial impacts on the size and continuity of California black oak vegetation are listed below:

- Removal of North Pines Campground and the concessioner stable would facilitate a continuous ecotonal transition from the riparian communities near Tenaya Creek and the Merced River to more California black oak stands to the south and east. Increasing the size of both California black oak and riparian communities, as well as eliminating most of the habitat fragmentation in this area (except for the small development of the amphitheater in a portion of the former concessioner stable area), would result in a long-term, major, beneficial impact.
- At Yosemite Lodge, adjacent areas of California black oak would be restored, creating a larger, more continuous area of potential California black oak woodland. Due to the presence of large annosus root rot populations in the area, landscaping would focus on California black oaks (which are resistant to annosus root rot) rather than conifers, leading to a greater proportion of oaks in this area. Benefits to the California black oak community would be moderate and long-term.
- Ahwahnee row houses would be removed and the area restored to meadow, riparian, and California black oak vegetation. This beneficial impact would be minor due to the small size; however, it would act as a buffer between human activities and Ahwahnee Meadow.
- The fruit trees within the three Valley orchards would be removed and the areas restored to California black oak and meadow vegetation, resulting in a moderate, beneficial impact.
- Removal of the Ahwahnee tennis courts and associated non-native vegetation would remove the gap in this otherwise intact California black oak woodland that surrounds the courts, thereby improving the continuity of the California black oak woodland through this entire area (between the Upper and Lower River Campgrounds area and Ahwahnee Meadow to The Ahwahnee). This would result in a moderate impact.

- Removal of fill material at restoration sites such as the Upper and Lower River Campgrounds area would remove habitat for upland communities and restore original lower (topographic) layers to California black oak woodland, meadow, and riparian habitat, resulting in a long-term, major impact.
- Restoration at the Superintendent's House (Residence 1) would result in minor, beneficial impacts (primarily due to its small size).

The natural structure, diversity, and productivity of California black oak vegetation would benefit from Alternative 3 in the following ways:

- Stands in the east Valley would be minimally fragmented by development, roads, and encroaching conifers because of the enhanced ability to manage areas with fire, removal of facilities, and restoration of areas such as the Ahwahnee tennis courts and the Upper and Lower River Campgrounds area into a mosaic of oak woodlands, meadows, and riparian areas. These actions would result in a moderate impact.
- The natural structure of California black oak stands in the west Valley would improve due to prescribed burning, with the subsequent reduction in conifer encroachment resulting in a moderate impact. Other components of California black oak communities, such as deer grass (an important ethnographic resource), would significantly increase from the reintroduction of natural and simulated natural processes (such as fire and corrections in drainages), resulting in a moderate, beneficial impact.
- Correction of drainage problems associated with roads (potentially on Northside Drive at El Capitan Meadow and Southside Drive in the Bridalveil Fall area) and the removal of roads through Ahwahnee and Stoneman Meadows would improve the condition of California black oak stands in these locations by re-establishing natural drainages. This would correct problems associated with the impoundment of water upslope of roads, which keeps soils wetter for longer periods during the summer, thus encouraging armillaria root rot to become fully established. The action would result in a major, beneficial impact to California black oak stands in the area.
- Restoration of historic landscaping characteristics at the Yosemite Village Historic District housing area would improve the condition of existing mature California black oaks and facilitate establishment of younger generations of these trees within the district, thereby improving stand structure and increasing the continuity of stands in this portion of the Valley. Moderate, beneficial impacts would result from the action.

Adverse Impacts

The adverse impacts would primarily result from the new lodging at Curry Village (5 acres) and the new South Camp walk-in sites (2 acres) and wilderness parking area (1 acre).

The size and continuity of California black oak vegetation would be adversely impacted by the following:

- The development of additional lodging units adjacent to Stoneman house would result in direct loss of some mature oak trees and loss of regenerating saplings, as well as understory structure and function. In addition, radiating human activities and lack of fire

would continue encroachment by conifers, leading to a gradual shift from a California black oak-dominated community to a mixed conifer, California black oak type that is more common in the Valley. This action would result in a moderate, long-term impact to the vegetation community.

- The addition of the new South Camp walk-in sites would result in moderate impacts to California black oak vegetation due to trampling and loss of understory vegetation.
- Mature California black oak trees would potentially be removed during site grading and development, and additional trees could be lost with root impacts during construction, changes in drainage, and hazard tree removal, thus resulting in loss of stand structure and continuity throughout the Valley. These proposed actions would result in a moderate, adverse impact due to the long-term nature of California black oak regeneration if individual trees are lost.

Meadow Communities

The proposed actions under Alternative 3 would have an adverse impact to 55 acres through restoration and would result in negligible, beneficial impacts (less than half an acre). The overall impact of this alternative on meadow vegetation would be major and beneficial.

Beneficial Impacts

The beneficial impacts would occur through restoration near Yosemite Lodge (22 acres), at Camp 6 (6 acres), at the Upper and Lower River Campgrounds area, North Pines Campground, and Lamon Orchard (26 acres), and from the removal of Curry Orchard parking (1 acre). Additional benefits to the meadow areas would be accomplished through improved water flows and a decrease in radiating impacts such as trampling.

The size and continuity, natural structure, diversity, and productivity of meadow vegetation would be beneficially affected by the following actions:

- The ecological restoration of the entire area south of the proposed new road alignment at Yosemite Lodge (aside from utilities and access near the confluence of the Merced River and Yosemite Creek) would have major, beneficial effects on the ecological function of this section of the Valley, with increased meadow and riparian acreage, enhanced wetlands, and minimal fragmentation of a large low-lying area.
- The meadow size of Ahwahnee and Stoneman Meadows through the removal of the bisecting roads would increase substantially, with improved natural drainage patterns and continuous meadow cover over large areas of the east Valley, resulting in a major, beneficial impact.
- Areas of former meadow at the Upper and Lower River Campgrounds area where it is bisected by Northside Drive; Ahwahnee Meadow; former sections of Lower Pines Campground, Southside Drive near Bridalveil Fall, and Cook's Meadow would be restored by unburying meadow soils where fill was added. Hydrology would be restored over time through the restoration of original topographic variations and the re-

establishment of native herbaceous species (due to improved soil and hydrologic conditions). The action would result in a major, beneficial impact to the meadows.

- Connectedness of meadows to riparian and wetland areas would be created by removing roads and reconstructing portions of roads to facilitate natural drainage patterns, resulting in major, beneficial impacts.
- Implementing the River Protection Overlay, with access directed to appropriate sites along the river, would minimize impacts to this critical ecotone and result in a major beneficial impact.
- Modification of roads at Bridalveil, El Capitan, and Cook's Meadows to allow drainage would allow for the re-establishment of functioning oxbow and cutoff channels through meadows, thus creating a critical link between meadow, riparian, and wetland systems. This would also increase native plant establishment (due to wetter conditions), native biodiversity, and overall productivity as a result of changes in species, food for wildlife, cover, etc, and result in a major, beneficial impact to the meadows.
- Development of a multi-use paved trail between Curry Village and Yosemite Village would potentially allow for removal of the boardwalk through north Stoneman Meadow. Removal of the boardwalk would increase the continuity of the meadow and adjacent oak woodland, resulting in a minor impact.
- Restoration at Lamon Orchard would return the area back to a mosaic of California black oak, meadow, and riparian vegetation types. This restoration would have local moderate, beneficial effects because of the restored plant diversity and structure and reduced fragmentation, even though it is a relatively small area.
- Restoration at Camp 6 would return this highly disturbed area to a mosaic of meadows and riparian vegetation, which would result in major, beneficial impacts from the reduced habitat fragmentation and increased vegetation diversity.

Adverse Impacts

Alternative 3 would result in negligible adverse impacts on meadow vegetation along multi-use paved trails and, possibly, from development of a vehicle check station at El Capitan crossover.

The adverse impacts to meadow community size, continuity, structure, diversity, and productivity include:

- Development of a multi-use paved trail between Curry Village and Yosemite Village through the Upper and Lower River Campgrounds area would not allow for complete elimination of fragmentation and impacts to existing and potential meadow and riparian zones. Alignment of the multi-use paved trail along the utility corridor through the Upper and Lower River Campgrounds area would minimize fragmentation somewhat by overlapping uses, resulting in a minor impact.
- Development of a vehicle management station, if required, at El Capitan crossover could result in undesired/unplanned parking along road shoulders at El Capitan Meadow, resulting in additional impacts from vehicles, trampling, the continued need to remove hazard trees, and introduction of non-native plant species into the meadow. However,

these radiating impacts would be mitigated through restricting parking along the roadway and restricting human use of the meadow. The action would result in a minor impact to the meadow.

Riparian Communities

Actions under Alternative 3 would create beneficial impacts to over 101 acres of riparian vegetation and result in an adverse impact to an estimated 7 acres of riparian vegetation. The overall impact of this alternative on riparian vegetation would be major and beneficial.

Beneficial Impacts

Restoration would be concentrated in the floodplain areas near Yosemite Lodge (19 acres), the Upper and Lower River, North Pines, Backpackers, Group, and portions of Lower Pines Campgrounds (61 acres); Camp 6 (5 acres); Housekeeping Camp (9 acres); Yellow Pine Campground (3 acres); and Swinging Bridge Picnic Area (2 acres), as well as the talus slope zone of Curry Village (3 acres).

The beneficial effects of Alternative 3 on the size and continuity of riparian vegetation types would include the following:

- Restoration at Camp 6 would return this highly disturbed area back to a mosaic of meadows and riparian vegetation, which would have major, beneficial impacts resulting from reduced habitat fragmentation and increased plant diversity.
- Beneficial effects of the removal of Swinging Bridge Picnic Area on hydraulic function and riparian vegetation would be augmented by the removal of Housekeeping and Superintendent's Bridges and restoration of the adjacent riverbanks. This would be a major beneficial impact because it would allow creation of continuous riparian areas with reduced intrusions of infrastructure on the river corridor.
- Removal of Sugar Pine and Stoneman Bridges would eliminate the hydrologic alternations that are causing a loss of riparian vegetation both upstream and downstream from these bridges. This would allow restoration of a continuous riparian band along a majority of the Merced River and Tenaya Creek through the east Valley that is currently almost entirely denuded. The resulting beneficial impacts to riparian vegetation would be major.
- Removal of North Pines Campground and the concessioner stable would facilitate a continuous ecotonal transition from the riparian communities near Tenaya Creek and the Merced River to drier California black oak stands to the south and east. This would increase the size of both vegetation communities as well as eliminate most of the habitat fragmentation in this area, except for the small development of the amphitheater in a part of the former concessioner stable area. Major beneficial impacts would result.
- Restoration of the Upper and Lower River Campgrounds area, the Upper Pines Campground dump station, a portion of Lower Pines Campground, a portion of Housekeeping Camp within the 150-foot River Protection Overlay, and Group and Backpackers Campgrounds would facilitate the re-establishment of riparian corridors

(oxbows and cutoff channels) through these sites as well as along the Merced River and Tenaya Creek, resulting in a major, beneficial impact.

- Restoration of the riparian corridor within the River Protection Overlay at Camp 6 would improve the continuity of riparian habitat along the Merced River corridor through the east Valley, and would provide connection between the wetland and meadow communities to the northeast and northwest of the proposed parking area. The action would result in a minor, beneficial impact to the riparian community.
- Ecological restoration of the entire area south of the proposed new road alignment at Yosemite Lodge (aside from utilities and access near the confluence of the Merced River and Yosemite Creek) would have major, beneficial effects on the ecological function of this section of the Valley, with increased meadow and riparian acreage, enhanced wetlands, and minimal fragmentation of a large low-lying area.
- Redesign of portions of Southside Drive in the Bridalveil Fall area would facilitate water flow under the road and enhance the continuity of the riparian community upslope and downslope of the existing road. This impact would be moderate.
- Yosemite Lodge landscaping would be designed to accommodate seasonal and ephemeral drainages, and channels would be revegetated with riparian species appropriate to the site to provide continuous riparian threads through the developed area. The action would result in a moderate, beneficial impact to the riparian community.
- Removal of the rubble pile from the western channel of Yosemite Creek would allow the western channel to flow for a longer period, enabling riparian vegetation to become established in this currently barren channel. Riparian vegetation within the area would receive a moderate, beneficial impact.
- Rehabilitation of bridges over Yosemite Creek in the braided stream channel area would remove impacts associated with undersized bridges that have resulted in scouring of the channel banks and loss of riparian vegetation. This would provide a moderate improvement to riparian conditions in this area, in conjunction with removal of the western channel rubble pile.
- Repair and construction of the road between the Cascades Diversion Dam and Pohono Bridge would eliminate roadside parking and associated human impacts on riparian vegetation along this section of the Merced River corridor. This action would result in a minor, beneficial impact.

Adverse Impacts

Adverse impacts would primarily take place at the new walk-in campsites at Upper Pines Campgrounds (3 acres) and at the new lodging at Curry Village (4 acres). Additional impacts would occur as a result of radiating use from these new and redeveloped sites.

Adverse impacts to size, continuity, productivity, diversity, and structure of riparian communities include the following:

- New walk-in campsites at Upper Pines Campground would cause minor impacts to riparian vegetation due to trampling and the use of fill to create flat spaces for tent pads.

- At Curry Village, a small area of riparian vegetation would be impacted in order for existing lodging to be relocated outside of the talus slope zone. This new lodging development would be designed to minimize impacts, resulting in local impacts that are moderate but minor in relationship to the overall impacts to riparian vegetation.
- Converting the trail south of the Happy Isles Loop Road between Curry Village and Happy Isles to a multi-use paved trail would result in continued and increased negative impacts to the fen (an alkaline wetland fed from groundwater sources located near Happy Isles) and adjacent riparian vegetation. These impacts would be due to widening the current trail to accommodate heavier bicycle traffic, with a long-term loss of more fen habitat. The fen is unique in Yosemite National Park and any impacts would be considered major due to the rarity of this type of vegetation community.
- Paving or hardening the eastern channel trail at Yosemite Creek for accessibility would directly impact some riparian vegetation because this action would involve widening or relocating the current trail. However, the area of impact would be small, and this site has already had an almost complete loss of herbaceous cover due to undirected foot traffic adjacent to the current access trail to Lower Yosemite Fall Bridge. The resulting impact would be minor.
- Development of a multi-use paved trail between Curry Village and Yosemite Village would allow for the elimination of habitat fragmentation through the restored section of Lower Pines Campground (riparian and California black oak). The trail would be designed to minimize impacts to the riparian zone between Ahwahnee Bridge and Curry Village to accommodate frequent cutoff channel flows across the river terrace. The action would result in a minor beneficial impact.
- Increased development at the Cathedral Beach Picnic Area to accommodate increased use radiating from the Taft Toe area could result in negative impacts to riparian vegetation. Impacts would result from picnic area development (with installation of restrooms, picnic tables, and barbecue grills, and trenching for utilities to support restrooms, running water, etc.) as well as radiating uses along the river. A trail currently exists along the river bank at this picnic area, but the substantial increased use of the entire area would result in a much higher level of use, creating a wider path, diversion of overland water runoff onto social trails, trampling of vegetation, and an increased need to remove hazard trees. These impacts would be moderate with the implementation of fencing and signs to keep visitors out of sensitive vegetation and focused toward point bars and gravel bars along the river.

Other Communities

The Alternative 3 actions would result in adverse impacts to about 4 acres of other types of vegetation ground cover. Forty acres of bare ground, orchards, watered lawns, bare areas, and developed open areas would be restored to either upland or highly valued resource vegetation types. The beneficial impacts have been discussed in the upland, California black oak, meadow, and riparian discussions above, and include restoration of the Curry Orchard to a mix of meadow, riparian, and California black oak stands; restoration of the site of the removed concessioner stables at North Pines Campground to riparian and California black oak woodland;

restoration of Lamon Orchard to meadow; restoration of Hutchings Orchard to California black oak woodland; and restoration of the Camp 6 area to a mosaic of meadow, riparian, and California black oak woodlands. Adverse impacts would occur in areas where sparsely vegetated lands would be developed, such as the development of new housing and lodging at Curry Village and lodging units at Yosemite Lodge. Overall, there would be negligible beneficial impacts on these other vegetation types under Alternative 3.

OUT-OF-VALLEY AREAS

Alternative 3 does not propose any out-of-Valley parking areas; therefore, vegetation communities in South Landing, Badger Pass, Hazel Green Ranch, and Henness Ridge would receive no impacts. No housing would be added in Wawona. The overall impact of this alternative on the remaining out-of-Valley areas would be moderate and adverse.

El Portal

Vegetation found in the El Portal area of impact include oak (a type of upland vegetation) and riparian types; however, the plant composition of these types varies from those in the Valley. Meadow and California black oak types are not represented in the El Portal area. The overall impact of Alternative 3 on El Portal vegetation would be moderate and adverse.

Upland Communities

BENEFICIAL IMPACTS

Increased use of the El Portal area would not benefit oak (upland) communities.

ADVERSE IMPACTS

- Existing oak stands would experience moderate, long-term impacts from the development of housing throughout El Portal. Direct loss of trees would occur with the development of housing within areas that are already somewhat impacted by low-density housing, as well as development of new housing sites at Hillside East and Hillside West. These developments would prevent retained trees from reproducing (from pavement, yard activities, landscaping, trampling, and the presence of structures), resulting in a decrease in the size and continuity of these oak woodlands.
- The natural structure, diversity, and productivity of oak and upland communities would be moderately impacted because of the increased likelihood of non-native plant species and lack of natural fire and fire frequencies.
- Prescribed burning and mechanical manipulation of vegetation surrounding El Portal would continue to maintain semi-natural stands of oaks around developed areas. These actions would promote oak regeneration by reducing competing vegetation. Many areas currently managed this way would be developed into housing, parking, and infrastructure, leaving fewer acres of oaks to regenerate, provide habitat, and add to the diversity of this area. The action would result in a minor impact.
- The development of a parking area could require the removal of large individual oaks adjacent to the Merced River at Middle Road. The development of housing upslope of

this site would eliminate connectedness of the oak stands on the slopes above El Portal with riparian and flat terrain oak communities, resulting in a moderate impact.

Riparian Communities

BENEFICIAL IMPACTS

- The removal and restoration of the old treatment plant at Rancheria Flat adjacent to the river would enhance the continuity of riparian vegetation along this curve of the Merced River, with potential increased habitat for rare plant species growing adjacent to the site. This would result in a major, beneficial impact to vegetation communities in the area.
- Implementation of the River Protection Overlay and management zoning, as prescribed in the *Merced Wild and Scenic River Comprehensive Management Plan* would help protect the riparian corridor throughout the El Portal Administrative Site and result in a minor, beneficial impact.
- Restoration of the sand pit area, with removal of remaining concrete wing wall and re-establishment of riparian vegetation, would enhance the river corridor and increase potential habitat for Congdon's woolly-sunflower, a state-listed rare plant species. This action would result in a minor benefit to the riparian vegetation community and Congdon's woolly-sunflower.

ADVERSE IMPACTS

- Riparian areas would receive minor impacts from the development of high-density housing at Hennessey's Ranch (due to their currently impacted condition). Associated increases in human use would cause a decline in the continuity of this vegetation community as social trails develop.
- The size of riparian areas would continue to be impacted by existing development and new development (Hennessey's Ranch and Village Center). A continued decline in riparian community size would also occur both in length along the river and width from the water's edge up to the bank edge, resulting in a minor impact.
- An increased human population, with an associated increase in landscaping, numbers of vehicles, and foot traffic (and means for seed dispersion), would result in more non-native plant species problems throughout the riparian and oak woodland areas, resulting in a moderate impact.
- The isolated nature of riparian areas in the El Portal core area (Crane Creek to Foresta Bridge), caused by structures and Highway 140 riprap, would continue to inhibit natural exchange of other biological components (mammals, amphibians, and reptiles) as well as wind-dispersed seeds. This would result in lower overall productivity of these areas and a minor impact.

Foresta

The development being considered for Foresta under Alternative 3 includes stables, a Volunteers-in-the-Parks Campground, and the replacement of 14 houses that were destroyed in

the 1990 A-Rock fire. The area of potential impact would be approximately 2 acres for the relocated stable facilities, and 3 acres for the campground. Housing impacts would occur within existing developed areas. The overall impact of Alternative 3 on Foresta vegetation would be minor and adverse, as compared to Alternative 1.

Adverse Impacts

- Development of the National Park Service and concessioner stables at McCauley Ranch, including access road widening and rebuilding of a bridge along the access road, would further break up the continuity of the upland and riparian communities that exist along this road corridor. Impacts would be minor because the road and bridge are already present.
- Development of the National Park Service and concessioner stables at McCauley ranch would also increase the possibility that non-native species could establish and spread. Foresta remains fairly susceptible to non-native plant establishment as a result of the severe impacts that occurred during the 1990 fires, because of constant ground disturbance, the need to maintain the road corridor, and importation of potentially contaminated feed. Stable operations could increase the chance of additional non-native plant species becoming established in the vicinity of the road and corral. This would result in a moderate impact.
- Isolated but extreme impacts from the establishment and spread of non-native plant species (including spotted knapweed, yellow star-thistle, and oxe-eye daisy) would occur at a somewhat more rapid rate due to increased vehicle use of this area from development of the stables and new housing. Management efforts would continue to attempt to contain and control (and eventually eradicate) existing and new non-native plant species. The spread of non-native species would be a moderate impact.
- The effect of the re-establishment of a campground at its former site (moved temporarily to Yellow Pine following the 1990 fires) would increase vehicular use to this site. This would increase the risk of introduction of non-native species. Non-natives impact the natural structure of communities, altering the natural diversity, and generally leading to less productive habitats for native wildlife. This action would represent a moderate impact.

Big Oak Flat Entrance

Additional parking and construction of a new visitor contact station (visitor center) would increase the footprint of the existing site by up to 5 acres. Impacts at the Big Oak Flat Entrance would be long-term, adverse, and minor due to the small size of additional impact, the existing level of habitat fragmentation, and the existing high potential for the introduction of non-native plant species.

Impacts to upland vegetation (ponderosa pine forest and mixed conifer forest) may occur depending on the actual site design, which is not known at this time. Impacts would include paving, the removal of trees and groundcover, an increased difficulty in managing fuels and vegetation structure with fire (due to the presence of additional structures requiring fire

protection), and trenching impacts to root systems (with a potential weakening of the health of directly affected trees).

Tioga Pass Entrance

Tioga Pass vegetation is characterized by a mosaic of both wet and dry subalpine meadows (dominated by native perennial grasses, sedges, rushes and forbs) and lodgepole pine forests. Continued degradation of these vegetation types would occur under Alternative 3. The impacts resulting from this alternative would be long-term, moderate, and adverse because of a loss of vegetation and further degradation of vegetation community structure and diversity within a currently disturbed area.

Adverse Impacts

- Construction of a new visitor center and associated parking (with potential impacts of up to 5 acres) in the vicinity of Tioga Pass would impact lodgepole pine forests and wet and dry subalpine meadows. Dry meadows and lodgepole forests would be affected by paving and addition of structures, utility lines, and trails, thereby reducing both the size and continuity of these vegetation types, resulting in long-term, moderate, and adverse impacts. Wet meadows would also receive long-term, moderate and adverse impacts from radiating uses due to increased human activity in the area. Impacts to wet meadows could be mitigated by more clearly defining trails leading to the Mt. Dana cross-country route and would most likely remain moderate (despite any mitigation) simply as a result of increased human use in the area.
- Paved areas and structures would result in changes in drainage patterns, with resulting moderate, adverse impacts. An increased number of visitors because of the new visitor center would increase the likelihood of additional firewood collection (causing a loss of nutrient recycling), and more vehicles in the area would increase the chance of non-native plant establishment as a result of more trampling and denuded soils.

South Entrance

Vegetation at the South Entrance to Yosemite National Park is characterized by dense montane, mixed conifer forest dominated by a white fir overstory with subordinate sugar pine, Douglas-fir, and ponderosa and Jeffrey pine. Riparian vegetation occurs along ephemeral and perennial stream channels.

Continued degradation of these vegetation types would occur under Alternative 3. The impact of this alternative would be long-term, minor, and adverse because there would be some increase in vegetation loss and degradation as compared to the existing condition.

Adverse Impacts

- Increased parking and structures would further add to the habitat fragmentation of the area, with an increased loss of riparian vegetation caused by potentially filling drainages, and an increased loss of forest cover. The loss of riparian vegetation could be minimized by using existing old road and railroad corridors rather than creating new developed

areas, resulting in minor, adverse impacts (due to the small area that would be disturbed). Forests would be impacted by the loss of up to 5 acres of trees in a currently forested area. Additional impacts would occur from the expansion of the hazard tree management zone along the corridor and around new parking areas.

- An increase in paved areas, how long vehicles are parked, and levels of human use in the South Entrance area would increase the potential for introduction and establishment of non-native species through a higher level of road-edge maintenance, increased introduction of sand with potential weed seeds, and more people with seeds clinging to clothing and cars. Impacts would be moderate and adverse to riparian vegetation and minor for forested areas.
- The increased human population would make reintroduction of fire into this area more problematic due to smoke and the presence of structures. These limitations could be minimized by site design to concentrate structures in as small an area as possible. Vegetated "islands" would also be minimized to allow management of adjacent vegetation with fire.

CONCLUSION

In Yosemite Valley, California black oak woodlands would receive major, beneficial impacts through the removal of some structures within existing stands and the potential for restoration of large areas of former California black oak. Both meadow and riparian areas in the east Valley would also receive major, beneficial effects under Alternative 3 from the removal of some facilities, the consolidation of others out of the Merced River floodplain, and an increased ability to restore large portions of the Valley to natural conditions. These benefits would be offset by moderate, adverse impacts from habitat loss and radiating impacts to adjacent areas in the currently undeveloped west Valley. Upland forests in the Valley would have long-term, moderate, adverse impacts as a result of the development of parking at Taft Toe.

In the El Portal Administrative Site, long-term, moderate, adverse effects would occur to the oak and upland vegetation communities due to new housing and parking development. Riparian areas would have moderate, adverse effects from radiating impacts due to existing and increased human population. Tioga Pass would also receive moderate, adverse impacts from direct and radiating impacts as a result of increased use of this subalpine area.

Minor, long-term, and adverse effects would occur in Foresta, at the Big Oak Flat Entrance, and at the South Entrance as a result of slightly increased radiating impacts from an increased human population, a higher chance of non-native plant species establishment, and a slightly greater fragmentation of vegetation.

The overall impacts of Alternative 3 on vegetation would be long-term, minor, and beneficial based on (1) the relatively large areas of highly valued resource vegetation types that would be restored, (2) the similarly large amount of adverse impacts to new areas in west Valley that would occur in non-highly valued resource vegetation communities (upland and other), and (3) the limited habitat fragmentation generated in the out-of-Valley areas.

CUMULATIVE IMPACTS

The overall impacts of past, present, and reasonably foreseeable future projects on vegetation would be the same under Alternative 3 as is described for Alternative 1.

Development of the Taft Toe Visitor/Transit Center and associated parking would result in the loss of a large stand of conifers in the central portion of Yosemite Valley. Additional adverse impacts to upland vegetation would occur through the restoration of areas currently covered with conifers to highly valued meadow, California black oak, and riparian vegetation types. This would constitute an improvement in the overall function of remaining upland communities through the re-introduction of fire, resulting in improved stand density and health. Altogether, these actions would have a moderate, adverse impact to uplands in the Valley. There would also be minor, adverse impacts to upland vegetation type in El Portal and Foresta (as well as at all park entrance stations) resulting from the addition of structures and parking. Proposed actions in Alternative 3, in conjunction with those reasonably foreseeable future projects described in Alternative 1, would result in a cumulative minor, adverse impact to upland vegetation.

Increased human activity and related air quality degradation in the El Portal area and elsewhere could adversely affect ponderosa pine, Jeffrey pine, and other ozone-intolerant species. The National Park Service has operated an ozone monitoring station at Turtleback Dome for more than a decade to identify ozone trends in Yosemite Valley. Although cleaner burning vehicles and fuels should reduce the amount of ozone in the atmosphere in the future, cumulative effects to such plant species are expected to continue.

Other cumulative impacts to vegetation would include plant community fragmentation from increased land development and potential continued introduction of non-native plant species. Cumulative impacts to riparian vegetation would also be expected due to development and other pressures along the narrow Valley floor adjacent to the Merced River.

Restoration actions proposed in Yosemite Valley and the removal of structures, with resulting decreased habitat fragmentation in some areas, would result in increased acreage of restored California black oak woodland which would be a major, beneficial impact. There would also be more acres of potential California black oak woodland through the re-introduction of fire into tree stands adjacent to uplands. The loss of valley, canyon live, blue, and California black oaks through construction in El Portal, however, would increase habitat fragmentation; site planning to avoid large trees and designing landscapes to minimize irrigation impacts would help mitigate these actions. Talus live oak communities in Yosemite Valley would not be impacted, and some oak would be restored under Alternative 3. In conjunction with reasonably foreseeable future projects, there would be cumulative moderate, beneficial impacts to oaks as a result of Alternative 3.

Alternative 3 also calls for the establishment of a River Protection Overlay in Yosemite Valley, which would create long linear sections of intact riparian vegetation after restoration efforts were completed. The natural links with meadows would be restored, and large continuous meadow areas would be recreated throughout the east Valley. However, this alternative also proposes additional multi-use paved trails, which often follow or cross riparian areas. Impacts could also occur to subalpine meadows at Tioga Pass. Thorough site planning could prevent impacts to

riparian and meadow vegetation in these newly developed areas by avoidance, thus resulting in a cumulative moderate, beneficial impact to riparian and meadow vegetation. Therefore, the overall cumulative impact of Alternative 3, in conjunction with reasonably foreseeable future projects, would be minor and beneficial.

Wildlife

This analysis describes impacts to wildlife in terms of changes to habitat, such as habitat loss or gain, degradation or enhancement, fragmentation or connectivity, amount of human disturbance, and potential for increased or decreased conditioning of wildlife. The Vegetation section provided detail (including acreage breakdowns) on the vegetation types that are related to the habitat types covered in this section: upland, California black oak woodland, meadow, riparian, and other. All but the upland and other habitat types are considered highly valued resources by the park because of their value to wildlife combined with other factors, such as scarcity on a regional basis and value as critical components in park ecosystems. General wildlife species associated with these habitat types are discussed in Chapter 3, Affected Environment, Wildlife; table 3-6 illustrates the connections between vegetation types and wildlife habitats. Special-status wildlife species are discussed in a separate section of this chapter.

Short-term impacts would occur to wildlife during construction or implementation of actions described in this section. Based on the mitigation measures that would be implemented during construction, all expected short-term impacts would be negligible.

Other impacts on wildlife and wildlife habitat generally would be characterized as long term for the actions reviewed under this alternative.

YOSEMITE VALLEY HABITATS

Habitat restoration would result in approximately 205 acres of restored or enhanced wildlife habitat within the Valley, of which 186 acres would restore highly valued resource habitat types. New or relocated development within existing wildlife habitat would result in approximately 99 acres of lost or degraded wildlife habitat, of which 85 acres would occur within upland or other habitat types within the Valley.

In restored habitat of all types, the resulting benefit to wildlife is highly dependent upon the size of the area restored and its connection or proximity to other natural or restored areas. Such benefit is also related to the proximity of the restored area to continued human activities and development. Larger restored areas of habitat tend to support a higher abundance and diversity of wildlife species, and are less affected by human disturbance from adjacent development and uses. Connections within and among habitat types allow more natural wildlife movement, and access to food, cover, and reproduction sites necessary for all stages the life cycles of various species. Management of human use in areas adjacent to natural or restored areas can minimize disturbance that would degrade habitat quality, especially of sensitive habitats such as meadows and riparian. For example, signs and fencing could keep visitors away from sensitive habitats or wildlife species, and control of human food sources in developed areas could reduce conditioning of wildlife and minimize human/wildlife conflicts.

In addition, where development is removed and human presence is reduced, management practices required to enhance public safety (at the cost of natural resources) can also be reduced. For example, dead trees (snags) are important habitat features for many wildlife species, but must be removed when they occur in or near roads, developed areas, or other sites of high human use. With the removal of development and the reduction in human use in an area, snags can be allowed to stand and benefit wildlife.

Upland Habitats

Approximately 80 acres of existing upland habitat would be developed under this alternative, approximately 19 acres would be restored, and an additional 99 acres would be converted to high value resource habitat types. The beneficial impacts to upland habitats would primarily be the result of increased connectivity of uplands with other habitats, as well as more natural habitat structure (understory, herbaceous or shrub layer, and canopy) in east Yosemite Valley. The adverse impacts on upland habitat would occur primarily as a result of habitat loss and increased fragmentation, mostly in west Yosemite Valley. A summary of actions and impact intensities for Alternative 3 are provided in table 4-62.

Adverse impacts on upland habitats and related wildlife species under this alternative are generally the same as described for Alternative 2. Most adverse impacts to wildlife would be minor to moderate, based on the implementation of mitigation measures to minimize impacts of increased human presence and degradation (e.g., fencing and signs to keep people out of sensitive areas) and the provision of food storage lockers and enforcement to limit wildlife access to human food sources. Most adverse impact areas would also be small relative to the amount of similar habitat remaining after the impact. The notable exception to this under Alternative 3 would be the development of parking in the Valley at Taft Toe instead of in out-of-Valley locations, as described below. This would be a major, adverse impact to upland habitats.

Alternative 3 would develop a new Taft Toe facility for day-visitor parking and a visitor/transit center, which would remove approximately 53 acres of upland habitat and affect species such as ringtail, California spotted owl, and Gilbert's skink. Development in this location would result in a high level of habitat disruption and human disturbance to the west Valley, creating a large element of habitat fragmentation. Noise, light, and increased human use radiating from the facility into adjacent habitats, including highly valued resource habitat, would affect their existing quality. Hazard tree mitigation would reduce local snag numbers and would affect wildlife such as bats and woodpeckers.

The location of this facility at the foot of Cathedral Spires gully would place it in a corridor that may be used by wildlife moving into and out of the Valley, which could inhibit the movement of some species or lead to conflicts between humans and animals. Such conflicts could result in property damage, injuries, and the conditioning of animals to human food sources in an area of the Valley where such incidents are now rare. Parking at Taft Toe, especially in the early morning or late evening, could lead to high levels of vehicle break-ins by conditioned black bears. General mitigation measures have been incorporated into the proposed parking areas to minimize wildlife impacts, including restricting visitor access into adjacent sensitive habitats and providing bear-resistant food storage for overnight parking, information and enforcement to discourage wildlife

feeding and encourage proper food storage, and adequate garbage services. Surface water runoff from parking areas would be collected and treated prior to entering meadows or riparian areas to minimize pollution impacts on frogs and other species dependent on aquatic habitat. Lighting would be designed to minimize illumination of surrounding areas. Despite these mitigation measures, impacts of the Taft Toe facility would be major and adverse.

California Black Oak Woodland Habitat

Approximately 7 acres of existing California black oak woodland habitat would be developed under this alternative and approximately 30 acres restored to this highly valued resource habitat. The beneficial impacts to California black oak woodland habitats and associated wildlife would primarily be the result of increased area of this type, improved connectivity with other habitats, and more natural habitat structure. The adverse impacts to California black oak woodland habitat would occur primarily as a result of habitat loss. A summary of actions and impact intensities for Alternative 3 are provided in table 4-62.

The main beneficial impacts are generally the same as described for Alternative 2. The primary differences in actions from those described in Alternative 2 are discussed below. Beneficial impacts on California black oak woodland habitat would have corresponding beneficial effects on many species, including mule deer, acorn woodpeckers, squirrels, mice, bats, great-horned owls, and a variety of small birds.

- The former gas station site and former bank building would be restored to oak woodland. Small patches of this high-value habitat type would be restored. These areas, however, represent a relatively small portion of California black oak habitat in the Valley, and would have continued human disturbance from Yosemite Village at the bank building site, and Yosemite Lodge and Camp 4 (Sunnyside Campground) at the gas station site, which would limit their quality to wildlife. Therefore, the net gain in habitat value would be minor.
- Ahwahnee Row houses would be removed and the area restored to California black oak woodland and some meadow and riparian habitat. The forest/meadow edge would be restored, providing a high-value ecotone for wildlife. Flows from Indian Creek could be allowed to follow a more natural course, leading to improved meadow habitat and the formation of riparian habitat, both highly valued resources. Impacts from domestic pets and non-native plants associated with current housing would be reduced. This restored habitat would be a relatively thin strip, and continued high levels of human use in adjacent areas would limit the value of this restoration to wildlife by causing disturbance in the area. Overall, this action would have moderate, beneficial effects.

Riparian and Meadow Habitats

Approximately 7 acres of existing meadow and riparian habitat would be developed under this alternative, and approximately 156 acres would be restored to these highly valued resource habitats. The beneficial impacts to meadow and riparian habitats would primarily be the result of increased size of this habitat type, improved connectivity with other habitats, as well as enhanced

habitat structure. The adverse impacts to meadow and riparian habitat would occur primarily as a result of habitat loss.

Beneficial and adverse impacts are generally the same as described for Alternative 2; a summary of actions and impact intensities for Alternative 3 are provided in table 4-62. The primary differences in actions from those described in Alternative 2 would be:

- Removal of all apple orchards would allow restoration of meadow habitats and eliminate a large source of unnatural food to wildlife that has, in the past, led to high levels of human/wildlife conflict. This action would provide major, beneficial effects for wildlife.
- The removal of 212 units at Housekeeping Camp would allow extensive restoration of riparian habitats, and augment the benefit provided by the River Protection Overlay. This restoration would provide increased habitat contiguity with other restoration actions (e.g., Upper River and Lower River Campgrounds area), thus benefiting species such as hairy woodpecker and various bat species. This would provide major, beneficial impact to wildlife.
- Removal of parking from Camp 6 would allow restoration of this area to riparian, meadow, and upland habitats. This would augment the benefit of adjacent restoration provided by implementation of the River Protection Overlay and increase habitat contiguity with other restoration actions (e.g., Housekeeping Camp and the area of the former Upper River and Lower River Campgrounds). This would benefit species such as Pacific tree frog, western toad, and yellow warbler This would provide major, beneficial impact to wildlife.
- The elimination of private stock use in Yosemite Valley would further reduce the abundance of brown-headed cowbirds and their effects on native bird species, providing a minor, beneficial impact. Such benefit would be in addition to that provided by the removal of National Park Service and concessioner stables that would occur under this alternative, if McCauley Ranch is determined to be a suitable location for these operations.

OUT-OF-VALLEY HABITATS

Under Alternative 3, development outside of Yosemite Valley would be limited. Impacts in Wawona would remain the same as in Alternative 2 from development of employee housing. In all other areas outside the Valley that would be affected under Alternative 2, there would be differences under Alternative 3.

Standard mitigation measures would be incorporated into project design to minimize wildlife impacts (see Chapter 2, Alternatives, Mitigation Measures Common to All Action Alternatives).

El Portal

Impacts in this area would be the same as under Alternative 2, except no parking facility would be established in the Middle Road location. This would allow retention of primarily oak woodland and shrubs and allow continued use of this habitat by wildlife, although existing impacts in the

area would continue. The overall impact in El Portal would be moderate and adverse from development of housing and administrative facilities.

Wawona

No additional housing or other facilities would be built in this location under Alternative 3; therefore, there would be no additional impacts to wildlife.

Hazel Green

No access road or parking facility would be constructed in this area, so no additional impact on wildlife or habitat would occur. Forest habitat would not be removed, and radiating human impacts into adjacent areas would not occur.

Foresta

Impacts in this area would be the same as under Alternative 2, except no parking facility would be developed as an alternative to Hazel Green. The overall impact in this area would be minor and adverse from construction of a small number of employee houses and establishment of National Park Service and concessioner administrative stable operations.

Badger Pass

The existing ski area facility would not be used for parking under this alternative, and thus no new disturbance to surrounding habitats and no new threats in the form of polluted runoff would result. Consequently, there would be no impact to the Badger Pass area under Alternative 3.

Entrance Stations

As described in more detail in Alternative 2, limited expansion of facilities at South Entrance, Big Oak Flat Entrance, and Tioga Pass Entrance, and the corresponding increase in human presence in these areas would have a minor, adverse effect, both individually and in total, on wildlife and habitat. The additional area of habitat would be relatively small and is already affected by humans due to its proximity to existing developments. Site design of these facilities would likely avoid any highly valued resource habitat types in the area, and signs, fencing, and visitor education would be used to minimize impact to adjacent sensitive habitats.

Table 4-62 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Beneficial Impacts				
Implementation of 150-foot River Protection Overlay	Reduction in human disturbance and habitat degradation	All	2, 3, 4, 5	Major
Removal of campgrounds within the River Protection Overlay and ecological restoration of areas	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction of human disturbance	All	2, 3, 4, 5	Major
Removal of campsites at North Pines from highly valued resource habitat types	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction of human disturbance	Riparian	2, 3, 4	Moderate
Removal of campsites at Lower Pines from highly valued resource habitat types	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human disturbance	Riparian	3, 4	Major
Restoration of Yosemite Lodge cabin area to natural conditions	Reduction in habitat fragmentation Reduction in human disturbance Improvement of habitat integrity Increase in habitat quantity	Riparian Meadow	2, 3, 4, 5	Moderate
Removal of 164 Housekeeping units and restoration of area to natural conditions	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human disturbance	Riparian	2, 5	Moderate
Removal of 212 Housekeeping units and restoration of area to natural conditions	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction of human disturbance	Riparian	3, 4	Major
Removal of roads through Stoneman and Ahwahnee Meadows and restoration of areas to natural condtions	Restoration of natural hydrology and vegetation Reduction in habitat fragmentation Reduction in human disturbance	Meadow	2, 3, 4	Major
Removal of Bridges: Sugar Pine and Stoneman (if necessary)	Restoration of natural hydrology to allow natural cycles of riparian habitat formation, and improve aquatic habitat	Riparian	2	Major
Removal of Bridges: Sugar Pine, Stoneman, Housekeeping, Superintendent's	Restoration of natural hydrology to allow natural cycles of riparian habitat formation, and improve aquatic habitat	Riparian	3, 4	Major
Removal of Bridges: Sugar Pine and Ahwahnee	Restoration of natural hydrology to allow natural cycles of riparian habitat formation, and improve aquatic habitat	Riparian	5	Major
Removal of Yellow Pine Campground and restoration to natural conditions	Restoration of habitat quality, integrity, and continuity Reduction in human disturbance	Riparian Upland	2, 3	Moderate

Table 4-62 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Removal and restoration of tennis courts and utility area near The Ahwahnee	Restoration of habitat and reduction in human disturbance	California black oak	2, 3, 4, 5	Moderate
Removal of Swinging Bridge Picnic Area	Restoration of forest understory and riparian habitat Reduction in wildlife feeding	Riparian Upland	2, 3, 4, 5	Moderate
Removal of Church Bowl Picnic Area	Restoration in habitat quantity and continuity Reduction in human disturbance	Upland	2, 5	Minor
Removal of Camp 6 parking from River Protection Overlay	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human disturbance	Riparian Meadow	2, 3, 4, 5	Moderate
Removal of Camp 6 parking from River Protection Overlay and highly valued resource areas	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human disturbance	Riparian Meadow	3, 4	Major
El Portal Road reconstruction from intersection with Big Oak Flat Road to Pohono Bridge	Reduction in impact to thin strip of riparian habitat from minor road realignment and removal of most turnouts, which would reduce human disturbance of habitats	Riparian	2, 3, 4, 5	Minor
Removal of Cascades Diversion Dam	Restoration of natural hydrology and cycle of riparian habitat formation	Riparian	2, 3, 4, 5	Minor
Removal of Curry Village tent cabins from talus slope zone	Restoration of habitat Reduction in habitat fragmentation Reduction in human disturbance	Upland Riparian	2, 3, 4, 5	Moderate
Removal of Curry Orchard and restoration to natural conditions	Reduction in human/wildlife conflicts Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation	Meadow	2, 3	Moderate
Removal of parking from Curry Orchard, but trees allowed to remain	Reduction in human/wildlife conflicts	Other	4, 5	Minor
Removal of all orchards and resoration to natural habitat	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human/wildlife conflicts	Upland Meadow	3	Major
Removal of Yosemite Falls parking area and redesign of trails	Restoration of small area of habitats, but with continued high levels of human disturbance in the area	Riparian Upland	2, 3, 4, 5	Minor
Removal of concessioner and NPS stables from Yosemite Valley and restoration of habitat (if operations can be moved to McCauley Ranch)	Increased habitat integrity and continuity Reduced parasitism by brown-headed cowbirds on native bird species	All	2, 3, 4	Moderate
Discontinue private stock use in Yosemite Valley	Reduction in brown-headed cowbird parasitism on native bird species	All	3	Minor

Table 4-62 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Modification of Northside Drive between Yosemite Lodge and El Capitan crossover to a multi-use (pedestrian/bicycle) paved trail	Reduction in traffic disturbance to habitats and wildlife in a substantial portion of Yosemite Valley Reduction in wildlife killed by vehicles and in habitat fragmentation	Other	2, 3, 4	Major
Removal of Superintendent's House (Residence 1) and restoration of area to natural habitat	Restoration of a small area of a high-value resource type Increased continuity with adjacent habitats	California black oak	2, 3, 5	Moderate
Restoration of the gas station site to natural habitat	Restoration of a small area of highly valued resource habitat Continued human impact from adjacent development	California black oak	2, 3	Minor
Removal of Ahwahnee Row houses and restoration to natural habitat	Restored meadow-forest edge More natural hydrology and habitat assiciated with Indian Creek	Meadow Riparian California black oak	3, 4, 5	Moderate
Happy Isles: ice cream/snack stand not replaced (temporary stand removed)	Reduction in human food sources to wildlife	Other	3, 4	Minor
Removal of parking along Northside Drive through El Capitan Meadow	Reduced impact to meadow from human trampling Reduced exposure of wildlife to human food, and reduced conditioning of bears to food left in cars overnight	Other	2, 3, 4, 5	Moderate
Reconstruction of roads at El Capitan Meadow and Bridalveil Creek to accommodate natural water flows	Restoration of natural water flows to sustain riparian, wetland, and meadow habitats Reduction in habitat fragmentation	Riparian Meadow	2, 3, 4, 5	Major
Adverse Impacts				
Establishment of new walk-in campsites in Yosemite Valley	Removal of habitat New areas for wildlife to be exposed to human food, leading to human/wildlife conflicts	Upland	2, 3, 4, 5	Moderate
Development of replacement housing and lodging at Curry Village outside of talus zone	Removal of habitat Increased human disturbance of adjacent habitats	Upland California black oak Riparian	2, 3, 4, 5	Minor
Redevelopment of area in Yosemite Village for 550 parking spaces	Increased human disturbance in adjacent habitats Increased trampling of vegetation Increased chance for human/wildlife conflicts	Upland	2, 5	Moderate
Development of new lodging at Yosemite Lodge	Loss of habitat (previously disturbed) Increased human presence	Upland	2, 3, 4, 5	Minor
Increased water levels in meadows from restoration	Potential increased bullfrog populations that would prey on native species; eradication is necessary for mitigation	Meadow Riparian	2, 3, 4, 5	Moderate
Establishment of a new picnic area at North American Wall	Loss of upland habitat Increased human disturbance Increased chance of wildlife conditioning to human food	Upland	2, 3, 4, 5	Minor
Development of the El Capitan crossover traffic check station, if required	Loss of habitat Disturbance from traffic and people	Upland	2, 5	Minor

Table 4-62 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Development of new housing at Wawona	Loss of montane hardwood conifer habitat and increased human disturbance	Upland	2, 5	Moderate
Development of new housing and administrative facilities in El Portal	Loss of habitat Increased human disturbance	Upland Riparian	2, 3, 4, 5	Moderate
Development of parking in El Portal	Loss of habitat Increased human disturbance	Upland California black oak	2, 4, 5	Moderate
Development of parking at Badger Pass on previously paved area	Increased human disturbance Trampling in adjacent habitats Increased human/wildlife conflicts	Upland Meadow	2, 4	Minor
Development of parking at Hazel Green, or at Foresta if Hazel Green is not viable	Loss of habitat Increased human disturbance in the area Increased trampling of vegetation Increased chance of human/wildlife conflicts	Upland	2	Moderate
Construct new visitor centers at or near park entrances	Minor loss of habitat Increased human disturbance	Upland	2, 3, 4, 5	Minor
Construction of a new trail adjacent to Southside Drive from El Capitan Bridge to Swinging Bridge	Loss of habitat Increased need for hazard tree management, reducing snag habitat	All	2, 3, 4	Moderate
Development of new roads and trails from realignments and new connections	Loss of habitat Removal of hazard trees, reducing snag habitat	All	2, 3, 4, 5	Moderate
Relocation of NPS and concessioner stables to McCauley Ranch in Foresta	Impact to meadow and forest habitat Creation of a new area for brown-headed cowbird infestation, affecting native bird species	Upland Meadow	2, 3, 4	Moderate
Widening of Southside Drive, where necessary, to accommodate two-way traffic	Removal of habitat already affected by proximity to existing road	Upland	2, 3, 4	Moderate
Construction of a new vehicle bridge across Yosemite Creek near Yosemite Lodge	Removal of small area of habitat	Riparian	2, 3, 4, 5	Minor
Construction of parking and transit facility at Taft Toe in mid-Yosemite Valley	Removal of approximately 53 acres of forest habitat Increased habitat fragmentation in a relatively intact area Increased human disturbance to surrounding habitats Noise and light disturbance from facility Increased chance of human/wildlife conflicts	Upland	3, 4	Major
Development of a new picnic area at the Curry Orchard	Increased chance for human/wildlife conflicts, especially in fall when apples are ripening and attracting wildlife	Other	3, 4	Moderate
Development of a new picnic area at former site of Superintendent's House (Residence 1)	Destruction of understory habitat Increased human disturbance Inhibited regeneration of oaks Increased exposure of wildlife to human food	California black oak	4	Minor
Development of parking at South Landing	Loss of forest habitat Increased human disturbance in the area Increased chance for human/wildlife conflicts	Upland	4	Moderate

Table 4-62 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Relocation of concessioner stable to east of Curry Village and continuation of guided rides	Loss of habitat from development of facility Increased local effects of brown-headed cowbird parasitism	Upland	5	Minor
Development of parking at Henness Ridge	Loss of habitat Increased human disturbance in adjacent habitats Increased chance of human/wildlife conflicts	Upland	5	Moderate
Expansion of the Yellow Pine Campground to accommodate volunteers and group campers	Loss of habitat Increased human disturbance in adjacent habitats Increased chance of human/wildlife conflicts	Upland Riparian	5	Moderate

1. Reasons for impact intensities are described in the text, along with explanations of mitigation measures incorporated into this evaluation. A complete list of mitigation measures is found in Chapter 2, Alternatives, Mitigation Measures Common to All Action Alternatives, Wildlife.

CONCLUSION

The removal of development from the River Protection Overlay would reduce habitat fragmentation in the east Valley through restoration of broad areas of riparian, wetland, and meadow habitats, helping to restore the diversity and abundance of wildlife. Restoration to natural habitat of the Yosemite Lodge cabin area, all of Camp 6, the Upper and Lower River Campgrounds, North Pines Campground, and most of Lower Pines Campground and Housekeeping Camp would provide the highest level of habitat contiguity and would benefit wildlife by allowing more natural movement and increasing habitat availability. Connections within and among habitat types would be improved, benefiting wildlife foraging, resting, and dispersal in the east Valley. The removal or reconstruction of roads through sensitive habitats would help mitigate their effects on habitat fragmentation and flows of nutrients and water. The removal of motor vehicle traffic from most of Northside Drive would help reduce habitat fragmentation and disturbance to wildlife along the north side of the Valley. The removal of four bridges would help restore riparian and aquatic habitats in those river reaches, including the two bridges determined to have the greatest negative effect on river hydrology (Sugar Pine and Stoneman). Exposure of wildlife to human food would be greatly reduced in the east Valley by the removal of numerous of tent cabins and the removal of orchards. Restoration of the orchards to natural habitat would further increase meadow habitat available to wildlife.

Construction and use of a large parking and transfer facility at Taft Toe, however, would introduce a new element of habitat fragmentation and disturbance in the west Valley. Establishment of new campgrounds north of Tenaya Creek, east of Curry Village, and northeast of Upper Pines would displace upland habitat, create local disturbance of wildlife, and provide areas where wildlife could become conditioned to human food.

Relocation of National Park Service and concessioner stables to McCauley Ranch could increase local impact of brown-headed cowbirds on other bird species in that area, but removal of these facilities from the Valley, and the discontinuation of private stock use in the Valley, would reduce cowbird impact in that location. If the stables are relocated to east of Curry Village, impacts of brown-headed cowbirds could increase in that area.

Overall, the impact to wildlife habitat and associated wildlife species would be moderate to major and beneficial, based largely on the increased size, continuity, and integrity of high-value resource habitat within the Valley. Adverse impacts would result from habitat loss, increased human presence, and wildlife conditioning to human food (mostly in west Yosemite Valley). However, these adverse impacts would primarily occur within areas that are not highly valued resource habitats and also the most abundant habitat types in and out of the Valley. These impacts would be reduced by implementation of the mitigation measures identified above (see Chapter 2, Alternatives, Mitigation Measures Common to All Action Alternatives).

CUMULATIVE IMPACTS

The beneficial and adverse impacts of past, present, and reasonably foreseeable future projects on wildlife are described under cumulative impacts for Alternative 2. When the expected impacts to wildlife from Alternative 3 are considered in combination with these other projects, minor beneficial cumulative effects on wildlife habitat and populations in the region would likely result

over the long term. Adverse cumulative effects would occur primarily from habitat loss and fragmentation, as well as reduced habitat quality from human disturbance. Beneficial cumulative effects would result from habitat restoration, particularly riparian, meadow, and wetland areas. Future land management planning efforts could also lead to beneficial cumulative impacts to wildlife habitat and populations through habitat protection and restoration over wide areas of the Sierra Nevada.

Alternative 3 would provide substantial restoration of riparian, meadow, and riverine habitats (highly valued resources) through implementation of the River Protection Overlay. Restoration of the Yosemite Lodge cabin area, all of Camp 6, Upper and Lower River Campgrounds, North Pines Campground, most of Lower Pines Campgrounds, Housekeeping Camp, and the orchards would help re-establish riparian and meadow habitat connectivity in the east Valley, benefiting wildlife by allowing greater natural movement and increasing habitat availability. These actions would be consistent with the basic goals of land management plans such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic River Comprehensive Management Plan (NPS). Removal or reconstruction of roads through sensitive habitats would improve habitat connectivity and help restore natural flows of nutrients and water, and removal of four bridges would help restore riparian and aquatic habitats along those river reaches. Exposure of wildlife to human food would be greatly reduced in the east Valley as a result of the removal of numerous tent cabins, as well as removal of parking from the apple orchards.

Other actions associated with Alternative 3 would adversely affect areas of upland habitat and its accompanying wildlife, including establishment of new campgrounds north of Tenaya Creek and east of Curry Village, and the development of multi-use paved trails. In addition, the development of a large day-visitor parking and visitor/transit center at Taft Toe would cause long-term, adverse impacts to a larger area of upland habitat in the west Valley. Forage and cover for species such as California spotted owl, ringtail, and Gilbert's skink could be affected. Each of the above actions would result in loss of upland habitat, habitat degradation from increased human activity, and additional areas where wildlife could become conditioned to human food. These effects would be in addition to impacts to uplands outside the park from past and present land management practices, such as logging and grazing, which have reduced the availability and quality of food and cover for wildlife. Foreseeable future projects such as the Evergreen Lodge Expansion (Tuolumne Co.), Hardin Flat Lodging and Conference Facilities (Tuolumne Co.), Hazel Green Ranch (Mariposa Co.), and the Evergreen Road Improvements (multi-agency, see Appendix H) would cause similar impacts to upland habitats.

Under Alternative 3, development outside of Yosemite Valley would include employee-related housing at El Portal, relocation of the stables and volunteer group campground to Foresta, construction of employee housing at Wawona, and establishment of visitor centers at park entrances. These actions would result in habitat loss and habitat degradation from human activity and would add to impacts of other actions that affect similar habitats. For example, development at Foresta and the four park entrance stations would adversely affect mixed conifer and other upland habitats. These effects (habitat loss and degradation) would be in addition to logging and grazing that have occurred over wide areas outside the park, as well as to proposed projects such

as Yosemite West Rezone for 55 Acres (Mariposa Co.), Silvertip Resort Village Project (Mariposa Co.), and reforestation projects. The proposed Silvertip Resort Village Project in Fish Camp would have the greatest interaction with the South Entrance visitor facilities proposed under this alternative, due to its proximity to the South Entrance and similarity in habitat. Consequently, these projects would have a cumulative, adverse effect on many of the same wildlife species.

Adverse impacts associated with the development of employee housing at El Portal (such as habitat loss and degradation due to increased human activity) would combine with impacts from other development projects proposed in the area, including the Yosemite View Parcel Land Exchange (NPS), Yosemite Motels Expansion, El Portal (Mariposa Co.), and El Portal Road Improvement Project (NPS) to adversely affect riparian and upland habitats and associated species. Because much of the area of potential development has been previously disturbed, however, the adverse impacts are expected to be minimal. Nevertheless, quality of forage and cover for species such as scrub jay, gray fox, and northern alligator lizard could be adversely affected.

The conclusion that cumulative impacts would be minor and beneficial is conservative because it is based on the goals and objectives of ongoing planning efforts (such as the Sierra Nevada Framework for Conservation and Collaboration) that are being undertaken to improve ecosystem management throughout much of the Sierra Nevada. However, should substantial or full implementation of the actions included in these plans occur over time, long-term, cumulative impacts on wildlife may, on balance, be beneficial to a greater degree.

Special-Status Species

WILDLIFE

A Biological Assessment was prepared, in accordance with Section 7 of the Endangered Species Act, to assess potential impacts to federally endangered and threatened species (see Appendix K). Specific, action-by-action analysis of impacts on vegetation types and general wildlife habitat is provided in the Vegetation and Wildlife sections of this chapter, respectively. The actions of Alternative 3 that would result in potential wildlife habitat impacts are listed in table 4-62 in the Wildlife section. The effect of these habitat impacts on individual special-status species is described below. The impacts identified in this section are long term, except where noted.

This analysis covers federal and/or California special-status species. Recent correspondence from U.S. Fish and Wildlife Service indicates that a number of these species are being considered for elevated federal status; these species are evaluated in this section in a separate category. Special-status species are listed in table 3-6 (Vol. 1A, Chapter 3). The “area” column of table 3-6 indicates the recorded locations of species occurrence or areas that may possess suitable habitat for each species in the vicinity of the recorded location. Identification of a location in the area column for a species does not necessarily indicate that the species has been documented to occur in that location.

This alternative would have no impacts at Hazel Green or Badger Pass, given that no actions are proposed in these areas under this alternative. The impact on rare wildlife species resulting from

the redeveloped and expanded visitor centers near existing entrance stations (i.e., Big Oak Flat, South, and Tioga Pass Entrances) would be the same as under Alternative 2. No parking facility would be developed in El Portal.

A total of 46 special-status wildlife species are known to occur, have historically occurred, or are likely to occur in Yosemite Valley or in the general vicinity of out-of-Valley project areas. One is classified as both federal and California endangered, one is federal threatened and California endangered, two are federal threatened, three are California endangered, and three are California threatened. The remaining 36 wildlife species are federal species of concern and/or California species of special concern. Of these lesser-status species, six are being considered by the U.S. Fish and Wildlife Service for elevation to endangered status. These species are analyzed along with the threatened or endangered species. The potential impacts to these species or their primary habitats as a result of this alternative are described below.

Potential Effects on Federal and California Threatened or Endangered Species

Valley elderberry longhorn beetle *(Desmocerus californicus dimorphus)*

Status: Federal threatened. The overall impact under this alternative would be the same as under Alternative 2 (which would be minor to moderate adverse compared to no action, even though less development would occur in El Portal under this alternative). This is due to the locally high concentration of elderberry plants outside the project area and to mitigation measures that would be implemented prior to and during construction to protect the Valley elderberry longhorn beetle and its host plant.

Limestone salamander *(Hydromantes brunus)*

Status: Federal species of concern; California threatened. The impacts would be the same as described for Alternative 2 (negligible and adverse).

California red-legged frog *(Rana aurora draytonii)*

Status: Federal threatened; California species of special concern. The impact would be the same as described for Alternative 2 except that not developing a parking facility at Foresta would avoid risk to potential habitat of red-legged frogs in this location, but not to the extent of changing the overall effect. Impacts of Alternative 3 would be minor to moderate and beneficial compared to the No Action Alternative.

Bald eagle *(Haliaeetus leucocephalus)*

Status: Federal threatened; California endangered. The overall impact would be the same as described for Alternative 2 (minor, beneficial). The lesser amount of development in El Portal and the greater restoration of riparian habitat in Yosemite Valley under this alternative could result in greater benefits to this species, but not enough to change the expected minor, beneficial effect that would come primarily from implementation of the River Protection Overlay.

Peregrine falcon *(Falco peregrinus)*

Status: California endangered (former federal endangered). The overall impact would be the same as described for Alternative 2 (moderate, beneficial). Development at Taft Toe would occur near a nest site located high on Cathedral Rocks, but would not have an appreciable effect on this site. Two other peregrine nest sites occur in east Yosemite Valley above more concentrated development, and the nests are successful.

Great gray owl *(Strix nebulosa)*

Status: California endangered. Impacts to great gray owls under this alternative would essentially be the same as under Alternative 2, with the following exception. No parking would be established at either Hazel Green or (as an option) Foresta. This would avoid the risk of substantial disturbance of great gray owls, at least in Foresta, where the species is known to winter and stage. Impact to great gray owls under Alternative 3, relative to no action, would be minor, adverse.

Willow flycatcher *(Empidonax traillii)*

Status: California endangered habitat. The impacts would be the same as described for Alternative 2 (minor to moderate and beneficial).

Sierra Nevada red fox *(Vulpes vulpes necator)*

Status: Federal species of concern; California threatened. The impacts would be the same as described for Alternative 2 (minor and adverse).

California wolverine *(Gulo gulo luteus)*

Status: Federal species of concern; California threatened. Because this species is likely to occur only around Tioga Pass, overall impacts would be the same as Alternative 2 (minor, adverse). Minor expansion of facilities could affect small areas of upland habitat, and increased visitor presence in the area could lead to greater human disturbance in surrounding habitats, which could adversely affect its use by wolverines.

Sierra Nevada bighorn sheep *(Ovis canadensis sierrae)*

Status: Federal endangered; California endangered. Effects on this species would be the same as under Alternative 2 (negligible), since there would be no change in potential development at Tioga Pass under Alternative 3.

Potential Effects on Species that are Being Considered for Elevated Federal Listing

Yosemite toad *(Bufo canorus)*

Current Status: Federal species of concern; California species of special concern. The overall impact to this species would be the same as described for Alternative 2 (negligible, adverse).

Foothill yellow-legged frog *(Rana boylei)*

Current Status: Federal species of concern; California species of special concern. The overall impact would be the same as described for Alternative 2, but effects would vary in the following

ways: no development would occur in Foresta and less would occur in El Portal under Alternative 3. This is not expected to have an appreciable effect on the overall impact to the species, since no populations (only suitable habitat) exists in these areas. The same is true for Yosemite Valley, where more extensive restoration of the Camp 6 and Housekeeping areas could yield more habitat. The overall impact intensity would be minor to moderate and beneficial, compared to no action.

Mountain yellow-legged frog *(Rana muscosa)*

Current Status: Federal species of concern; California species of special concern. The overall impact would be similar to that described for Alternative 2, except that no actions are proposed at Badger Pass. Effects at Tioga Pass would be small. Overall impact to this species under Alternative 3 would be negligible, adverse.

California spotted owl *(Strix occidentalis occidentalis)*

Current Status: Federal species of concern; California species of special concern. The overall effects would be the same as described for Alternative 2, except that habitat loss due to new parking area impacts would occur at Taft Toe instead of Hazel Green. Recent surveys located a pair of spotted owls near the base of Cathedral Spires, which is near the Taft Toe site. The development would not affect nesting or roosting of this pair (since the tree canopy closure on the site is not adequate) but would probably remove an area of foraging habitat from their territory. Human disturbance radiating from the facility could also disturb the pair. On balance, habitat restoration in Yosemite Valley together with potential effects of the Taft Toe development on a known pair of spotted owls in this alternative would result in a negligible, beneficial impact on the species compared to no action.

Marten *(Martes american)*

Current Status: Federal species of concern. Effects on this species would be the same as Alternative 2, with these exceptions: Martens would not be affected at Badger Pass or Hazel Green because no actions are proposed to occur in these areas under this alternative. Development of parking at Taft Toe could remove marten habitat, but the low elevation of Yosemite Valley, the relatively open tree canopy, and lack of habitat complexity on the site suggest this is marginal habitat. Consequently, the impact on martens under this alternative would be negligible, adverse.

Pacific fisher *(Martes pennanti pacifica)*

Current Status: Federal species of concern; California species of special concern. Effects on this species would be the same as Alternative 2, with these exceptions: Fishers would not be affected at Badger Pass or Hazel Green because no actions are proposed to occur in these areas under this alternative. Development of parking at Taft Toe could remove fisher habitat, but the low elevation of Yosemite Valley, the relatively open tree canopy, and lack of habitat complexity on the site suggest this is marginal habitat. The area of potential impact at South Entrance and Big Oak Flat Entrance would be very small relative to the large amount of suitable habitat remaining in the area. Overall impacts on fishers would be negligible and adverse under Alternative 3.

Potential Effects on Federal Species of Concern and California Species of Special Concern

Merced Canyon shoulderband snail *(Helminthoglypta allynsmithi)*

Status: Federal species of concern. The overall impact on this species would be negligible and adverse, since no effect on the habitat of this species (talus) is expected.

Mariposa sideband snail *(Monadenia hillebrandi)*

Status: Federal species of concern. The impact on this species would be the same as under Alternative 2 (moderate, beneficial), primarily due to restoration of potential habitat in the talus above Curry Village.

Sierra pygmy grasshopper *(Tetrix sierrana)*

Status: Federal species of concern. Less development would occur in El Portal than under Alternative 2, but the area that would remain undeveloped is not the favored habitat of this species (riparian). Additional riparian restoration in Yosemite Valley, at Camp 6, and Housekeeping Camp and the removal of two additional bridges would provide more habitat. However, the impact would be negligible to minor and adverse due to development in El Portal, the most likely area of occurrence of the Sierra pygmy grasshopper.

Wawona riffle beetle *(Atractelmis wawona)*

Status: Federal species of concern. The overall impact to this species would be the same as under Alternative 2 (moderate, beneficial), primarily from large-scale restoration of riparian and wetland habitats that directly benefit the aquatic habitat of the riffle beetle. Additonal restoration of riparian areas in Yosemite Valley, at Camp 6, and Housekeeping Camp and the removal of two additional bridges would benefit aquatic habitats but are not expected to be a substantial enough increase in restoration to change the level of impact.

Bohart's blue butterfly *(Philotiella speciosa bohartorum)*

Status: Federal species of concern. Under this alternative, the lesser amount of development in El Portal, compared to Alternative 2 could preserve habitat and host plants for this species. This difference, however, is not expected to be substantial enough to change the level of impact relative to that of Alternative 2 (minor and adverse).

Mount Lyell salamander *(Hydromantes platycephalus)*

Status: Federal species of concern; California species of special concern. The overall impact on this species would be the same as under Alternative 2 (minor, beneficial), since actions in the most likely habitat, Tioga Pass and Curry Village in Yosemite Valley, would be the same.

Northwestern pond turtle *(Clemmys marmorata marmorata)* and Southwestern pond turtle *(Clemmys marmorata pallida)*

Status: Federal species of concern; California species of special concern. Under this alternative, the overall impact to this species is expected to be the same as under Alternative 2. Additonal restoration of riparian areas in Yosemite Valley, at Camp 6 and Housekeeping Camp, and the removal of two additional bridges would benefit aquatic habitats. Less development at El Portal

and Foresta, compared to Alternative 2, would cause somewhat less risk of human disturbance to potential breeding and hibernation areas in upland areas. However, these differences in impacts would not be substantial enough to change the expected level of impact relative to Alternative 2, which is minor and beneficial.

Harlequin duck *(Histrionicus histrionicus)*

Status: Federal species of concern; California species of special concern. Under this alternative, the overall impact on the harlequin duck would be the same as under Alternative 2. Compared to Alternative 2, there would be additional restoration of riparian habitat at Camp 6, Housekeeping Camp, and the sites of two additional bridges slated for removal. This would improve the habitat for the harlequin duck but would not be a substantial enough improvement to change the level of impact anticipated with Alternative 2. Consequently, impacts to this species would be minor and beneficial.

Cooper's hawk *(Accipiter cooperi)*

Status: Federal species of concern; California species of special concern. This species would benefit from decreased development and fragmentation in forest habitat in the east Valley from such action as the restoration of the Upper and Lower River Campgrounds and a lack of development at Hazel Green and Wawona. However, development of a large parking and transfer facility at Taft Toe would result in loss and fragmentation of forest habitat, an adverse impact for Cooper's hawks. Development at Foresta and El Portal under this alternative would cause adverse impacts on Cooper's hawks in these locations, but existing development at these locations would limit this effect. Under this alternative, the overall impact to Cooper's hawks would be minor and adverse.

Northern goshawk *(Accipiter gentilis)*

Status: Federal species of concern; California species of special concern. This alternative would not result in development at Hazel Green and would not increase use at Badger Pass. Potential impacts at Tioga Pass, South Entrance, and Big Oak Flat Entrance would be the same as in Alternative 2, with a very small area of habitat affected relative to the large amount of suitable habitat available in the area. Alternative 3 would result in a negligible, adverse impact on northern goshawks.

Sharp-shinned hawk *(Accipiter striatus)*

Status: California species of special concern. Construction of the large parking and transit facility at Taft Toe would directly impact sharp-shinned hawk habitat through removal and fragmentation. Hazel Green would not be developed for parking, and Badger Pass would not be used for summer parking, minimizing disturbance of sharp-shinned hawks in these areas. On balance, this would result in an overall negligible, adverse impact on the species, primarily from habitat loss at Taft Toe.

Golden eagle *(Aquila chrysaetos)*

Status: California species of special concern. Under this alternative, impact to golden eagles would be the same as under Alternative 2 because the primary benefit to this species would derive

from habitat restoration in Yosemite Valley, and impacts outside the Valley would be negligible. The overall effect of Alternative 3 on golden eagles would be minor and beneficial.

Merlin *(Falco columbarius)*

Status: California species of special concern. Under this alternative, the overall impact to merlins would be the same as under Alternative 2. Less development would occur in El Portal, more highly valued resources area would be restored in Yosemite Valley, and less development would occur in Foresta, but such changes would not be substantial enough to change the level of impact from that of Alternative 2. Therefore, minor, beneficial impacts to this species would result under this alternative.

Prairie falcon *(Falco mexicanus)*

Status: California species of special concern. Under this alternative, the overall impact to prairie falcons would be the same as under Alternative 2, based primarily upon restoration of habitats in Yosemite Valley. Less development would occur in Foresta as compared to Alternative 2, but the area that would be affected is not suitable habitat for the species. Effect would be minor, beneficial.

Long-eared owl *(Asio otus)*

Status: California species of special concern. The overall impact of Alternative 3 on long-eared owls would be the same as that of Alternative 2. A small amount of additional riparian habitat would be restored at Camp 6 and Housekeeping Camp, and parking would not be developed at Hazel Green or El Portal, as under Alternative 2. These changes, however, would not be substantial enough to change the impact intensity under Alternative 3. Minor, beneficial effects would result, primarily from restoration of large areas of riparian habitat in Yosemite Valley.

Yellow warbler *(Dendroica petechia)*

Status: California species of special concern. The overall impact would be the same as described for Alternative 2 due to restoration of high-value habitat in Yosemite Valley. Restoration of additional riparian habitat at Camp 6 and Housekeeping Camp and removal of two additional bridges would increase the amount of habitat in these locations. Lack of development at Hazel Green and Wawona and less development at Foresta and El Portal would provide additional habitat. These effects and restoration of large areas of high-quality habitat (riparian) in Yosemite Valley should result in moderate, beneficial impacts compared to no action.

Mount Lyell shrew *(Sorex lyelli)*

Status: Federal species of concern. Under this alternative, impacts to the Mount Lyell shrew would be the same as under Alternative 2 (negligible and adverse) because development at Tioga Pass would be the same as under Alternative 2, with the possible minor expansion of entrance station facilities.

Bat Species

For all special-status bat species listed below, overall impacts would be the same as under Alternative 2. However, no development would occur at Hazel Green and Wawona, and less

development would occur in Foresta and El Portal. Development of parking at Taft Toe would remove a large area of forest habitat near the west end of Yosemite Valley, but riparian and wetland habitat would be restored near Camp 6, Housekeeping Camp, and adjacent to two additional bridges that would be removed. On balance, these bat species would derive primary benefit from the large area of highly valued resources that would be restored under Alternative 3.

- Townsend's big-eared bat *(Corynorhinus townsendii townsendii)*
  Status: California species of special concern (minor, beneficial)
- Spotted bat *(Euderma maculatum)*
  Status: Federal species of concern; California species of special concern (moderate, beneficial)
- Small-footed myotis bat *(Myotis ciliolabrum)*
  Status: Federal species of concern (minor, beneficial)
- Fringed myotis bat *(Myotis thysanodes)*
  Status: Federal species of concern (minor, benefical)
- Yuma myotis bat *(Myotis yumanensis)*
  Status: Federal species of concern; California species of special concern (moderate, beneficial)
- Greater western mastiff bat *(Eumops perotis californicus)*
  Status: Federal species of concern; California species of special concern (moderate, beneficial)

For the species listed below, which are more dependent upon forested habitat for foraging and roosting than the other bat species, development at Taft Toe would adversely affect a relatively large area of forested habitat. Restoration of highly valued resource habitat types at Camp 6, Housekeeping Camp, and two additional bridge sites would still be a beneficial impact for these species, because they forage in a variety of habitat types.

- Pallid bat *(Antrozous pallidus)*
  Status: California species of special concern (minor, beneficial)
- Long-eared myotis bat *(Myotis evotis)*
  Status: Federal species of concern (negligible, beneficial)
- Long-legged myotis bat *(Myotis volans)*
  Status: Federal species of concern (negligible, beneficial)

Sierra Nevada snowshoe hare *(Lepus americanus tahoensis)*

Status: Federal species of concern. Under Alternative 3, impact to this species would be negligible, but adverse, since no out-of-Valley parking areas would be established in potential habitat. Minor expansion of facilities at South Entrance and Big Oak Flat Entrance would also have a negligible impact on snowshoe hares because of the limited area that would be affected and its proximity to existing development.

White-tailed hare *(Lepus townsendii)*

Status: California species of special concern. The overall impact to this species under Alternative 3 would be the same as under Alternative 2 (minor and adverse), because of possible minor expansion of facilities at Tioga Pass, the only project area with potential occurrence of this species.

Sierra Nevada mountain beaver *(Aplodontia rufa californica)*

Status: Federal species of concern; California species of special concern. Because no increased use or development would occur at Badger Pass under this alternative, there would be no impact to this species beyond existing levels.

Conclusion

Impacts under Alternative 3 on special-status species would be similar to those under Alternative 2. Large blocks of riparian, meadow, and wetland would be restored, increasing the size, integrity, and connectivity within and among habitat types, which would in turn increase the availability of food, cover, and reproductive sites for a variety of wildlife species (including special-status species). These restored blocks of habitat would also help insulate wildlife from human impacts radiating from adjacent development that would remain. Under Alternative 3, a small amount of additional riparian and meadow habitats would be restored at Camp 6 and Housekeeping Camp, which would benefit species that rely on these habitats (e.g. yellow warbler and long-eared owl), but such restorations would not be substantial enough to change the impact intensities from those under Alternative 2.

Changes in development patterns in upland, forested habitat would have an effect on some special-status species. California spotted owl, Cooper's hawk, and sharp-shinned hawk would all experience increased levels of adverse impact under Alternative 3 due to the development of Taft Toe. This is especially true for the spotted owl, a pair of which was recently discovered near the Taft Toe site. Impacts to these species would result from removal of habitat, increased fragmentation of habitats in the west Valley, and human disturbance in surrounding areas associated with increased visitor use. In areas outside of Yosemite Valley, great gray owls, marten, fisher, and northern goshawk would be less affected by development outside of Yosemite Valley as compared to Alternative 2.

For some special-status wildlife species, the magnitude of benefits provided under this alternative is limited by existing impacts on these species outside of Yosemite National Park that have led to population declines over wide regions of the Sierra Nevada. These ongoing impacts affect the abundance of some species inside the park, despite the presence of relatively intact habitats (e.g., willow flycatcher).

Comparing the adverse and beneficial impacts under Alternative 3 with existing conditions, the overall impact on special-status species of this alternative would be moderate and beneficial.

Cumulative Impacts

The following sections discuss the potential impacts of other past, present, and reasonably foreseeable future projects on special-concern species in conjunction with the impacts of

Alternative 2. Appendix H presents other ongoing or future projects in the region that were considered in the cumulative impacts analysis. The analysis assumed that mitigation requirements for the California Environmental Quality Act and Endangered Species Act would be implemented as part of each foreseeable future project, as applicable.

Potential Cumulative Impacts on Federal and California Threatened and Endangered Species

VALLEY ELDERBERRY LONGHORN BEETLE *(DESMOCERUS CALIFORNICUS DIMORPHUS)*

Status: Federal threatened; California species of special concern. Projects below elevations of 3,000 feet that could affect the abundance of elderberry plants, the Valley elderberry longhorn beetle's host plant, would affect this species and could ultimately affect populations in Yosemite. The distribution of Valley elderberry longhorn beetles and their host plant in the park is rather small, with the only suitable habitat occurring in the Merced River Canyon in El Portal. Current and reasonably foreseeable future projects in this location would, therefore, have the greatest potential to affect the park population of Valley elderberry longhorn beetle. Current and reasonably foreseeable future projects in the Merced River Canyon in El Portal with the potential to adversely effect the Valley elderberry longhorn beetle include the Yosemite View Parcel Land Exchange (NPS) and the Yosemite Motels Expansion, El Portal (Mariposa Co.). However, the impact would be limited by the high abundance of elderberry plants in the surrounding area and mitigations that would be required by the U.S. Fish and Wildlife Service. Other projects with a potential to adversely affect Valley elderberry longhorn beetle include the Mariposa Creek Pedestrian/Bike Path (Mariposa Co.); the Buildout of City of Merced, General Plan; and the Merced River Canyon Trail Acquisition (BLM). Actions under this alternative would also be primarily adverse due to development of housing and administrative facilities in El Portal.

All of these projects would could damage or destroy elderberry plants, which would directly affect local Valley elderberry longhorn beetle populations. However, mitigation requirements established through consultation with the U.S. Fish and Wildlife Service and other agencies would limit these impacts to minor and adverse. Minor, beneficial impacts would be expected from the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) because these plans would potentially lead to greater protection of elderberry plants. The combination of beneficial effects, resulting from implementation of regional plans that cover wide areas of the Valley elderberry longhorn beetle range, and adverse impacts, including actions under this alternative that would generally affect relatively small numbers of elderberry plants, would result in an overall minor, beneficial impact on Valley elderberry longhorn beetles. Adverse impacts would be minimized through the implementation of mitigation measures prescribed by the U.S. Fish and Wildlife Service to protect the species.

LIMESTONE SALAMANDER *(HYDROMANTES BRUNUS)*

Status: Federal species of concern; California threatened. The limestone salamander has a very restricted distribution. Its habitat is protected by the 120-acre Limestone Salamander Ecological Reserve and the Bureau of Land Management 1,600-acre Limestone Salamander Area of Critical Environmental Concern. It is only known to occur in the mixed chaparral

habitats of the Merced River and its tributaries, in association with limestone outcrops between 800 and 2,500 feet in elevation. Existing features that affect this species include road cuts and water impoundments that affect its habitat. Present and reasonably foreseeable future projects in El Portal (Yosemite View Land Parcel Exchange [NPS] and Yosemite Motels Expansion, El Portal [Mariposa Co.]) are the only projects with the potential to impact the limestone salamander, but this species has never been found in El Portal. Impact to this species would, therefore, be negligible. Likewise, projects in El Portal associated with this alternative are unlikely to cause any effect on limestone salamanders. Overall cumulative impact on this species would, therefore, be negligible.

CALIFORNIA RED-LEGGED FROG *(RANA AURORA DRAYTONII)*

Status: Federal threatened; California species of special concern. Projects in the vicinity of Yosemite are unlikely to affect any known populations of red-legged frogs. Environmental compliance carried out in association with these projects would require further surveys to evaluate whether unknown populations of red-legged frogs could be affected. Projects that degrade aquatic habitats, however, are likely to adversely affect suitability of such habitats for red-legged frogs, if reintroduction or recolonization of this species becomes possible.

Current and reasonably foreseeable future projects that could have adverse impacts on aquatic habitats include Rio Mesa Area Plan (Madera Co.); University of California, Merced Campus (Merced Co.); and the Buildout of City of Merced, General Plan. Beneficial impacts to aquatic habitats may result from the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS). These beneficial effects would be augmented by restoration of potential habitat in Yosemite Valley under this alternative. Overall, cumulative impacts would be beneficial, based on potential protection of red-legged frog habitat through the implementation of plans that cover wide areas coupled with restoration of suitable habitat through the implementation of this alternative. The intensity of this impact would be minor because this species is almost extinct from the Sierra Nevada region, but habitat should be protected for potential reintroduction or recolonization of the species. Projects with a possible negative impact on red-legged frogs would affect a relatively small area of habitat compared to projects with potential beneficial impacts, but these projects could have a major negative impact if they affected an unknown population of red-legged frogs, which could be among the last in the Sierra Nevada. However, site surveys would be completed in compliance with site and federal regulations as applicable, thus minimizing the potential adverse effects.

BALD EAGLE *(HALIAEETUS LEUCOCEPHALUS)*

Status: Federal threatened; California endangered. Projects associated with the Merced River could adversely affect habitat that is transiently used by bald eagles, such as at the Yosemite View Parcel Land Exchange (NPS). The Merced Wild and Scenic River Comprehensive Management Plan (NPS) has the potential to benefit eagles by preserving riparian and riverine habitat through implementation of the River Protection Overlay. The beneficial effects of this would be enhanced by restoration of riparian and river habitats in Yosemite Valley under this alternative. Overall, the cumulative impact on bald eagles would be minor and beneficial.

PEREGRINE FALCON *(FALCO PEREGRINUS)*

Status: California endangered. Because peregrine falcons forage over a broad range of habitat types adjacent to their nesting cliffs, implementation of plans with potential widespread effects would have the greatest impact on this species. These plans include the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Merced Wild and Scenic River Comprehensive Management Plan (NPS), and the Fire Management Plan Update (NPS), which would have minor, beneficial effects. These plans are complementary to the beneficial effects of this alternative on peregrine falcons in Yosemite National Park, where the concentration of the species is among the highest in the Sierra Nevada. No current and reasonably foreseeable future projects considered would have an adverse impact on peregrine falcons because these projects are not anticipated to effect cliff nesting habitat or surrounding foraging habitat. Greater regional effects on peregrine falcons that nest in the Sierra come from degradation of seasonally used coastal and wetland habitats and pesticide residues in the peregrine falcon's food chain.

Restoration of a diversity of habitat types in Yosemite Valley under this alternative would augment regional beneficial impacts from current and reasonably foreseeable future projects outside the park. Development of parking at Taft Toe would remove an area of forest habitat near a known peregrine nest site but would have a negligible effect on the falcons. The overall cumulative impact on peregrine falcons would be minor and beneficial, based primarily on the beneficial effects of widespread plans on Sierra Nevada habitats but limited by the continued adverse effects of pesticides.

GREAT GRAY OWL *(STRIX NEBULOSA)*

Status: California endangered. The great gray owl nests in mixed conifer and red fir forests near meadows and winters at lower elevations in mixed conifer down to blue oak woodlands. Nearly the entire California population of great gray owls breeds in the Yosemite region, where habitats are relatively intact. Some research suggests that this species is susceptible to human disturbance, which may explain its absence from Yosemite Valley, where great gray owls are rarely seen despite the presence of apparently suitable habitat. The Hazel Green Ranch (Mariposa Co.) project has the greatest potential to effect great gray owls because of this area's meadow habitats and proximity to the park. Past studies and recent surveys, however, indicate the meadows are seldom used by great gray owls, and then probably just by transient owls moving between wintering and nesting areas (Skiff 1995; Skenfield 1999). Development at Hazel Green Ranch would likely avoid meadow habitats, but increased human disturbance in the area could deter owls from using these areas, resulting in minor, adverse effects. Sites of other current and reasonably foreseeable future projects have habitats that are unsuitable for great gray owls, or previous impacts at these sites have rendered the habitats unsuitable. Current and reasonably foreseeable future development projects are, therefore, expected to have a minor but adverse effect on great gray owls.

Projects that could have a beneficial effect on this species by preserving or restoring habitat include the Sierra Nevada Framework for Conservation and Collaboration (USFS), Fire Management Plan Update (NPS), Merced Wild and Scenic River Comprehensive Management Plan (NPS), and Fire Management Action Plan for Wilderness (USFS,

Stanislaus). These plans could beneficially affect great gray owls by restoring habitat and limiting future impacts over wide areas of the Sierra Nevada. Under this alternative, restoration of habitats in Yosemite Valley would be beneficial to great gray owls. If stables are developed at McCauley Ranch, this could have an adverse effect on the few great gray owls that occasionally use this habitat in winter. Overall, cumulative impacts on great gray owls from current and reasonably foreseeable future projects, in combination with actions under this alternative, would be moderate and beneficial, based primarily on implementation of regional plans with widespread effect, compared to development projects with localized adverse effects.

WILLOW FLYCATCHER *(EMPIDONAX TRAILLII)*

Status: California endangered. The willow flycatcher was formerly a common Sierra Nevada species in meadows with dense growth of willow shrubs. Likely causes for the recent steep declines in populations include destruction of habitat and nest parasitism by brown-headed cowbirds. Willow flycatchers have not nested in Yosemite Valley for more than 30 years but in recent years have been seen at Wawona Meadow and Hodgdon Meadow. Projects that would cause degradation of meadow habitat or increased abundance of brown-headed cowbirds would adversely affect willow flycatchers through habitat loss and nest parasitism, respectively. The site of the Hazel Green Ranch (Mariposa Co.) project contains meadows that could be directly or indirectly affected. No willow flycatchers were found at this site during recent surveys, and habitat in the meadows appears to be unsuitable for this species. Regional and parkwide planning efforts, such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could benefit 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. These regional benefits would be augmented by actions under this alternative that would restore willow flycatcher habitat in Yosemite Valley and reduce cowbird abundance. The overall cumulative impact on willow flycatchers under Alternative 3 would be minor and beneficial.

SIERRA NEVADA RED FOX *(VULPES VULPES NECATOR)*

Status: Federal species of concern; California threatened. The Sierra Nevada red fox is found mostly above elevations of 7,000 feet in a wide variety of habitat types. The Sierra Nevada red fox is rare, and its population appears to be declining. The cause of this decline is unknown, but it could be related to human activities that disturb habitat, such as logging and fire suppression. Regional and parkwide planning efforts such the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for red foxes. These actions could have long-term, moderate to major, beneficial effects on suitable red fox habitat depending on the alternatives chosen for implementation and the extent of their implementation over time.

Current and foreseeable future projects that could adversely effect suitable habitat for red foxes include Evergreen Lodge Expansion (Tuolumne Co.) and the Hazel Green Ranch (Mariposa Co.). These projects would primarily affect forest habitat. In addition, actions under this alternative would have a minor, adverse effect on red foxes, primarily through effects on habitat at Tioga Pass.

Overall, there would be a moderate, beneficial impact on Sierra Nevada red foxes, based on the potential protection of suitable habitat if regional plans are implemented. The projects with a possible adverse effect on red foxes, including the actions under this alternative, would affect a relatively small area of habitat compared to projects with potential beneficial effects.

CALIFORNIA WOLVERINE *(GULO GULO LUTEUS)*

Status: Federal species of concern; California threatened. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS), could improve the size, integrity, and connectivity of suitable habitat for California wolverines. These regional plans would have a long-term, moderate, beneficial effect on the California wolverine.

The possible expansion of facilities at Tioga Pass, and increased visitor use in that area that could occur under this alternative, could have an adverse effect on California wolverines. However, this impact would be minor, given the apparent scarcity of this species in the Sierra Nevada.

Overall cumulative impacts on California wolverines would be moderate and beneficial, based primarily upon the implementation of management plans that have the potential for protecting wide areas of wolverine habitat in the Sierra Nevada, compared to the limited effects of increased human use at Tioga Pass under this alternative.

SIERRA NEVADA BIGHORN SHEEP *(OVIS CANADENSIS SIERRAE)*

Status: Federal endangered; California endangered. Because this species occurs at high elevation, few of the reasonably current and foreseeable future projects would affect it. Implementation of plans that cover wide areas of habitat outside the park, such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and U.S. Forest Service plans for wilderness adjacent to the park, could result in moderate to major beneficial effects on bighorn sheep, depending upon the alternatives selected and the extent of their implementation over time. Such benefit could be major if the plans reduce the area grazed by domestic sheep, which would reduce the threat of disease transmission to bighorns and open more areas for reintroduction of the species.

Only the Tioga Inn, Lee Vining (Mono Co.) project could adversely affect bighorn sheep. Historically, some bighorn sheep probably descended to this area during winter, and the area could be used again if the species recovers in abundance. However, existing development has already affected the quality of habitat in the area.

Possible expansion of facilities at the Tioga Pass Entrance is the only action under Alternative 3 that could affect bighorn sheep, but this impact would be negligible, given the

relative inaccessibility of their habitat. This impact, coupled with the effects of current and reasonably foreseeable future projects outside Yosemite National Park, would result in an overall, moderate and beneficial cumulative impact on Sierra Nevada bighorn sheep under Alternative 3, based upon potential implementation of land management plans that could protect and improve habitat conditions over wide areas of the Sierra Nevada.

Potential Cumulative Impacts on Species that are Being Considered for Elevated Federal Listing

The U.S. Fish and Wildlife Service indicates that the following species of concern may be listed as federally threatened or endangered in the future. Because these species could be listed before the Final Yosemite Valley Plan/SEIS is finalized, the potential impacts to these species are also described.

YOSEMITE TOAD *(BUFO CANORUS)*

Status: Federal species of concern; California species of special concern. Projects that would have an appreciable impact on meadow habitats of this high-elevation species are most likely to affect populations of the Yosemite toad. Projects that would have a potential beneficial impact on the Yosemite toad, due to complementary management objectives, include the Fire Management Plan Update (NPS), the Sierra Nevada Framework for Conservation and Collaboration (USFS), Merced Wild and Scenic River Comprehensive Management Plan (NPS), and U.S. Forest Service plans for adjacent wilderness. Projects that would have a potentially adverse impact on the Yosemite toad include the Tioga Inn, Lee Vining (Mono Co.); Highlands, June Lake (Mono Co.); and Double Eagle Resort Construction at June Lake (Mono Co.) projects. Actions under this alternative that would expand facilities at Tioga Pass Entrance and lead to increased visitor use of Badger Pass could affect Yosemite toads, but such effects would be negligible.

Overall, cumulative impacts to the Yosemite toad would be moderate and beneficial, based primarily on the potential for protection of habitat and populations resulting from implementation of plans that would affect large, high-elevation areas. Projects with adverse impacts would affect relatively small areas where the presence of the Yosemite toad is questionable.

FOOTHILL YELLOW-LEGGED FROG *(RANA BOYLEI)*

Status: Federal species of concern; California species of special concern. The impact on the foothill yellow-legged frog would be similar to that of the California red-legged frog; the foothill yellow-legged frog is virtually extinct in the Sierra Nevada and, therefore, projects in its area of former occurrence would not affect any existing populations. However, projects that affect suitable habitat (e.g., wet meadows and rocky streams) may affect reintroduction or recolonization of this species. Projects that would have beneficial impacts include the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Merced Wild and Scenic River Comprehensive Management Plan (NPS), and U.S. Forest Service plans for adjacent wilderness, and Fire Management Plan for Wilderness (USFS, Stanislaus).

These beneficial effects would be augmented by restoration of suitable habitat in Yosemite Valley. Overall, the cumulative impact would be minor and beneficial based on potential protection of foothill yellow-legged frog habitat through implementation of plans that cover wide areas and restoration of potential habitats in Yosemite Valley under this alternative. The intensity of this impact would be minor because this species is almost extinct from the Sierra Nevada, but habitat should be protected for potential reintroduction or recolonization of the species. Projects with a possible adverse impact on foothill yellow-legged frogs, such as the Mariposa Creek Pedestrian/Bike Path (Mariposa Co.), Yosemite View Parcel Land Exchange (NPS), and Merced River Canyon Trail Acquisition (BLM), would affect a relatively small area of habitat compared to projects with potential beneficial impacts. These projects could, though, have a major, adverse impact if they affected an unknown population of foothill yellow-legged frogs, which could be among the last in the Sierra Nevada. However, site surveys would be completed where applicable, as required by Council on Environmental Quality and Endangered Species Act, prior to disturbance to determine whether this species is present.

MOUNTAIN YELLOW-LEGGED FROG *(RANA MUSCOSA)*

Status: Federal species of concern; California species of special concern. The foreseeable future projects that would have beneficial impacts to aquatic habitats due to complementary management objectives include the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Merced Wild and Scenic River Comprehensive Management Plan (NPS), U.S. Forest Service plans for adjacent wilderness, and Fire Management Action Plan for Wilderness (USFS, Stanislaus). Development that would occur at Tioga Pass would have a negligible effect on mountain yellow-legged frogs and, therefore, would not be a factor in cumulative impacts. Projects with potential adverse effects include the Hazel Green Ranch Project, and projects at June Lake (Mono Co.). Overall, the cumulative impact is expected to be moderate and beneficial based on the amount of habitat and number of populations that would be affected by implementation of plans designed to better protect Sierra Nevada ecosystems. Projects with negative impacts could affect small areas and relatively few populations (if present).

CALIFORNIA SPOTTED OWL *(STRIX OCCIDENTALIS OCCIDENTALIS)*

Status: Federal species of concern; California species of special concern. The decline of the California spotted owl in the Sierra Nevada has been linked to degradation of its forest habitats from logging, which affects the size of forested tracts as well as tree density and age. Projects likely to have a beneficial impact on spotted owl habitat, through long-term habitat improvements plans, include the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Orange Crush Fuels Treatment Projects (USFS, Stanislaus), A-Rock Reforestation (USFS, Stanislaus), Rogge-Ackerson Fire Reforestation (Tuolumne Co.), and the Fire Management Action Plan for Wilderness (USFS, Stanislaus). In addition, actions under this alternative would restore habitats near known spotted owl nest sites in Yosemite Valley, thus providing beneficial effects. Development of the Taft Toe Visitor/Transit Center would, however, occur near a known pair of spotted owls, resulting in adverse effects. Development outside of Yosemite Valley at entrance stations would affect small areas of spotted owls foraging habitat, but such areas are distant from known or

suspected nesting areas. Projects with potentially adverse impacts include the Evergreen Lodge Expansion (Tuolumne Co.), Hazel Green Ranch (Mariposa Co.) project, and Yosemite West Rezone for 55 Acres (Mariposa Co.).

Overall, the cumulative impact on this species would be moderate and beneficial, based primarily on implementation of plans for ecosystem-based management of forest habitats over much of the Sierra Nevada and reforestation projects that would hasten a return of habitat more suitable for spotted owls, in combination with beneficial and adverse effects on spotted owl habitat in Yosemite Valley that would occur under this alternative. Projects with negative impacts would affect relatively small areas, and would not have far-ranging impacts on the California spotted owl and habitat restoration that would occur under this alternative.

MARTEN *(MARTES AMERICANA)*

Status: Federal species of concern. The marten is dependent on dense, complex coniferous forests with large trees, snags, and structural complexity near the ground. Projects likely to have a beneficial impact on marten habitat due to complementary management objectives include the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Orange Crush Fuels Treatment Projects (USFS, Stanislaus), A-Rock Reforestation, Rogge-Ackerson Fire Reforestation (USFS, Stanislaus), and the Fire Management Action Plan for Wilderness (USFS, Stanislaus). Projects likely to have an adverse impact on marten habitat include the Evergreen Lodge Expansion (Tuolumne Co.), Hazel Green Ranch (Mariposa Co.) project, and the Yosemite West Rezone for 55 Acres (Mariposa Co.). Impacts on martens under this alternative would be primarily adverse due to the development of parking facilities in Yosemite Valley and expansion of entrance stations outside of Yosemite Valley, although such effects would be negligible.

Overall, the cumulative impact on martens would be moderate and beneficial, based primarily on better protection of forest habitats through implementation of plans that could affect wide areas of the Sierra Nevada. Reforestation projects could hasten the return of forest habitats that are more favorable to marten. In comparison, projects with potential adverse impacts on martens, including this alternative, would affect relatively small areas of forest habitat.

PACIFIC FISHER *(MARTES PENNANTI PACIFICA)*

Status: Federal species of concern; California species of special concern. Pacific fishers in the Sierra Nevada prefer coniferous forests (especially fir) with a high degree of canopy closure and structural complexity. Projects likely to have a beneficial effect on fisher habitat, due to complementary management objectives, include the Yosemite Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Orange Crush Fuels Treatment Projects (USFS, Stanislaus), A-Rock Reforestation (USFS, Stanislaus), Rogge-Ackerson Fire Reforestation (Tuolumne Co.), and the Fire Management Action Plan for Wilderness (USFS, Stanislaus). Projects likely to have an adverse effect on fisher habitat include the Evergreen Lodge Expansion (Tuolumne Co.), Merced Wild and Scenic River Comprehensive Management Plan (NPS), U.S. Forest Service plans for adjacent wilderness, Hazel Green Ranch (Mariposa Co.) project, and the Yosemite West Rezone for 55 Acres (Mariposa Co.). Effects on fishers under this alternative would be primarily adverse due

to the development of parking facilities in Yosemite Valley and expansion of entrance stations outside of Yosemite Valley, although such effects would be negligible.

Overall, the cumulative impact on the Pacific fisher would be moderate and beneficial, based primarily on better protection of forest habitats through implementation of plans that could affect wide areas of the Sierra Nevada. Reforestation projects could hasten the return of forest habitats more favorable to the fisher. In comparison, projects with the potential to adversely impact fishers, including this alternative, would affect relatively small areas of forest habitat.

Potential Cumulative Impacts on Federal Species of Concern and California Species of Concern

MERCED CANYON SHOULDERBAND SNAIL *(HELMINTHOGLYPTA ALLYNSMITHI)*

Status: Federal species of concern. Regional planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Merced Canyon shoulderband snail. These actions could, in turn, have long-term, minor, beneficial effects on suitable habitat. The Incline Road Construction, Foresta Road Bridge to South Fork (Mariposa Co.) project could have a detrimental effect on snail habitat, but such an effect is expected to be minor because it would primarily affect previously impacted areas. Development that would occur in El Portal under this alternative would cause negligible impact to this snail species because no suitable habitat would be affected.

Overall, there would be a minor, beneficial, cumulative impact on the Merced Canyon shoulderband snail, based on the potential protection of suitable habitat from regional plans, whereas actions under this alternative would have a negligible effect.

MARIPOSA SIDEBAND SNAIL *(MONADENIA HILLEBRANDI)*

Status: Federal species of concern. Regional planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Mariposa sideband snail. These actions could have long-term, minor, beneficial effects on suitable habitat. Restoration of potential habitat in Yosemite Valley under this alternative would augment this beneficial effect. Projects with the potential to adversely affect this species include the El Portal Road Improvement Project (NPS); the Incline Road Construction; Foresta Road Bridge to South Fork (Mariposa Co.) project; and Yosemite Motels Expansion, El Portal (Mariposa Co.). Impacts from these projects are expected to have a local, minor, adverse effect on the species because these projects either occur in areas of previous disturbance or in areas that do not contain suitable habitat.

Overall, there would be a minor, beneficial, cumulative impact on the Mariposa sideband snail, based on the potential protection of suitable habitat from regional plans and restoration of habitats in Yosemite Valley.

SIERRA PYGMY GRASSHOPPER *(TETRIX SIERRANA)*

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Sierra pygmy grasshopper. These actions could have long-term, minor, beneficial effects on suitable habitat. Projects with potential adverse effects include the Incline Road Construction, Foresta Road Bridge to South Fork (Mariposa Co.) project and the Yosemite Motels Expansion, El Portal (Mariposa Co.). The effects of these projects would be limited to minor and adverse because they would occur in areas that do not contain suitable habitat or in areas of previous disturbance. Under this alternative, restoration of riparian habitats in Yosemite Valley would beneficially affect this species, while developments in El Portal and South Entrance could have a localized, adverse effect on suitable habitat.

The overall cumulative impact on the Sierra pygmy grasshopper is expected to be minor and beneficial, based on the potential protection of large areas of suitable habitat provided by implementation of regional plans in combination with mixed effects from this alternative.

WAWONA RIFFLE BEETLE *(ATRACTELMIS WAWONA)*

Status: Federal species of concern. Cumulative effects that could have large-scale benefits to Wawona riffle beetle habitat include regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic River Comprehensive Management Plan (NPS). These beneficial effects would be augmented by restoration of large areas of riparian and meadow habitat in Yosemite Valley that would occur under this alternative. The Yosemite View Parcel Land Exchange (NPS) could affect aquatic habitat for the riffle beetle in the adjacent reach of the Merced River. Overall, there would be a minor, beneficial, cumulative effect on the riffle beetle. This is largely due to regional and parkwide planning that would protect wide areas of habitat for the Wawona riffle beetle, combined with habitat restoration that would occur under this alternative.

BOHART'S BLUE BUTTERFLY *(PHILOTIELLA SPECIOSA BOHARTORUM)*

Status: Federal species of concern. The nearest documented occurrence of this species to the park is near Briceburg, west of El Portal. Regional planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) could improve the size, integrity, and connectivity of suitable habitat for the Bohart's blue butterfly over a wide area of foothill habitat. This action could have long-term, minor, beneficial effects on suitable habitat. Further surveys for this species have found the Bohart's blue butterfly in other areas such as Merced, Fresno, and Tulare counties. Projects in those areas, such as the Rio Mesa Area Plan (Madera Co.) and University of California, Merced Campus (Merced Co.), could have a local, minor, adverse effect on Bohart's blue butterfly. These effects would be limited in scale, in comparison to the Sierra Nevada Framework for Conservation and Collaboration (USFS), which would help protect wide areas of foothill woodland habitat that is declining rapidly. Development of parking, housing, and administrative facilities that would occur under this alternative could

adversely affect suitable habitat, although the occurrence of the Bohart's blue butterfly in El Portal is questionable.

The overall cumulative impact on the Bohart's blue butterfly would be minor and beneficial, based on the potential beneficial protection of wide areas of suitable habitat from the Sierra Nevada Framework, as opposed to localized potential adverse impacts in El Portal that would occur under this alternative.

MOUNT LYELL SALAMANDER *(HYDROMANTES PLATYCEPHALUS)*

Status: Federal species of concern; California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Mount Lyell salamander over a wide area. These actions, augmented by habitat restoration in Yosemite Valley under this alternative, have the potential for long-term, minor, beneficial, cumulative effects on suitable habitat, depending upon the alternatives chosen and the extent of their implementation over time. No current and reasonably foreseeable future projects are expected to have an adverse effect on Mount Lyell salamanders.

NORTHWESTERN POND TURTLE *(CLEMMYS MARMORATA MARMORATA)* AND SOUTHWESTERN POND TURTLE *(CLEMMYS MARMORATA PALLIDA)*

Status: Federal species of concern; California species of special concern. Cumulative effects that could have large-scale benefits to western pond turtle habitat include regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic River Comprehensive Management Plan (NPS). These beneficial effects would be augmented by restoration of large areas of riparian and wetland habitats in Yosemite Valley under this alternative. The Yosemite View Parcel Land Exchange (NPS) would directly affect a small area of habitat suitable for the western pond turtle. Overall, cumulative effects on the western pond turtle would be minor and beneficial. This benefit would largely result from implementation of regional and parkwide planning that would protect habitat for western pond turtles and restoration of suitable habitat in Yosemite Valley under this alternative.

HARLEQUIN DUCK *(HISTRIONICUS HISTRIONICUS)*

Status: Federal species of concern; California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the harlequin duck. This alternative would restore or protect about 100 acres of suitable riparian and aquatic habitat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat for the harlequin ducks, depending on the alternatives chosen and the extent of their implementation over time.

Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for the harlequin duck include the Yosemite View Parcel Land Exchange (NPS) and the Incline Road Construction, Foresta Road Bridge to South Fork (Mariposa Co.) project. There are no known populations of harlequin duck in these areas.

Overall, there would be a moderate, beneficial, cumulative impact on the harlequin duck, based on the potential protection of suitable habitat offered by regional plans, combined with restoration of suitable habitat provided under this alternative. The projects with a possible adverse impact on harlequin duck habitat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

COOPER'S HAWK *(ACCIPITER COOPERI)*

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) would improve the size, integrity, and connectivity of suitable habitat for the Cooper's hawk. These regional plans would have a long-term, moderate to major, beneficial effect on the Cooper's hawk, depending on the alternatives chosen and the extent of their implementation over time. These beneficial effects would be augmented by restoration of habitats in Yosemite Valley under this alternative. Current and reasonably foreseeable future projects that could adversely affect suitable habitat for the Cooper's hawk include the Hazel Green Ranch (Mariposa Co.) project; Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Evergreen Lodge Expansion (Tuolumne Co.); and Yosemite West Rezone for 55 Acres (Mariposa Co.). Development of a parking area at Taft Toe under this alternative would also cause adverse effects due to the removal of forest habitat, as would development in El Portal and Foresta.

The overall cumulative impact on Cooper's hawks would be moderate and beneficial, based primarily on implementation of wide-ranging plans that would protect large areas of the Sierra Nevada in combination with restoration of habitats in Yosemite Valley under this alternative. In comparison, adverse effects resulting from individual projects and new development under this alternative would be localized in relatively small areas.

NORTHERN GOSHAWK *(ACCIPITER GENTILIS)*

Status: Federal species of concern; California species of special concern. Projects likely to have a beneficial effect on northern goshawk habitat include the Fire Management Plan Update (NPS), the Sierra Nevada Framework for Conservation and Collaboration (USFS), Wilderness Management Plan Update (NPS), and U.S. Forest Service plans for adjacent wilderness. Implementation of these plans would have a moderate to major effect on northern goshawks, depending upon the alternatives chosen and the extent of their implementation over time.

Projects that could have an adverse effect on northern goshawk habitat include the Hazel Green Ranch (Mariposa Co.) project, Evergreen Lodge Expansion (Tuolumne Co.), and the

Yosemite West Rezone for 55 Acres (Mariposa Co.). Minor expansion of facilities at entrance stations to the park under this alternative could affect northern goshawk habitat. These projects, however, would affect relatively small areas of habitat.

Overall, cumulative impacts on the northern goshawk would be long-term, moderate, and beneficial, primarily due to the potential protection of wide areas of habitat through implementation of regional land management plans as compared to adverse effects on small, localized areas of habitat from individual projects (including effects from this alternative).

SHARP-SHINNED HAWK *(ACCIPITER STRIATUS)*

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of wide areas of suitable habitat for the sharp-shinned hawk. A mix of habitats favorable to sharp-shinned hawks would be restored in Yosemite Valley under this alternative, but such benefits would be diminished by the development of the Taft Toe visitor/transit center, which would affect forest habitat. These regional plans, in combination with this alternative, would have a long-term, minor to moderate, beneficial effect on the sharp-shinned hawk, depending on the alternatives chosen and the extent of their implementation over time. This effect is of lower intensity than it is for other *Accipiter* species because sharp-shinned hawks do not commonly nest in the Sierra Nevada.

Current and reasonably foreseeable future projects that could adversely affect suitable habitat for the sharp-shinned hawks include the Hazel Green Ranch (Mariposa Co.) project; Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement (NPS); Evergreen Lodge Expansion (Tuolumne Co.); and Yosemite West Rezone for 55 Acres (Mariposa Co.). Under this alternative, some habitat would be adversely affected, including habitat in Wawona and El Portal.

Overall cumulative impacts on sharp-shinned hawks would be moderate and beneficial, based primarily on implementation of plans that would protect large areas of the Sierra Nevada and restoration of diverse habitats in Yosemite Valley under this alternative. In comparison, adverse effects resulting from individual projects would be localized in relatively small areas.

GOLDEN EAGLE *(AQUILA CHRYSAETOS)*

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for golden eagles. These regional plans would have a long-term, moderate, beneficial effect on golden eagles. Restoration of habitats in Yosemite Valley under this alternative would likewise benefit golden eagles.

Current and reasonably foreseeable future projects that could have an adverse impact on golden eagles include the Rio Mesa Area Plan (Madera Co.); University of California, Merced Campus (Merced Co.); Buildout of City of Merced, General Plan; and the Tioga Inn, Lee Vining (Mono Co.). These projects, in total, would have a minor, adverse effect on golden eagles because of the limited area they would affect.

Overall cumulative effects on golden eagles would be minor and beneficial, based primarily on the protection of habitat provided by implementation of land management plans that would cover large areas of the Sierra Nevada, in combination with restoration of habitats in Yosemite Valley due to this alternative. There would be a limited area of effect caused by projects that have an adverse impact on golden eagles.

MERLIN *(FALCO COLUMBARIUS)*

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of large areas of suitable habitat for the merlin. These regional plans would have a long-term, minor to moderate, beneficial effect on the merlin, depending on the alternatives chosen and the extent of their implementation over time. Merlin habitat would be further supplemented by restoration of meadow and riparian habitats in Yosemite Valley, as would occur under this alternative.

Current and reasonably foreseeable future projects that could adversely affect merlins include the Yosemite View Parcel Land Exchange (NPS); Rio Mesa Area Plan (Madera Co.); Yosemite Motels Expansion, El Portal (Mariposa Co.); University of California, Merced Campus (Merced Co.); and Buildout of City of Merced, General Plan. These projects could have a minor, adverse effect on merlins, depending on the alternatives chosen and the extent of their implementation over time. Under this alternative, habitat could be adversely affected by development in Foresta and El Portal, but the areas affected would be small, less suitable areas of habitat.

Overall cumulative effects would be moderate and beneficial, based primarily on the implementation of land management plans that could affect large areas of the Sierra Nevada in combination with restoration of habitats in Yosemite Valley that would occur under this alternative.

PRAIRIE FALCON *(FALCO MEXICANUS)*

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the prairie falcon. These actions could have long-term, moderate to major, beneficial effects on prairie falcon habitat, depending upon the alternatives chosen and the extent of their implementation over time. A further benefit to

this species would result from restoration of habitats in Yosemite Valley, as would occur under this alternative.

Current and reasonably foreseeable future projects that could have an adverse effect on prairie falcons include the Rio Mesa Area Plan (Madera Co.); University of California, Merced Campus (Merced Co.); Buildout of City of Merced, General Plan; and Tioga Inn, Lee Vining (Mono Co.). These projects, in total, would have a minor, adverse effect on prairie falcons because of the limited area they would affect.

Overall cumulative effects on prairie falcons would be moderate and beneficial, based primarily on the protection of habitat resulting from implementation of land management plans that would cover large areas of the Sierra Nevada in combination with restoration of Yosemite Valley habitats under this alternative. In comparison, projects that have an adverse effect on prairie falcons would affect a limited area.

LONG-EARED OWL *(ASIO OTUS)*

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for long-eared owls. These regional plans would have a long-term, moderate, beneficial effect on long-eared owls, depending on the alternatives chosen and the extent of their implementation over time. Restoration of extensive riparian habitats in Yosemite Valley that would occur under this alternative would provide additional benefit to long-eared owls.

Current and reasonably foreseeable future projects that could adversely affect suitable habitat for long-eared owls include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); and Evergreen Lodge Expansion (Tuolumne Co.). Development of housing and administrative facilities in El Portal under this alternative could affect some areas of potential habitat.

The overall cumulative impacts on long-eared owls would be minor and beneficial, based primarily on the protection of habitat provided by implementation of wide-ranging land management plans that would cover large areas of the Sierra Nevada and restoration of large areas of riparian habitat in Yosemite Valley from implementation of this alternative. A limited area would be affected by projects that have an adverse impact on long-eared owls.

YELLOW WARBLER *(DENDROICA PETECHIA)*

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of large areas of suitable habitat for the yellow warbler. These regional plans would have a long-term, moderate to major, beneficial effect on the yellow

warbler, depending on the alternatives chosen and the extent of their implementation over time. Under this alternative, extensive areas of riparian habitat would be restored, thus providing high-quality habitat for yellow warblers. If stables are removed from Yosemite Valley, this would also benefit yellow warblers by reducing brown-headed cowbird parasitism.

Current and reasonably foreseeable future projects with the potential adversely affect yellow warblers include the Hazel Green Ranch (Mariposa Co.) project, Yosemite View Parcel Land Exchange (NPS), and the Yosemite West Rezone of 55 Acres (Mariposa Co.). Development in El Portal, Wawona, and Foresta that would occur under this alternative would affect yellow warbler habitat. These projects would have a minor, adverse effect because the affected areas are generally lower quality habitat for yellow warblers; the affected areas are limited; and large areas of suitable, unaffected habitat would continue to exist in surrounding areas.

Overall cumulative effects on yellow warblers would be moderate and beneficial, based primarily on the protection of large areas of high-quality habitat resulting from implementation of regional land management plans that would cover large areas of the Sierra Nevada and restoration of large areas of high quality riparian habitat in Yosemite Valley from this alternative. There would be a limited area of impact on lower-quality habitat caused by projects that would adversely affect yellow warblers.

MOUNT LYELL SHREW *(SOREX LYELLI)*

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), the Wilderness Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Mount Lyell shrew. These regional plans would have a long-term, minor, beneficial effect on suitable habitat for the Mount Lyell shrew. Possible development at Tioga Pass, the only area of potential effect, would have a negligible impact on Mount Lyell shrews. No current and reasonably foreseeable future projects are expected to have an adverse effect on this species, therefore, overall impact from this alternative combined with current and reasonably foreseeable future projects would be minor and beneficial.

PALLID BAT *(ANTROZOUS PALLIDUS)*

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration, U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the pallid bat. These regional plans would have a long-term, minor to moderate, beneficial effect on the pallid bat, depending on the alternatives chosen and the extent of their implementation over time. Restoration of large areas of riparian, meadow, and California black oak habitats that would occur under this alternative would further benefit pallid bats by providing important foraging habitat.

Current and reasonably foreseeable future projects that could adversely affect suitable habitat for the pallid bat include the Hazel Green Ranch (Mariposa Co.) project; Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). New development that would occur at Foresta and El Portal under this alternative could affect pallid bats. Development of the Taft Toe Visitor/Transit Center under this alternative would affect an area of forest habitat that could be used by pallid bats.

Overall, there would be a minor, beneficial, cumulative impact on the pallid bat, based on the potential protection of suitable habitat provided by regional plans and restoration of diverse habitats in Yosemite Valley under this alternative. The projects with a possible adverse effect on the pallid bat, including new development under this alternative, would affect a relatively small area of habitat compared to projects with potential beneficial effects.

TOWNSEND'S BIG-EARED BAT *(CORYNORHINUS TOWNSENDII TOWNSENDII)*

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of large areas of suitable habitat for the Townsend's big-eared bat. These regional plans would have a long-term, minor to moderate, beneficial effect on the Townsend's big-eared bat, depending on the alternatives chosen and the extent of their implementation over time. Such benefits would be augmented under this alternative through restoration of large areas of riparian, meadow, and California black oak habitats in Yosemite Valley. These areas are important foraging areas for Townsend's big-eared bats.

Current and reasonably foreseeable future projects that could adversely effects on suitable habitat for Townsend's big-eared bats include the Hazel Green Ranch (Mariposa Co.) project; Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Evergreen Lodge Expansion (Tuolumne Co.); and Yosemite West Rezone for 55 Acres (Mariposa Co.). New development at El Portal and Foresta could affect small areas of suitable habitat. Development of parking at Taft Toe could affect a block of forest habitat in Yosemite Valley that could be used by foraging big-eared bats.

Overall, there would be a minor, beneficial, cumulative impact on Townsend's big-eared bat, based on the potential protection of suitable habitat through implementation of regional plans as well as restoration of Yosemite Valley habitats under this alternative. The projects with possible adverse impacts on the Townsend's big-eared bat would affect a relatively small area of marginal habitat compared to projects with potential beneficial impacts.

SPOTTED BAT *(EUDERMA MACULATUM)*

Status: Federal species of concern; California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and

Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the spotted bat. These actions have the potential for long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Such benefits would be augmented by restoration of large areas of riparian and meadow habitats that would occur under this alternative. These habitats are important foraging areas for spotted bats.

Projects that could adversely affect suitable habitat for the spotted bat include the Yosemite View Parcel Land Exchange (NPS); El Portal Road Improvement Project (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.); Hazel Green Ranch (Mariposa Co.) project; and Yosemite West Rezone for 55 Acres (Mariposa Co.). New development at Wawona and El Portal would affect potential spotted bat habitat. Development of parking at Taft Toe would affect an area of forest, but such habitat is not preferred by spotted bats. Adverse cumulative impacts on spotted bats would be minor, based on the relatively limited area of effect and the type of habitat affected.

In total, there would be a moderate, beneficial impact on the spotted bat, based primarily on the potential protection of large areas of suitable habitat from regional plans in combination with restoration of important habitats in Yosemite Valley that would occur under this alternative. The projects with the potential to result in adverse impacts on the spotted bat would affect a relatively small area of less suitable habitat compared to projects with potential beneficial effects.

SMALL-FOOTED MYOTIS BAT *(MYOTIS CILIOLABRUM)*

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the small-footed myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat depending upon the alternatives chosen for implementation and the extent of their implementation over time. Further benefits would occur under this alternative from restoration of large areas of riparian and meadow habitats in Yosemite Valley, which are important foraging habitat for the small-footed myotis bat.

Projects that could have adversely affect suitable habitat for the small-footed myotis bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development in El Portal and Foresta under this alternative. Development at Taft Toe would affect an area of forest habitat, although such habitat is less preferred by this species.

In total, cumulative impacts on the small-footed myotis bat would be moderate and beneficial, based primarily on implementation of large-scale regional land plans that could protect wide areas of habitat and restoration of important habitats in Yosemite Valley under this alternative. In comparison, projects with potential adverse impacts would affect relatively small areas of habitat.

LONG-EARED MYOTIS BAT *(MYOTIS EVOTIS)*

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the long-eared myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Further benefits would occur under this alternative from restoration of large areas of riparian and meadow habitats in Yosemite Valley, which are important foraging areas for long-eared myotis bats.

Current and reasonably foreseeable future projects that could adversely affect suitable habitat for the long-eared myotis bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development in El Portal and Foresta under this alternative. Development of the Taft Toe Visitor/Transit Center would affect an area of forest that could be foraging habitat for long-eared myotis bats.

Overall, there would be a moderate, beneficial, cumulative impact on long-eared myotis bats under this alternative, based on the potential protection of suitable habitat resulting from implementation of regional plans in combination with restoration of important habitats in Yosemite Valley. The projects with the potential to have adverse impacts on the long-eared myotis bat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

FRINGED MYOTIS BAT *(MYOTIS THYSANODES)*

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS); and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the fringed myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Further beneficial effects would be provided by restoration of large areas of riparian and meadow habitats in Yosemite Valley that would occur under this alternative. Such areas are important foraging habitat for fringed myotis bats.

Current and reasonably foreseeable future projects that could adversely affect suitable habitat for fringed myotis bats include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development in El Portal and Foresta under this alternative. Development of the Taft Toe Visitor/Transit Center would affect an area of forest that could be foraging habitat for fringed myotis bats.

Overall, there would be a moderate, beneficial, cumulative impact on the fringed myotis bat, based on the potential protection of suitable habitat provided by wide-reaching regional plans coupled with actions under this alternative that would restore important habitats in Yosemite Valley. The projects with possible adverse impacts on the fringed myotis bat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

LONG-LEGGED MYOTIS BAT *(MYOTIS VOLANS)*

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the long-legged myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Further beneficial effects would result from restoration of large areas of riparian and meadow habitats in Yosemite Valley that would occur under this alternative. Such areas are important foraging habitat for long-legged myotis bats.

Current and reasonably foreseeable future projects that could adversely affect suitable habitat for the long-legged myotis bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development in El Portal and Foresta under this alternative. Development of parking at Taft Toe would remove an area of forest that could be foraging habitat for long-legged myotis bats.

Overall, there would be a moderate, beneficial, cumulative impact on the long-legged myotis bat, based on the potential protection of suitable habitat provided by implementation of regional plans in combination with restoration of important habitats in Yosemite Valley under this alternative. The projects with the potential to have adverse impacts on the spotted bat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

YUMA MYOTIS BAT *(MYOTIS YUMANENSIS)*

Status: Federal species of concern; California species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration

(USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Yuma myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending upon the alternatives chosen for implementation and the extent of their implementation over time. Actions under this alternative would also benefit Yuma myotis bats by restoring large areas of meadow and riparian habitats in Yosemite Valley, which are important foraging areas for this species.

Current and reasonably foreseeable future projects that could adversely affect suitable habitat for the Yuma myotis bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development in El Portal and Foresta under this alternative. Development of parking at Taft Toe would affect an area of forest, but such habitat is not preferred by Yuma myotis bats.

Overall, there would be a moderate, beneficial, cumulative impact on the Yuma myotis bat, based on the potential protection of suitable habitat from implementation of regional plans augmented by restoration of important habitats in Yosemite Valley by this alternative. The projects with a possible adverse effect on Yuma myotis bats would affect a relatively small area of habitat compared to projects with potential beneficial effects.

GREATER WESTERN MASTIFF BAT *(EUMOPS PEROTIS CALIFORNICUS)*

Status: Federal species of concern; California species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of large areas of suitable habitat for the greater western mastiff bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. This alternative would further benefit the greater western mastiff bat through the restoration of large areas of meadow and riparian habitats that are important foraging areas for this species.

Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for the greater western mastiff bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvements Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would result from new development in El Portal and Foresta under this alternative, although no suitable roosting habitat (cliffs) is nearby these areas.

Overall, there would be a moderate, beneficial, cumulative impact on the greater western mastiff bat, based on the potential protection of suitable habitat provided by implementation of

regional plans in combination with restoration of important habitats in Yosemite Valley that would occur under this alternative. The projects with the potential to result in adverse impacts on the greater western mastiff bat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

SIERRA NEVADA SNOWSHOE HARE *(LEPUS AMERICANUS TAHOENSIS)*

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for snowshoe hares. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time.

Present and reasonably foreseeable future projects that could have adverse effects on suitable habitat for snowshoe hares include Evergreen Lodge Expansion (Tuolumne Co.) and Hazel Green Ranch (Mariposa Co.) project. The Evergreen Lodge Expansion would primarily affect forest habitat. New development at Hazel Green Ranch that would occur under this alternative could affect snowshoe hare habitat, although the apparent scarcity of this species makes such an impact unlikely. Minor expansion of park entrance stations under this alternative would affect small areas of habitat.

Overall, there would be a minor and beneficial cumulative impact on snowshoe hares, based on the potential protection of suitable habitat from implementation of regional plans. The projects with the potential adverse impacts on snowshoe hares would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

WHITE-TAILED HARE *(LEPUS TOWNSENDII)*

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the white-tailed hare. These regional plans would have a long-term, moderate, beneficial cumulative effect on the white-tailed hare. No current and reasonably foreseeable future projects are expected to have an adverse effect on white-tailed hares, including the possible minor expansion of Tioga Pass Entrance, under this alternative.

SIERRA NEVADA MOUNTAIN BEAVER *(APLODONTIA RUFA CALIFORNICA)*

Status: Federal species of concern; California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the mountain beaver. These regional plans would have a long-term, moderate, beneficial

cumulative effect on suitable habitat for the mountain beaver. No current or reasonably foreseeable future projects are expected to have an adverse effect on Sierra Nevada mountain beaver, including actions under this alternative.

Cumulative Impacts Conclusion

Many of the cumulative impact principles given in the conclusion for general wildlife earlier in this alternative also apply to special-status species.

Overall, current and reasonably foreseeable projects within the cumulative impact assessment area considered, in conjunction with the actions under Alternative 3 would have a moderate beneficial effect on special-status species and their habitats. This is primarily due to the potential effects that would come from implementation of large-scale planning documents that could protect and restore wildlife habitats over much of the Sierra Nevada. These plans would compliment actions under this alternative, which would restore large areas of meadow, riparian, and California black oak habitats that are important to many special-status species.

Under Alternative 3, some special-status species would experience adverse impacts, such as the Valley elderberry longhorn beetle from new development outside of Yosemite Valley and California spotted owl, Cooper's hawk, sharp-shinned hawk, and three bat species from new development in the Valley. Such impacts would be additive to the adverse effects of some current and reasonably foreseeable future projects. These impacts would, however, be of limited severity because of the size and type of habitat affected, and would have little effect on the overall cumulative impacts on special-status species under this alternative, which would be moderate beneficial.

VEGETATION

Forty-three special-status plant species within Yosemite Valley and other out-of-Valley areas could be affected by Alternative 3 of the Final Yosemite Valley Plan/SEIS. Refer to table 3-7 (see Vol. Ia, Chapter 3) for a list of these species; their state, federal, and local status; and their general habitat requirements and locations. The impacts that have been identified in this section are generally long term except where noted.

Yosemite Valley

No federal- or state-listed plant species are known to occur in Yosemite Valley. Twelve park rare plant species currently exist in the Valley: sugar stick, round-leaved sundew, stream orchid, fawn-lily, northern bedstraw, Sierra laurel, false pimpernel, azure penstemon, phacelia, wood saxifrage, giant sequoia, and ladies' tresses. Impacts on northern bedstraw, false pimpernel, round-leaved sundew, phacelia, Sierra laurel, and ladies' tresses would be moderate and beneficial as a result of the restoration of large portions of potentially wet meadows and riparian areas (at former developed areas of Yosemite Lodge, Camp 6, and the former Upper and Lower River Campgrounds), and removal and ecological restoration of a portion of current Lower Pines Campground, all of North Pines Campground, riparian portions of Housekeeping Camp, and the Ahwahnee Row houses. Potential increased radiating impacts to El Capitan Meadow (by development of the Taft Toe Visitor/Transit Center) would not affect these species. Sugar stick, azure penstemon, and phacelia would not be impacted by actions of Alternative 3. Permanent

removal of the Happy Isles snack stand would increase the potential for re-establishment of stream orchid in its natural habitat; this beneficial impact would be minor because of the small size of the area and the high level of visitor use.

Removal of the Ahwahnee tennis courts would have a major, long-term, adverse impact on the individual planted giant sequoia trees in this area, because these trees would be removed and the site restored to California black oak woodland. Redesign of The Ahwahnee parking lot could also have adverse impacts to planted giant sequoias, depending on final alignment of parking lots and driveways. Removal of the Superintendent's House (Residence 1) and restoration of this area could result in removal of the single planted giant sequoia along the access road. None of these actions would affect overall sustainability of giant sequoias in the park's three naturally occurring groves; therefore, the impact to this species would be negligible and adverse.

The fawn-lily is currently affected by trampling and picking of its showy flowers; this existing impact would not change under Alternative 3. The wood saxifrage typically grows on moist cliffs and also would not be affected by the actions of this alternative.

Out-of-Valley Impacts

Alternative 3 would have no impacts on rare plant species at Hazel Green Ranch, Henness Ridge, South Landing, Wawona, or Badger Pass, given that no actions are proposed in these areas.

El Portal

Currently, one federal plant species of concern (Congdon's lomatium), four state-listed rare species (Yosemite onion, Tompkin's sedge, Congdon's woolly-sunflower, and Congdon's lewisia), and six park rare species (Indian paintbrush, collinsia, pitcher sage, Congdon's monkeyflower, Palmer's monkeyflower, and phacelia) occur within the general El Portal area.

Radiating impacts from trampling would continue to occur to all of these species except for Yosemite onion and Congdon's lomatium, which occur on steep, inaccessible slopes in association with poison oak. Under Alternative 3, impacts to the remaining species would increase from Alternative 1 due to a significantly increased residential population in El Portal. Adverse impacts from habitat loss and competition for resources (e.g., light, water, and nutrients) would continue to adversely affect most species because of the continued high degree of non-native species encroachment expected in this area as well as the increased potential for new introductions as a result of increased area disturbance and landscaping. Potential adverse impacts would occur to Tompkin's sedge, Indian paintbrush, collinsia, pitcher sage, Congdon's monkeyflower, Palmer's monkeyflower, and phacelia from development of out-of-Valley parking and employee housing. These impacts would be minimized as much as possible through avoidance (site selection), plant salvage and replanting of perennials (Tompkin's sedge in particular), and topsoil salvage and re-application after construction to protect annuals. Impacts to these species would be minor and adverse as a result.

Restoration of riparian habitat at the old treatment plant at Rancheria Flat and the sand pit would increase potential habitat for Congdon's woolly-sunflower. Moderate, beneficial effects are expected because the area of restoration would be relatively small.

Foresta

No federal- or state-listed plant species occur in Foresta; however, five park rare species are found within the general Foresta area (snapdragon, Small's southern clarkia, goldenaster, inconspicuous monkeyflower, and pansy monkeyflower). These species would experience slightly greater radiating impacts under Alternative 3 due to increased human activity from the reconstruction of 14 houses and the potential move of the National Park Service and Concessioner stable operations to Foresta; however, habitat loss from construction would not be expected because these species are not known to occur in the development area. There would be a potential increase in adverse impacts to rare plant habitat by encroachment of non-native species associated with landscaping activities and increased numbers of residential and horse trailer vehicles. However, non-native species management would be increased in these areas to minimize such impacts, resulting in overall minor, adverse impacts to Foresta.

Big Oak Flat Entrance

No impacts to federal-, state-, or park-listed plant species would occur under Alternative 3 because no special-status species are known to occur in the vicinity of the Big Oak Flat Entrance area.

South Entrance

No known federal- or state-listed plant species occur in the South Entrance area. One park rare species (Sierra sweet-bay) is located within the riparian areas adjacent to the Wawona Road. Expanded parking and visitor center structures in this vicinity would be designed to avoid riparian areas as much as possible and would therefore minimize the potential impact on Sierra sweet-bay. The impacts of Alternative 3 on this species would be minor and adverse as a result of increased visitor activity in the South Entrance area and the potential loss of a small area of habitat.

Tioga Pass Entrance

One federal species of concern (Tiehm's rock-cress) and thirteen park rare species occur within hiking distance of Tioga Pass. One species, the common juniper, could be directly impacted by construction of a new or expanded entrance/visitor contact station at Tioga Pass. Construction may result in loss of habitat or direct loss of individual plants. There could be indirect effects on Tiehm's rock-cress and all thirteen park rare species from increased foot traffic and associated trampling in the area. There could also be increased hiking on Mt. Dana, which is within a day's hike from the Tioga Pass Entrance Station. The popular hike to the top of Mt. Dana is a cross-country path, without a formal route. Increased hiking on Mt. Dana could have a long-term, moderate, adverse impact on these rare plant species on Mt. Dana.

Conclusion

Forty-three special-status plant species would potentially be impacted by actions proposed in Alternative 3. The proposed actions of this alternative would include mitigation measures to minimize radiating adverse impacts to these species. Radiating adverse impacts from development actions (such as trampling, picking, and increases in non-native plants from

increased visitor uses in and out of the Valley) would be limited to negligible to minor effects by managing uses within these sensitive areas and increasing management efforts to control non-native plants.

Adverse impacts as a result of habitat loss would occur in El Portal for two state-listed rare and six park rare species and in the Valley for one park rare species. These impacts would be mitigated by reasonable designs to avoid these species, as identified in site-specific surveys. For some species, salvaged topsoil would be retained and reused at the site to encourage re-establishment. Consequently, minor to moderate local adverse impacts to individual plants or populations would occur in these areas.

Beneficial impacts would occur to northern bedstraw, false pimpernel, phacelia, round-leaved sundew, and ladies' tresses because of the extensive restoration of riparian and meadow habitat, with moderate, beneficial effects. Removal of food services at Happy Isles could slightly increase natural habitat for the stream orchid, with minor, beneficial effects. Alternative 3 would have no impacts to fawn-lily and wood saxifrage. Moderate, beneficial impacts would also occur in El Portal to Congdon's woolly-sunflower with restoration of habitat at the old treatment plant at Rancheria Flat and the sand pit.

Therefore, the overall impact to park rare or special concern plant species under this alternative would be negligible and adverse, primarily due to habitat loss in El Portal for park rare species because of new developments, and increased radiating impacts to state-listed rare species.

Cumulative Impacts

The description of the impacts of reasonably current and foreseeable future future projects within the cumulative impact assessment area on special-status plant species is the same as described for Alternative 2. The projects considered in this analysis are listed in Vol. II, Appendix H. Reasonably current and foreseeable future future management and planning projects within the cumulative impact assessment area would have regional minor to moderate, beneficial impacts on rare species and their habitats due to their similar management objectives. Development projects such as the Yosemite View Parcel Land Exchange and Yosemite Motels Expansion, El Portal (Mariposa Co.) would have potential for localized minor to moderate and adverse impacts on rare species habitat; however, with the implementation of site-specific surveys and state and federal required mitigation measures, these localized adverse impacts would be minor.

As summarized in the conclusions for Alternative 3, actions proposed under this alternative alone would have negligible adverse impacts on special-status species due to habitat loss and radiating impacts. When looking at impacts of Alternative 3 in conjunction with other regional planning and development impacts, the cumulative effect on park special-status plant species would be negligible and adverse, largely as a result of the localized project impacts outside of the Final Yosemite Valley Plan/SEIS. However, the potential impact on rare species from Alternative 3 itself would comprise a relatively small portion of the total cumulative impact.

VEHICLE-GENERATED EMISSIONS

A summary of the traffic air emissions in Yosemite Valley under Alternative 3 is provided in table 4-63. The emissions data noted in table 4-63 reflect emissions from the following major vehicle fleet categories:

- Visitor vehicles
- Commercial tour buses
- In-Valley shuttle buses (four propulsion/fuel technology options including diesel, propane, compressed natural gas, and fuel cell were analyzed)
- National Park Service and concessioner employee vehicles
- National Park Service and concessioner maintenance and administration road vehicles
- National Park Service and concessioner maintenance and administration non-road vehicles

Compared to air emissions under Alternative 1 in 2015, with the use of diesel fuel in the shuttle bus fleet, volatile organic compound emissions would decrease by 12%, carbon monoxide would decrease by 20%, nitrogen dioxide would decrease by 6%, sulfur dioxide would decrease by 17%, and particulate matter (PM_{10}) would decrease by about 23%. A moderate decrease in PM_{10} would be caused by reductions in vehicle miles traveled and associated road dust.

If compressed natural gas were to be used in the shuttle bus fleet instead of diesel fuel, emissions of all pollutants except carbon monoxide would be reduced under Alternative 3. The use of propane for fuel would cause a reduction in nitrogen oxides and sulfur dioxide emissions and an increase in volatile organic compounds and carbon monoxide emissions compared to diesel. The use of fuel cells would achieve the greatest reductions in pollutant emissions among the technologies for shuttle buses that were analyzed.

Table 4-63
Summary of Annual Air Emissions from Vehicles in Yosemite Valley (Tons/Yr)

Alter-native	2000				2005				2010				2015			
	Shuttle Bus Fuel Type				Shuttle Bus Fuel Type				Shuttle Bus Fuel Type				Shuttle Bus Fuel Type			
	Diesel	CNG	Propane	FC	Diesel[1]	CNG	Propane	FC	Diesel[1]	CNG	Propane	FC	Diesel[1]	CNG	Propane	FC
VOC Emissions																
1[2]	50.9	No alternative fuels			28.0	No alternative fuels			14.0	No alternative fuels			8.6	No alternative fuels		
3	NA				23.0	22.8	23.8	NA[3]	11.9	11.7	12.6	11.0	7.6	7.4	8.3	6.7
CO Emissions																
1[2]	568.2	No alternative fuels			364.1	No alternative fuels			249.2	No alternative fuels			189.8	No alternative fuels		
3	NA				290.2	296.7	288.1	NA[3]	199.3	208.4	199.4	194.9	152.0	163.5	154.1	147.7
NO_X Emissions																
1[2]	84.2	No alternative fuels			59.3	No alternative fuels			44.9	No alternative fuels			38.8	No alternative fuels		
3	NA				52.2	50.3	48.5	NA[3]	41.0	39.2	37.3	32.6	36.3	34.6	32.6	27.9
SO_2 Emissions																
1[2]	6.3	No alternative fuels			5.8	No alternative fuels			4.6	No alternative fuels			5.4	No alternative fuels		
3	NA				4.8	4.5	4.5	NA[3]	4.6	4.3	4.3	4.3	4.5	4.2	4.2	4.2
PM_{10} Emissions																
1[2]	2.5	No alternative fuels			2.3	No alternative fuels			2.2	No alternative fuels			2.2	No alternative fuels		
3	NA				1.8	1.8	1.8	NA[3]	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7
PM_{10} Road Dust																
1[2]	165				165				165				165			
3	129				129				129				129			

1. Assumes that in-Valley shuttle buses are conventional diesel buses that would meet emissions standards in effect in 2000. Shuttle buses in this alternative could employ advanced technologies to lower emissions.
2. No Action
3. NA = Not Applicable; fuel cell scenarios were assumed not be available until the year 2010.
Note: Values expressed in tons per year
CNG = compressed natural gas
FC = Fuel Cell

Traffic flow was modeled to perform carbon monoxide and PM_{10} hot-spot analyses for Northside Drive from Yosemite Lodge to park headquarters. During the inbound peak travel hour, the EMFAC model predicted a maximum 1-hour average carbon monoxide concentration of 0.5 parts per million, and a carbon monoxide concentration for the outbound peak travel hour of 0.6 parts per million. When added to a background carbon monoxide concentration of 3.0, the estimated carbon monoxide concentrations of 3.5 and 3.6 for inbound and outbound traffic scenarios, respectively, would not exceed the federal or California 1-hour carbon monoxide standards of 35 parts per million and 20 parts per million, respectively. Based on traffic in the inbound peak travel hour, the calculated maximum 8-hour average carbon monoxide concentration was 2.45 parts per million, and the maximum 8-hour carbon monoxide concentration was 2.52 parts per million based on traffic in the outbound peak travel hour. The carbon monoxide concentrations for Alternative 3 would not exceed the federal or California 8-hour carbon monoxide standard of 9 parts per million. As shown in Table 4-64, these carbon monoxide concentrations would represent major reductions in ambient carbon monoxide levels when compared to Alternative 1.

Table 4-64
Predicted Maximum Carbon Monoxide Concentrations

Alternative	Standard		Inbound Peak Hour		Outbound Peak Hour	
	CA	Fed	Maximum (ppm)	Reduction[1] (%)	Maximum (ppm)	Reduction[1] (%)
	(ppm)					
1-Hour Concentration						
1	20	35	5.10	NA	6.50	NA
3			3.50	76.2	3.60	82.9
8-Hour Concentration						
1	9	9	3.57	NA	4.55	NA
3			2.45	76.2	2.52	82.9

1. Based on results without background concentrations and relative to the No Action Alternative
NA = Not applicable

Based on traffic in the inbound peak travel hour, the maximum 24-hour average PM_{10} concentration would be 27.8 micrograms per cubic meter ($\mu g/m^3$), and the analogous PM_{10} concentration would be 28.6 $\mu g/m^3$ based on traffic in the outbound peak travel hour. The estimated PM_{10} concentrations for the inbound and the outbound peak hours would not exceed the federal standard of 150 $\mu g/m^3$ or the California standard of 50 $\mu g/m^3$. As presented in table 4-65, these PM_{10} concentrations would represent major reductions in ambient PM_{10} levels for the inbound and outbound peak hours when compared to Alternative 1.

Table 4-65
Predicted Maximum 24-Hour PM_{10} Concentrations

Alternative	Standard[1]		Inbound Peak Hour		Outbound Peak Hour	
	CA	Fed	Maximum ($\mu g/m^3$)	Reduction[1] (%)	Maximum ($\mu g/m^3$)	Reduction[1] (%)
	($\mu g/m^3$)					
1	50	150	46.2	NA	64.2	NA
3			27.8	73.0	28.6	82.4

1. Based on results without background concentrations and relative to the No Action Alternative

CONSTRUCTION-GENERATED AIR EMISSIONS

Air emissions associated with construction activities proposed for Alternative 3 are summarized in table 4-66. A description of construction-related emissions and the approach used for this analysis is included in the Methodologies and Assumptions section of this chapter. These construction-related emissions would represent minor adverse additions to air emissions in the short term.

Table 4-66
Air Emissions from Construction Activities

Construction Activity	Emissions (tons/yr)				
	VOC	CO	NO_X	PM_{10}	SO_2
Yosemite Lodge Redevelopment	0.32	1.37	1.75	4.16	0.49
Yosemite Falls Parking Removal and Trails	0.05	0.28	0.29	5.14	0.08
Meadow Road Removal	0.01	0.05	0.05	1.76	0.02
Traffic Management Facility at El Capitan crossover	0.02	0.07	0.12	0.39	0.09
Taft Toe Day-Visitor Parking Area	0.49	0.97	1.97	12.81	2.26
Southside Drive Reconstruction	0.31	0.61	1.24	8.85	1.52
Transit Facility/Visitor Center	0.03	0.16	0.19	1.23	0.05
El Portal Employee Housing	1.19	5.87	6.23	36.94	1.76
NPS/Concessioner Headquarters	0.09	0.39	0.51	1.88	0.15
El Portal Road Segment D	0.15	0.46	0.71	2.5	0.48
Total	**2.66**	**10.23**	**13.06**	**75.66**	**6.90**

CO = carbon monoxide
NO_x = nitrogen oxide
PM_{10} = particulate matter less than 10 microns in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compounds
NPS = National Park Service

CONCLUSION

Compared with Alternative 1, Alternative 3 would produce moderate, beneficial impacts on PM_{10} emissions and minor, beneficial impacts on volatile organic compounds, carbon monoxide, sulfur dioxide, and nitrogen oxide emissions. With the use of diesel buses in the shuttle bus fleet, road dust PM_{10} emissions would be reduced in proportion to the reduction in vehicle miles traveled between Alternatives 1 and 3. In comparison with the use of diesel fuel for shuttle buses under Alternative 3, all alternative fuel shuttle bus options would produce lower vehicle traffic emissions for all pollutants by the year 2015. Emission reductions for Alternative 3 would be the greatest using fuel cell technology for shuttle buses.

Air emissions associated with construction and demolition projects would be minor, occur only once, and be generated over a relatively short-term period.

CUMULATIVE IMPACTS

Air quality in Yosemite National Park is currently affected by internal air pollution sources, such as furnaces, boilers, wood stoves, and campfires. Estimates of air emissions from these sources are provided in table 3-12 (see Vol. IA, Chapter 3). For purposes of this analysis, these air pollution sources would continue to exist under Alternative 3, with emission levels remaining relatively similar to existing levels. These emissions sources are relatively small when compared to vehicle emissions and overall air emissions in the Yosemite region.

The cumulative impacts on air emissions associated with Alternative 3 include new housing and lodging developments outside the park. The cumulative impacts for Alternative 3 would be the same as those associated with Alternative 2. Considered with the moderate, adverse impact resulting from the past, present, and reasonably foreseeable future projects in the region, Alternative 3 impacts in Yosemite National Park would remain moderate and beneficial.

Construction emissions associated with some of the projects under Alternative 3 could be coincident with emissions generated by the some of the construction associated with development. However, this would be a temporary condition that would occur only in areas where construction is conducted in the same local area. An example would be new National Park Service and concessioner housing construction in El Portal, which may be conducted concurrently with construction of new commercial lodging in El Portal.

Geologic Hazards

Impacts are described as levels of risk to human life and property, and are based on the facility categories defined in the *Yosemite Valley Geologic Hazard Guidelines*, Vol. II, Appendix C, and the presence or absence of geological hazards (rockfall) as mapped by the U.S. Geological Survey (USGS 1998)

This impact analysis was completed only for those areas currently within the talus slope and the shadow line zones in the Valley. Rockfall hazards would likely be long term and permanent. The potential for rockfall is ongoing, as this natural process continues to occur in Yosemite Valley. With the exception of the Arch Rock Entrance Station, there are no permanent structures planned for the area between Yosemite Valley and El Portal. Also, traffic along the roadway in this area is considered transitory and not a permanent population. The transitory nature of the traffic allows little exposure at any one time to potential geologic hazards. For these reasons, this area was not included in the analysis of geologic hazards for Yosemite Valley. Other out-of-Valley areas were not included in the analysis. The relative risk of rockfall in these areas is negligible due to the lack of evidence of past rockfall events in these areas.

HOUSEKEEPING CAMP AREA

All of the Housekeeping Camp facilities and the LeConte Memorial Lodge are within the talus slope zone. Under this alternative, the occupancy category and location of these facilities would not change. The LeConte Memorial Lodge is standard occupancy and a historic structure; thus, the action would have an adverse impact and moderate risks would be retained. Housekeeping Camp (standard occupancy) would be reduced by 212 units, thus reducing the density of individuals and facilities within the shadow line zone. The net impact of this action would be beneficial, but the risks would remain moderate due to the reduction in density of individuals within the shadow line zone.

CURRY VILLAGE AREA

Facilities, specifically tent cabins, are being proposed to be removed from the talus slope zone. Proposed new development and redevelopment are both within and outside the shadow line zone, which is consistent with the *Geologic Hazard Guidelines*.

Numerous visitor and employee facilities are located within Curry Village. This alternative calls for the removal of most tent cabins and many other cabins from the talus slope zone, which would be a beneficial impact. The redevelopment of the guest parking areas in the talus slope and shadow line zones would also reduce risk to life and property, and would adhere to the *Geologic Hazard Guidelines*, because new miscellaneous structures (parking) may be placed in any area. Employee housing proposed for the area would be constructed within the shadow line zone. All temporary employee housing and tent cabin housing would be removed. These facilities are considered standard occupancy, except the pavilion, which is considered special occupancy. Consequently, these actions would be beneficial, and would reduce the level of risk to minor, except at the pavilion, where risks would remain moderate.

Campground Areas

The majority of the existing campgrounds, as well as new campsites and facilities, would be located outside of both the talus slope and shadow line zones. A small portion of Upper Pines Campground would remain in the talus slope zone. Campgrounds are considered miscellaneous structures, and those portions of the campgrounds currently located in the talus slope and shadow line zones would remain. This would be consistent with the *Geologic Hazard Guidelines.* Existing risks to life and property would remain adverse and minor.

The Ahwahnee Area

The Ahwahnee and associated support facilities, which are considered to be in the special occupancy category, are within the shadow line zone. A small portion of the hotel parking lot is within the talus slope zone. Retaining existing conditions would be an adverse effect. The proposed action at The Ahwahnee would be consistent with the *Geologic Hazard Guidelines.* Existing risks to life and property would remain adverse and moderate.

Yosemite Village Area

The entire Yosemite Village development is within the shadow line zone, and approximately one-half of the area is within the talus slope zone. This alternative relocates several facilities from the talus slope zone to areas outside of the shadow line zone, including essential facilities (fire station, law enforcement, jail, court, communication center); special occupancy facilities (visitor center and auditoriums); and one hazardous facility category (fuel storage). Medical facilities (essential facilities) would remain within the talus slope zone. Numerous standard occupancy facilities would remain within both the talus slope and shadow line zones (employee housing, maintenance facilities, retail sales, and post office), which would be consistent with the *Geologic Hazard Guidelines.* Under this alternative, actions would lower the density of facilities within both the talus slope and shadow line zones. Actions within the Yosemite Village area are considered beneficial, and would reduce risks to moderate.

Yosemite Lodge Area

Existing and proposed new lodge buildings are considered standard occupancy facilities. Proposed buildings would be in the shadow line zone and their location and functions would be

consistent with the *Geologic Hazard Guidelines*. These actions would be adverse due to the increase in density within the shadow line zone, but risks would remain moderate.

Existing conditions at Camp 4 (Sunnyside Campground) and the proposed expansion of the campground are within the shadow line zone. This would be consistent with the *Geologic Hazard Guidelines*. Although the density of individuals within the shadow line zone would increase, the adverse risks would remain minor.

All existing, rebuilt, and/or proposed facilities at Yosemite Falls (trails, bridges, comfort station, and shuttle bus stop) can be located anywhere; therefore, their location is not a geologic hazard issue. The majority of the development would, however, be outside the talus slope and shadow line zones. The parking lot would be removed and the comfort station would be relocated outside the shadow line zone, thus reducing the risk to life and property. Under this alternative, actions would be beneficial, and risks would be minor.

Bridalveil Fall Area

Currently, no facilities are located within the talus slope or shadow line zones in this area. Consequently, there would be a negligible risk of adverse impacts from rockfall.

Taft Toe Area

The Taft Toe Visitor/Transit Center, a special occupancy facility, would be within the shadow line zone. This action would be consistent with the *Geologic Hazard Guidelines*; however, it increases the density of individuals and facilities exposed to risk in this area and would be adverse. Under this alternative, day-visitor parking would be located within the shadow line zone; consequently, the risk would be minor.

Conclusion

As previously stated, regardless of the number of relocations or removal of facilities proposed, there would always be potential for adverse impacts on life and property due to geologic hazards within the Valley. However, under Alternative 3, the level of risk to life and property would be reduced by decreasing the density of standard occupancy structures from the talus slope zone, primarily from the Curry Village and Housekeeping Camp areas. In addition, essential facilities, hazardous facilities, and one special occupancy facility would be relocated out of the talus slope and shadow line zones. The development of the Taft Toe Visitor/Transit Center within the shadow line zone would result in minor, adverse impacts. Overall, the actions of this alternative would be considered beneficial as a result of reduction in the density of individuals and facilities in the talus slope zone. This would reduce the risk from geologic hazards in the Valley from major to moderate.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects could have a cumulative effect, in conjunction with impacts of Alternative 3, if such projects would affect the characteristics of the geologic resource, specifically the steep granite walls and drainage systems within Yosemite Valley. Risks associated with the Indian Cultural Center cannot be evaluated because the

occupancy category has not yet been determined; however, it would be located within the shadow line zone. These buildings are likely to be categorized as standard occupancy, and their placement would be consistent with the *Geologic Hazard Guidelines*. Past and present actions, which at times require the use of explosives for trail maintenance or road work, could potentially trigger rockfall events. This would be an adverse impact. Risk of such impacts would be evaluated before decisions concerning the type of work to be undertaken were made. There are no reasonably foreseeable future projects (see Vol. II, Appendix H) that would impact or change the geologic structure of the granite walls within Yosemite Valley. The park uses explosives guidelines; if these guidelines are applied consistently and effects of blasting are monitored, the cumulative impacts would not increase the level of risk at facilities in the Valley.

Scenic Resources

YOSEMITE VALLEY

Under Alternative 3, 170 acres of developed land would be restored to natural conditions, thus improving the scenic quality of Yosemite Valley. Proposed restoration and development (in acres) within each scenic category are found in table 4-67. The primary improvements within the A Scenic category would be the restoration of a large tract of highly valued resources along the Merced River, specifically the former Upper and Lower River Campgrounds, North Pines Campground, a portion of Lower Pines Campground, Housekeeping Camp, and Camp 6. Roads would also be removed from Ahwahnee and Stoneman Meadows. These improvements would be long-term, major, beneficial impacts.

Although there would be a net improvement in the east Valley, there would be 99 acres of new development within the Valley. This new development would primarily be located in the west Valley at Taft Toe near the El Capitan crossover and concentrated at the Taft Toe Visitor/Transit Center. This facility would be visible from both Dewey and Taft Points, which are within designated Wilderness. The impacts of this particular action would be long-term, major, and adverse.

The overall impact of this alternative on scenic resources would be long-term, moderate, and beneficial, due to the large-scale restoration, mostly within the A Scenic category.

Table 4-67
Proposed Restoration and Development by Scenic Category (acres)

Action	A Scenic	B Scenic	C Scenic	Alternative 3 Totals[1]	Alternative 1 Totals
Natural Resource Restoration Acres	127 acres	81 acres	0	170 acres[2]	0
Developed[3]	65 acres	142 acres	28 acres	235 acres	406 acres
New Development	37 acres	54 acres	6 acres	99 acres[4]	0
Total Development				**334 acres**	**406 acres**
Development Difference				**-72 acres**	

1. Totals may differ due to rounding.
2. Of the total 208 acres of natural resource restoration in A, B, and C Scenic areas, only 167 acres currently contain intrusions to scenic views, i.e., developed facilities. Thus, 41 acres of restoration are not included in this analysis of acreage of restored scenery. Because these 41 acres have not been further analyzed to determine their exact locations within A, B, and C Scenic categories, only the total acreage figure reflects the reduction of these 41 acres from the analysis. Also, the total acreage has been increased by the three acres of restoration in areas not classified as either A, B, and C Scenic in the 1980 *General Management Plan*.
3. Developed acres include areas that are redeveloped or that remain unchanged.
4. Two acres not classified as either A, B, or C Scenic in the 1980 *General Management Plan* would be newly developed and increase the total acreage figure by 2.

Table 4-68 lists the impacts on each vantage point (vantage points are site-specific locations that have either been designed for or provide specific opportunities for visitors to view the scenery). All impacts would be long term.

Table 4-68
Potential Impacts on Vantage Points

Vantage Point	Major Impacts of this Alternative	Intensity of Impact	Type of Impact
Tunnel View	None	Negligible	Neutral
Bridalveil Fall turnout along Southside Drive	None	Negligible	Neutral
Valley View	None	Negligible	Neutral
Dewey Point	Taft Toe parking and transit facility would be visible.	Major	Adverse
Taft Point	Taft Toe parking and transit facility would be visible.	Major	Adverse
Upper Yosemite Falls	72 acres less development in east Valley. Restoration would principally be located at Camp 6, Upper and Lower River, Lower Pines and North Pines Campgrounds, and Housekeeping Camp. Removal of roads and traffic from Ahwahnee and Stoneman Meadows. Implementation of the River Protection Overlay.	Major	Beneficial
Sentinel Dome	None	None	Neutral
Glacier Point	72 acres less development in east Valley. Restoration would be visible from Glacier Point. New employee housing in Curry Village may be visible. Removal of roads and traffic from Ahwahnee and Stoneman Meadows. Implementation of the River Protection Overlay.	Major	Beneficial
El Capitan Meadow	Taft Toe Visitor/Transit Center may be visible.	Moderate	Adverse
Sentinel Meadow turnout along Southside Drive	None	Negligible	Neutral
Sentinel Bridge	None	Negligible	Neutral
Four-Mile Trailhead	None	Negligible	Neutral
Columbia Point	Yosemite Falls parking area would be removed. There would be less development in east Valley.	Moderate	Beneficial
Lower Yosemite Fall View	Views would be improved by removal of adjacent vehicles, reduced traffic, and redesign of area.	Minor	Beneficial
Cook's Meadow	Views would be improved by removal of the Superintendent's House (Residence 1) and reduction of vehicles along the road to the north.	Minor	Beneficial

Table 4-69 lists the impacts on the 11 most important scenic features within the Valley. All impacts would be long term.

Table 4-69 Potential Impacts on Scenic Features			
Scenic Feature	**Major Impacts of this Alternative**	**Intensity of Impact**	**Type of Impact**
Yosemite Falls	Crowding and traffic would be reduced and parking along Northside Drive could be eliminated.	Minor	Beneficial
Sentinel Rock	None	Negligible	Neutral
Glacier Point	Some views would be improved by removal of traffic through Stoneman and Ahwahnee Meadows, the removal of parking and restoration of Camp 6, and the restoration of the following campgrounds: the former Upper and Lower River, Lower Pines, and North Pines. The south portion of Yosemite Village may be less visible; however, new employee housing in Curry Village may be visible.	Moderate	Beneficial
Half Dome	Views would be improved by removal of traffic from Stoneman and Ahwahnee Meadows; the removal of Camp 6 parking and the implementation of the River Protection Overlay.	Moderate	Beneficial
North Dome	None	Negligible	Neutral
Royal Arches	Vistas near Ahwahnee Meadow would be improved by removal of the tennis courts; removal of traffic from Ahwahnee Meadow; foreground restoration of the former Upper and Lower River Campground and the implementation of the River Protection Overlay.	Moderate	Beneficial
El Capitan	New parking and transit facility would be in the view.	Moderate	Adverse
Bridalveil Fall	None	Negligible	Neutral
Cathedral Rock and Spires	The view from El Capitan would include the parking and transit facility at Taft Toe.	Moderate	Adverse
Washington Column	Vistas near Ahwahnee Meadow would be improved by removal of the tennis courts; removal of traffic from Ahwahnee Meadow; foreground restoration of the former Upper and Lower River Campground and the implementation of the River Protection Overlay.	Moderate	Beneficial
Three Brothers	Traffic would be removed along Northside Drive.	Minor	Beneficial

OUT-OF-VALLEY

Under this alternative, no out-of-Valley parking facilities would be constructed; however, facilities at each entrance station would be expanded, and housing and administrative facilities in El Portal would be increased. In El Portal, the impact of employee parking and administrative facilities would be long-term, minor, and adverse because actions would be visible from Highway 140 as the visitor approaches Yosemite National Park. The expansion of entrance station facilities would be mitigated through design, and the impacts would be long-term, minor, and adverse because they would cause new intrusions to views at already developed locations.

CONCLUSION

This alternative would have a long-term, moderate, beneficial impact on the overall scenic quality of Yosemite Valley. The overall impact intensity would be considered moderate due to the construction of the Taft Toe Visitor/Transit Center in an area that currently has no development. There would be a net decrease of 72 acres in the development footprint within Yosemite Valley. Of the 170 acres of restoration, the majority are within the A Scenic category. The majority of the actions do result in a net improvement of scenic vistas and vantage points, especially in east

Valley, where there is the greatest opportunity for scenic vistas from individual locations. This alternative would, however, introduce a new scenic impact in an A Scenic area in the west Valley.

Yosemite Valley would remain one of the world's premier landscapes. The amount of intrusion into Yosemite Valley scenery would be reduced in the east end, but consolidated parking in the west Valley would add an intrusion that does not exist today in this premier landscape. No visual intrusions would occur from the Tunnel View vantage point. Collectively, there would be long-term, minor, adverse impacts in all out-of-Valley locations because intrusions to these locations would be adjacent to previously developed areas. However, impacts in these areas can be directly related to the improvement of the views within the Valley.

CUMULATIVE IMPACTS

Projects approved or planned that could impact scenic resources within Yosemite National Park or close to park boundaries, and the impacts of those projects, would be the same as those described under Alternative 2. Cumulatively, Alternative 3 would result in a long-term, moderate, beneficial impact.

Cultural Resources

ARCHEOLOGICAL RESOURCES

Impacts to archeological resources are considered permanent unless otherwise noted.

As described for Alternative 2, every effort would be made to avoid archeological sites through careful project design and subsequent site-specific environmental compliance. If sites could not be avoided, all data recovery to retrieve important information would be conducted in accordance with the Yosemite Programmatic Agreement (see Vol. II, Appendix D).

Yosemite Valley

Yosemite Lodge and Vicinity

Impacts under this alternative would be the same as Alternative 2. With archeological data recovery, the resultant impacts would be permanent, minor, and adverse, as well as long-term, minor, and beneficial.

Yosemite Falls

The impacts would be the same as described in Alternative 2, except that the restroom would be built at the site of the existing parking lot, which would result in additional, direct impacts to one of the two prehistoric/historic American Indian sites with moderate data potential. Data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information about the site prior to construction, and would reduce the intensity of the adverse impact from moderate to minor and adverse.

Yosemite Village

Proposed undertakings include redesigning the National Park Service maintenance area; rehabilitating the Yosemite Village housing area; removing fruit trees from the historic

Hutchings Orchard; constructing a new collections storage facility adjacent to the visitor center, a fire station, and rehabilitating a picnic area. These actions would involve grading, trenching, and other earthmoving activities that would potentially disturb portions of two prehistoric/historic American Indian habitation sites and one historic-era archeological site. Site data potential ranges from low to high. Data recovery, carried out in accordance with the Programmatic Agreement, would reduce the intensity of adverse impacts from moderate to minor. As described for Alternative 2, the burial area in Yosemite Village that is paved and used for materials staging would be restored to a natural condition and protected from future development. All work in the vicinity of the burial area would be carefully designed to avoid disturbance to intact deposits, and would be monitored by archeologists and representatives of culturally associated American Indian tribes.

The Ahwahnee

Impacts under this alternative would be the same as under Alternative 2. With archelological data recovery, the resultant impact would be permanent, minor, and adverse.

Housekeeping Camp

Impacts under this alternative would be the same as under Alternative 2. With archeological data recovery, the resultant impact would be negligible.

Campgrounds

Impacts under this alternative would be the same as under Alternative 2. With archeological data recovery, the resultant adverse impacts at ten archeological sites would be permanent, minor, and adverse. Beneficial impacts would be long-term and minor.

Curry Village

Impacts under this alternative would be the same as under Alternative 2. With archeological data recovery, resultant impacts would be negligible.

Merced River Restoration

Removing Sugar Pine Bridge would involve earthmoving that would possibly disturb some intact deposits at a prehistoric American Indian habitation site with high data potential (the same as under Alternative 2). In addition, removing Superintendent's Bridge would potentially impact a historic-era dump with unknown data potential. If sites could not be avoided, data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information prior to construction, and reduce the intensity of the adverse impact from moderate to minor and adverse.

Meadow Restoration

Impacts under this alternative would be the same as under Alternative 2. With data recovery excavations, the resultant impacts would be minor and adverse, or negligible.

Circulation Changes

Constructing a major parking facility, vehicle check station, visitor center/transit center, shuttle parking, and light maintenance facility at Taft Toe would disturb or destroy three intact prehistoric/historic Indian habitation sites (one with high data potential, and two with low data potential). There are also historic-era deposits with unknown data potential. Any unavoidable impacts to archeological resources would be moderate in intensity, due to the small number of sites and their data potential. However, the impacts would be reduced in intensity from moderate to minor through data recovery in accordance with the Programmatic Agreement.

As described for Alternative 2, widening Southside Drive between El Capitan Bridge and Curry Village (with realignment at the Sentinel Bridge intersection, as well as other minor realignments) would involve grading that would disturb portions of one small prehistoric/historic American Indian habitation site with high data potential; one large prehistoric/historic American Indian habitation site with moderate data potential; and one large prehistoric/historic American Indian and Euro-American site with moderate data potential. If these sites could not be avoided, data recovery prior to construction would reduce the intensity of adverse impacts from moderate to minor.

Establishing a new multi-use paved trail between Swinging Bridge and El Capitan Bridge south of and adjacent to Southside Drive would involve minor grading, which would impact portions of two prehistoric/historic American Indian habitation sites (one with historic-era deposits), as described under Alternative 2. One of these sites contains high data potential, and one contains moderate data potential. If these sites could not be avoided through site design, data recovery would retrieve important information and reduce the intensity of adverse impacts from moderate to minor.

As described for Alternative 2, realigning the multi-use paved trail between Yosemite Village and Mirror Lake would involve minor grading that would disturb portions of one prehistoric American Indian site with high data potential. If this site could not be avoided, data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information and reduce the intensity of adverse impacts from moderate to minor.

Establishing a new multi-use paved trail between the northern abutment of Sentinel Bridge and Yosemite Village would involve minor grading that could impact an archeological site exhibiting both prehistoric and historic components with high data potential. The park would strive to avoid adverse impacts by siting the trail in such a way as to avoid affecting the site. However, if such impacts were unavoidable, data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information and reduce the intensity of adverse impacts from minor to negligible.

Establishing a new multi-use paved trail between The Ahwahnee and the existing bicycle path to Mirror Lake would involve minor grading, that could affect four archeological sites. All four of these sites contain both prehistoric and historic-era deposits. Three of the four have high data potential, while the fourth has moderate data potential. The park would strive to avoid adverse impacts by siting the trail in such a way as to avoid impacting the site. However, if such impacts were unavoidable, data recovery, carried out in accordance with the Programmatic Agreement,

would retrieve important information and reduce the intensity of adverse impacts from minor to negligible.

As described for Alternative 2, placement of multi-use paved trails, picnic areas, and campgrounds within the immediate vicinity of known archeological resources could result in long-term, minor, adverse impacts associated with visitor use, including artifact collection, soil compaction, and accelerated erosion. Given the potential for these impacts, sites subject to such visitor use, would be monitored according to the Visitor Experience and Resource Protection Program, as described in Chapter 2. Through this monitoring program, threats and disturbances would be noted. Every effort would be made to avoid or reduce adverse impacts through changes in visitor access, relocation of facilities, or archeological data recovery carried out according to the stipulations of the Programmatic Agreement.

General Valley Actions

Impacts under this alternative would be the same as Alternative 2. Potential adverse impacts to known archeological sites in Yosemite Valley are shown in table 4-70.

Table 4-70
Potential Adverse Impacts to Known Sites in Yosemite Valley (Alternative 3)

Number of Sites with High Data Potential	Number of Sites with Moderate Data Potential	Number of Sites with Low Data Potential	Number of Sites with Unknown Data Potential
9	14	7	4

Out-of-Valley

El Portal

The following impact analysis is based on general land-use planning actions for the El Portal area. The National Park Service would undertake site-specific design studies and environmental review to evaluate options for new housing and administrative facilities in El Portal. These studies would include, as necessary, additional resource surveys (archeological inventory and testing). The National Park Service would initiate further consultation with the State Historic Preservation Officer, culturally associated American Indian tribes, and the public, as stipulated in the Programmatic Agreement. A complete and detailed assessment of impacts to archeological resources would be presented as part of that review.

As described for Alternative 2, several actions at Old El Portal and Village Center (constructing a multi-use trail, employee housing, and support facilities), would disturb or destroy portions of up to 14 prehistoric and historic-era archeological sites (11 of the sites have moderate data potential, 1 has low data potential, and 2 have unknown data potential). If sites could not be avoided, data recovery, carried out in accordance with the Programmatic Agreement prior to construction, would reduce the intensity of adverse impacts from moderate to minor.

Developing employee parking in the Middle Road area (as described for Alternative 2), would involve major grading and earthmoving activities, which would disturb potentially major portions of two archeological sites: one prehistoric American Indian habitation site with historic-era deposits containing low data potential, and one historic-era site with unknown data potential. If these sites could not be avoided, data recovery, carried out in accordance with the Programmatic

Agreement prior to construction, would reduce the intensity of adverse impacts from moderate to minor.

Constructing National Park Service and concessioner administrative facilities at Railroad Flat would involve major grading, trenching, and excavation, actions that have the potential to disturb archeological deposits at portions of one prehistoric/historic Indian habitation site with low data potential. Data recovery would retrieve important information and reduce the intensity of adverse impacts from minor to negligible.

Constructing housing facilities at Hillside East and West would involve major grading, excavation, and trenching that would destroy major portions of an intact prehistoric/historic American Indian habitation site (with some Euro-American deposits) with high data potential. A site-specific data recovery program, negotiated between the National Park Service, the State Historic Preservation Officer, and local culturally associated American Indian tribes would recover important information, thereby reducing the intensity of adverse impacts from major to moderate.

Development and construction at Rancheria Flat would entail grading, trenching, and excavating, potentially disturbing intact archeological deposits at two archeological sites with moderate data potential. Data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information and reduce the intensity of adverse impacts from moderate to minor.

Constructing high-density housing (656 beds) and support facilities at Hennessey's Ranch would disturb a prehistoric American Indian habitation site and part of a historic-era ranch, both of which were heavily disturbed when the Trailer Village was constructed; data potential of this site is unknown. If these sites could not be avoided, data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information and reduce the intensity of this adverse impact.

As described for Alternative 2, removing an abandoned wastewater treatment plant and restoring the area to natural conditions would be carefully designed to avoid disturbance to intact areas of a prehistoric American Indian habitation site and burial area. Actions would be monitored by archeologists and culturally associated American Indian tribes, in accordance with the Programmatic Agreement, and negligible impacts to archeological resources would be anticipated. Since surface conditions at this site would be restored to natural conditions, long-term impacts associated with the presence of this facility would be reduced. This would result in a long-term, minor, beneficial impact.

As described under Alternative 2, the Johnny Wilson Ranch (Riverside area), previously proposed for high-density housing (NPS 1996a), would not be developed. Instead, these archeological sites and burial area would continue to be relatively inaccessible.

Foresta and McCauley Ranch

Impacts under this alternative would be the same as under Alternative 2, although no out-of-Valley parking would be constructed. Actions could impact archeological resources of unknown

data potential, depending on design of any road improvements, stable facilities, and location of proposed housing. Data recovery excavations would reduce the intensity of any adverse impacts.

Other Out-of-Valley Areas

As described for Alternative 2, reconstructing El Portal Road between the intersection of El Portal Road/Big Oak Flat Road and Pohono Bridge would involve widening the road corridor, potentially removing or disturbing a portion of a large prehistoric/historic Indian habitation site with high data potential. Data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information and reduce the intensity of adverse impacts from major to minor.

Removing the four residences at Cascades, as described for Alternative 2, would involve minor grading and trenching that could disturb intact deposits at one prehistoric archeological site with unknown data potential. However, the project would be carefully designed to avoid ground disturbance in intact areas, and would be monitored by archeologists as stipulated in the Programmatic Agreement, to ensure site protection. By implementing these measures, negligible impacts would result.

Removing the Cascades Diversion Dam would not impact any archeological resources (the same as under Alternative 2). Earthmoving and facility removal would be monitored by an archeologist in the event that historic archeological features or artifacts associated with construction and use of the dam were discovered during removal.

As described for Alternative 2, since the location and design of visitor centers associated with park entrance stations are unknown at this time, it is not possible to predict the potential for impacts to archeological resources. The park would conduct archeological inventory, site evaluation, and data recovery as necessary, and further environmental review. In accordance with the Programmatic Agreement, the National Park Service would first seek to avoid impacts to any archeological resources, and would retrieve important scientific information at sites that could not be avoided, thereby reducing the intensity of any adverse impacts.

Archeological Resources Conclusion

Proposed project undertakings would have varied impacts on as many as 59 known archeological sites, with intensities of impact varying depending on the potential of the archeological sites to yield significant information about prehistoric and historic lifeways, and the nature and design of proposed development. See Chapter 3, Cultural Resources, for descriptions of low, moderate, and high data potential.

In all instances, where identified sites could not be avoided and would be disturbed, the park would carry out data recovery in accordance with the Programmatic Agreement to retrieve important scientific information, thereby reducing the intensity of adverse impacts. For some proposed project areas, information regarding the nature and importance of archeological resources is unknown; in these instances, the park would first inventory project areas, test/evaluate the significance of identified sites, and undertake data recovery to retrieve important information, in accordance with the Programmatic Agreement, prior to construction disturbance.

Cumulative Impacts

Cumulative impacts would be the same as those described for Alternative 2, except this alternative would contribute to the loss of regional archeological resources as a consequence of the disturbance or degradation of as many as 59 additional known archeological sites. With appropriate mitigation, the cumulative adverse impacts associated with this alternative, in conjunction with other past, present, and reasonably foreseeable future projects, would be minor.

ETHNOGRAPHIC RESOURCES

As described for Alternative 2, the National Park Service, in consultation with culturally associated American Indian tribes, and in keeping with the Programmatic Agreement, would develop appropriate mitigation strategies for impacts to ethnographic resources. Such strategies could include identifying and helping provide access to alternative resource-gathering areas; continuing to provide access to traditional use or spiritual areas; and screening new development from traditional use areas.

Yosemite Valley

Yosemite Lodge and Vicinity

Impacts under this alternative would be the same as under Alternative 2. With mitigation, the resultant adverse impacts would be negligible; and beneficial impacts would be long-term and minor.

Lower Yosemite Fall

Impacts under this alternative would be essentially the same as under Alternative 2. With mitigation, the resultant adverse impacts would be negligible; and beneficial impacts would be permanent and minor.

Yosemite Village

As described for Alternative 2, rehabilitating the Yosemite Village Historic District housing area would improve habitat conditions for California black oak, a traditionally gathered resource. Conversely, constructing a new emergency facility in this area would disturb a small portion of the same traditional gathering area, a contributing element of the Valleywide ethnographic landscape, thus causing long-term, minor, adverse impacts. Appropriate mitigation strategies, developed in consultation with culturally associated American Indian tribes, would reduce the intensity of impacts from minor to negligible.

The Ahwahnee

Impacts under this alternative would be the same as under Alternative 2. There would be no impact to ethnographic resources.

Housekeeping

Impacts under this alternative would be the same as under Alternative 2. There would be negligible impact.

Campgrounds

Impacts under this alternative would be the same as under Alternative 2. With mitigation, the resultant adverse impacts would be permanent and minor. Beneficial impacts would be long-term and moderate.

Curry Village

Impacts under this alternative would be the same as under Alternative 2. Impacts would be negligible.

Merced River Restoration

Removing Sugar Pine, Stoneman, Housekeeping, and Superintendent's Bridges, along with the raised causeway between Sugar Pine and Ahwahnee Bridges, would have long-term, minor, beneficial impacts by partly restoring habitat in a traditional gathering area, a contributing element of the ethnographic landscape. This could allow for recovery of traditionally used plants, and enhance their availability for procurement.

Meadow Restoration

Impacts under this alternative would be the same as under Alternative 2. Impacts would be long-term, minor, and beneficial.

Circulation Changes

Constructing a visitor center, a transit center, and day-visitor parking at Taft Toe would have long-term, minor, adverse impacts on the ethnographic landscape by disturbing or destroying a traditional gathering area. The National Park Service would consult with culturally associated American Indian tribes, in accordance with the Programmatic Agreement, regarding sensitive design guidelines and other appropriate mitigation (such as identifying and helping provide access to alternative resource-gathering areas), to reduce the intensity of the impacts from minor to negligible.

Realigning Southside Drive south of Sentinel Bridge would disturb a portion of a historic village, as described for Alternative 2, resulting in a permanent, minor, adverse impact on the Valleywide ethnographic landscape. The National Park Service, in consultation with culturally associated American Indian tribes, and in accordance with the Programmatic Agreement, would develop appropriate mitigation strategies for impacts to ethnographic resources. Such strategies could include identifying and helping provide access to alternative resource-gathering areas; continuing to provide access to traditional use or spiritual areas; and screening new developments from traditional use areas. This would reduce the intensity of the adverse impacts from minor to negligible.

Widening Southside Drive between El Capitan Bridge and Curry Village, as described for Alternative 2, would disturb portions of four historic villages, and possibly disturb resources at one traditional gathering area, although it might be possible to avoid this resource through careful site design. This would result in permanent, minor, adverse impacts on the Valleywide ethnographic landscape. Appropriate mitigation strategies would reduce the intensity of the adverse impacts from minor to negligible.

As described for Alternative 2, actions and related impacts associated with constructing multi-use paved trails in the east Valley would not impact any traditional use areas. Constructing a new multi-use paved trail between Swinging Bridge and El Capitan Bridge could disturb two historic village areas, causing permanent, minor, adverse impacts to the Valleywide ethnographic landscape. The National Park Service, in consultation with culturally associated American Indian tribes, and in keeping with the Programmatic Agreement, would develop appropriate mitigation strategies for impacts to ethnographic resources. Such strategies could include recovering important archeological data, as well as using any other measures identified during consultation, which would reduce the intensity of adverse impacts from minor to negligible.

General Valley Actions

Impacts under this alternative would be essentially the same as under Alternative 2. With mitigation, impacts would be negligible.

Out-of-Valley

El Portal

The impact analysis presented below is based on general land-use planning actions for El Portal, and is based on limited information regarding the location and significance of ethnographic properties. The National Park Service would undertake site-specific design studies and environmental review to evaluate options for new housing and administrative facilities. These studies would include, as necessary, additional resource surveys (ethnographic resources inventory and evaluation). The National Park Service would initiate further consultation with the State Historic Preservation Officer, culturally associated Indian tribes, and the public, as provided for in the Programmatic Agreement. A complete and detailed assessment of impacts to ethnographic resources would be presented as part of that review.

Constructing single-family homes at Hillside West, studio apartments at Hillside East and West, and employee housing at Village Center would destroy a large portion of a historic village area, similar to Alternative 2, resulting in a permanent, major, adverse impact. The portions of this historic village site that are known to contain human burials would be protected from development. As described in Alternative 2, mitigation would reduce the intensity of adverse impact to moderate. Constructing single-family homes, apartments, and housing support facilities at Rancheria Flat, Hennessey's Ranch, and Old El Portal, as well as administrative facilities at Railroad Flat, would disturb or destroy portions of at least three traditional gathering areas, resulting in long-term, minor, adverse impacts. With mitigation, the resultant impacts would be negligible.

Removing the abandoned wastewater treatment facility would have permanent, moderate, beneficial impacts on a prehistoric village and burial area by eliminating modern, intrusive development (the same as under Alternative 2). To ensure protection of these intact deposits and burials, which are held in high regard by culturally associated American Indian tribes, this removal would be carefully designed and implemented. The work would be monitored by representatives from culturally affiliated American Indian tribes to ensure protection of any

objects or remains subject to Native American Graves Protection and Repatriation Act (NAGPRA) provisions.

Other Out-of-Valley Areas

Actions at McCauley Ranch and at the park entrance stations would have unknown impacts on ethnographic resources, since there is not enough information about the location and significance of ethnographic resources to assess the nature and intensity of impacts. The National Park Service, in consultation with culturally associated American Indian tribes, and in accordance with the Programmatic Agreement, would develop appropriate mitigation strategies for reducing the intensity of any adverse impacts.

Rehabilitating the Foresta Campground would occur in an area used for traditional ceremonies. This action would be designed to avoid the most sensitive areas, and scheduled administrative use of the campground would not overlap with the campground's use for traditional activities. As a result, adverse impacts to ethnographic resources would be negligible.

The National Park Service has consulted with the American Indian Council of Mariposa County, Inc., during planning and preliminary design for the reconstruction of El Portal Road. The proposed reconstruction of the easternmost portion of the road, the removal of the Cascades Diversion Dam and screenhouse, and the removal of the four Cascades residences would not impact any known ethnographic resources.

Ethnographic Resources Conclusion

Proposed undertakings would have varied impacts ranging from potentially major to negligible, depending in part on the nature and design of proposed development, and the sensitivity of the different traditional use areas. In Yosemite Valley, proposed actions would disturb or destroy parts of up to eight traditional gathering areas; would add or expand modern development at eight historic village areas; and would add development in at least one area figuring in oral traditions. However, facility removal and ecological restoration would benefit up to five traditional gathering areas by enhancing conditions for plant resources; and would remove modern development from three historic village areas. In general, actions in Yosemite Valley would have minor, adverse impacts to the Valleywide ethnographic landscape.

In El Portal, proposed actions are designed to maximize administrative, park operations, and residential development. The precise nature and intensity of adverse impacts to ethnographic resources in El Portal, Foresta, McCauley Ranch, and other out-of-Valley areas are unknown. In El Portal, however, proposed actions would most likely have permanent, moderate to major, adverse impacts by destroying portions of historic villages and traditional gathering areas, and by adding concentrated residential use in some areas that are currently undeveloped. As in Yosemite Valley and other park areas, known burial areas would be protected from disturbance, and modern facilities in burial areas would be removed. The National Park Service would conduct an ethnographic resources inventory and evaluation of El Portal, as well as other out-of-Valley areas, and would continue consulting with culturally associated American Indian tribes to seek ways to avoid, minimize, and mitigate potential adverse impacts to ethnographic resources. These measures could include setting aside some areas for traditional uses; designing new development

to avoid the most sensitive areas; screening development from traditional use areas; and directing visitor and residential use away from sensitive areas.

Cumulative Impacts

Cumulative impacts on ethnographic resources would be the same as those described for Alternative 2. Minor to moderate cumulative, adverse impacts would result from implementing this alternative, in conjunction with past, present, and reasonably foreseeable future undertakings.

CULTURAL LANDSCAPE RESOURCES (INCLUDING INDIVIDUALLY SIGNIFICANT HISTORIC SITES AND STRUCTURES)

Yosemite Valley

Natural Systems and Features

Under Alternative 3, large portions of the natural landscape, which has influenced the physical development in Yosemite Valley, would be rehabilitated and restored to natural conditions. The major focus of this effort would be the long-term restoration of the Merced River corridor and the rehabilitation of eight meadows that are historically significant and contribute to the Valleywide cultural landscape. California black oak woodlands would be rehabilitated and restored to natural conditions, and general environmental restoration would enhance the historic vegetative mosaic of coniferous forest, oak woodlands, and open meadows. These actions would collectively result in a long-term, beneficial, impact to the cultural landscape of the Valley.

Historic Land Use Patterns

Historic land use patterns, which have concentrated visitor services and administration in the east Valley, would be dramatically altered. Construction of day-visitor parking, transit, and visitor facilities at Taft Toe would shift the major focus of arrival and orientation in Yosemite Valley from its historic location at Yosemite Village. This would result in a permanent, major, adverse impact on the spatial organization of the cultural landscape. The National Register Historic Districts and properties of Camp Curry, Yosemite Village, and The Ahwahnee, would remain, and would largely continue to function as they did historically, with the exception of Yosemite Village, as noted above. While camping would remain in the Upper and Lower Pines Campgrounds and Camp 4 (Sunnyside Campground), relocating other Valley campgrounds currently situated along the Merced River would be a change in historic land use patterns, resulting in a permanent, minor, adverse impact.

Historic Circulation Systems

Proposed changes to circulation systems throughout Yosemite Valley would result in removal of one historic road segment, realignment of a portion of Northside Drive, and realignment and widening of a portion of Southside Drive. All three of these historic roads are contributing structures to the proposed Yosemite Valley Cultural Landscape Historic District. The historic road segment currently bisecting Upper and Lower River Campgrounds would be removed. A segment of Northside Drive at Yosemite Lodge would be realigned, and the segment between

Yosemite Lodge and El Captain crossover would be closed to motor vehicles. While the lanes would significantly alter the way in which visitors experience this historic "loop" circulation pattern through the Valley, it would not result in any physical changes to this segment of Northside Drive itself. A portion of Southside Drive would be widened to accommodate two-way traffic, and the segment near the Chapel would be realigned, changing the physical structure of this contributing element. Other changes in the circulation system consist of adding new multi-use paved trails, rehabilitating or realigning existing multi-use paved trails, and constructing day-visitor parking at Taft Toe near El Capitan crossover. Collectively, these changes would result in a long-term, moderate, adverse impact to historic circulation systems that contribute to the cultural landscape. Removal or alteration of historic road segments would be partly mitigated by documentation, thus preserving a historical record (although the resource would be changed or would cease to exist). Addition of new (and modification of existing) multi-use paved trails and addition of a traffic check station would be partly mitigated by the use of compatible design; thus, the intensity of these adverse impacts would be reduced from moderate to minor. Removing non-contributing roads from Ahwahnee and Stoneman Meadows would have a minor, beneficial, and permanent impact.

In general, changes to physical features and addition of new structures and facilities within the Valleywide cultural landscape would follow design guidelines consistent with the *Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation* (USDOI 1983). In this manner, the potential for impacts resulting from addition of non-historic facilities would be reduced.

Historic Structures

Restoration of the Merced River would result in the removal of Sugar Pine and Stoneman Bridges, both listed in the National Register of Historic Places. This would result in the loss of two individually significant historic structures, resulting in a permanent, major, adverse impact. Although the physical structures would be lost, these impacts would be mitigated through documentation and salvage of historic materials, thus reducing the intensity of adverse impacts from major to moderate. Documentation of Sugar Pine and Stoneman Bridges has been completed, thus preserving a historical record of the resources.

The individually significant Superintendent's House (Residence 1) and its associated garage would be removed. As in Alternative 1, this would result in the loss of the historic structure; therefore, there would be no additional adverse impact. However, this action would result in immediate, rather than eventual, loss. The structures and their setting have already been documented; therefore, although the physical structures would be removed, a historical record has been preserved. In addition, the National Park Service would salvage historic materials as stipulated in the Programmatic Agreement.

Other historic structures that are not individually significant but contribute to the Valleywide cultural landscape would be removed. These structures consist of Superintendent's and Housekeeping Bridges, the concessioner stable and its associated structures, three pedestrian bridges at Lower Yosemite Fall, and riprap, wing, and check dams along the Merced River and its tributaries. In addition, three pedestrian bridges at Lower Yosemite Fall would be

rehabilitated or rebuilt, and one would be relocated. These actions would result in the loss or change in contributing elements of the Valleywide landscape, resulting in a permanent, moderate, adverse impact. Although the physical structures would be lost or changed, these impacts would be partly mitigated through documentation, thus reducing the intensity of adverse impacts from moderate to minor.

Actions at Yosemite Lodge and Housekeeping Camp would not result in the loss of any historic structures, as there are no historic structures in either of these developed areas.

Historic Districts and Developed Areas

Yosemite Village: The historic design and spatial organization of the Yosemite Village area would be rehabilitated, resulting in the preservation of many of the historic structures; removal of non-contributing structures; redevelopment of non-contributing areas within the district; and restoration of some areas to natural conditions. This would result in a permanent, minor, beneficial impact to the design and spatial organization of the district. However, historic land uses would change significantly (e.g., removing primary visitor arrival and orientation, removing National Park Service stable and parkwide administration), although many of the land uses historically associated with the village, such as museum facilities and employee housing, would remain. In addition, the re-establishment of historic viewsheds from within the village and the protection of the California black oak woodland would enhance the historic character of the developed area, resulting in a permanent, minor, beneficial impact.

Natural resource restoration and redevelopment at Camp 6, Yosemite Village, and Ahwahnee Meadow would result in the removal of several historic structures that contribute to the cultural landscape. These buildings consist of the Concessioner Headquarters Building; the Village Garage and associated apartment and three shop buildings; the “Y” Apartments; the Ahwahnee Row Houses, cottages, converted cabins, laundry room, and garage. These actions would result in the loss of historic structures, resulting in a permanent, moderate, adverse impact to the cultural landscape. The loss of the historic structures would be mitigated by HABS/HAER documentation, and salvage of historic materials as stipulated in the Programmatic Agreement. In this manner, a historical record would be preserved even though the structures themselves would cease to exist; thus, the intensity of adverse impacts would be reduced from moderate to minor. In cases where historic structures would be lost, the National Park Service would first consider the possibility of relocation and adaptive reuse in another location within the park.

Actions at the National Park Service maintenance area would result in the loss of the National Park Service Operations Building (Fort Yosemite) and thirteen additional historic structures that contribute to the cultural landscape, resulting in a permanent, moderate, adverse impact to the cultural landscape. This would be mitigated through documentation and salvage of historic materials, as stipulated in the Programmatic Agreement. Thus, although the structures themselves would cease to exist, a historical record would be preserved, reducing the intensity of adverse impacts from moderate to minor. In cases where historic structures would be lost, the National Park Service would first consider the possibility of relocation and adaptive reuse in another location within the park. The area would be redeveloped for district operational needs, resulting in the addition of non-historic facilities adjacent to the Yosemite Village Historic

District. The impact associated with this would be mitigated by using compatible design, thus reducing the intensity of impact from minor to negligible.

In the Yosemite Village Historic District, individually contributing structures would be retained and some would be rehabilitated for adaptive reuse. The National Park Service Administration Building would be rehabilitated for a new use as a natural history museum. The Museum/Valley District Building would be rehabilitated for use solely as a cultural history museum. Rehabilitation of these structures would follow the *Secretary's Standards* (USDOI 1983), and thus would have negligible impacts on the historic structures and the district itself. The Visitor Center and auditoriums would be rehabilitated for use as part of the educational function in Yosemite Village (to house the Yosemite Museum collections, including the research library and archives, and provide space for theater productions and special programs). Two new facilities would be constructed within the historic district: a new museum collection storage facility adjacent to the Visitor Center auditoriums and a fire station adjacent to the residential area. This would result in a permanent, minor, adverse impact to the historic district. This impact would be mitigated by designing the new facilities to be compatible with the district in terms of scale, massing, materials, orientation, and design; thus, the intensity of this adverse impact would be reduced to negligible.

Curry Village and the Camp Curry Historic District: Actions proposed for the Curry Village developed area and the Camp Curry Historic District would result in the loss of historic structures; construction of new facilities within the historic district; and construction of an employee housing area adjacent to the historic district. Collectively, these actions would result in permanent, major, adverse impacts as described below.

The historic Curry Orchard, the Curry Orchard parking area, 277 historic guest tent cabins, some historic comfort stations, the Tresidder Residence, Cabin 90A/B, and the Huff House would be removed, resulting in a permanent, major, adverse impact to the historic district. The intensity of this impact would be reduced through site design, by retaining, to the extent possible, the general configuration of the remaining 150 tent cabins around the central core of the village, in keeping with the historic design and extent of Camp Curry. The intensity of this impact would also be reduced by documentation of historic structures as described in the Programmatic Agreement. In this manner, although the physical structures would be lost, a historical record would be preserved. The resultant intensity of these adverse impacts would therefore be moderate.

Other actions in the Curry Village developed area would result in the rehabilitation and adaptive reuse of several individual historic structures. These structures consist of Mother Curry Bungalow, Stoneman Lodge, the 48 cabins-with-bath, Cottage 819, the Lounge, and the Registration Building. Rehabilitation would be accomplished in keeping with the *Secretary's Standards* (USDOI 1983); thus, there would be a negligible impact on historic structures.

Construction of 54 new lodging units (4-plex bungalows), a cafeteria, and two new parking areas (one at the west end to serve the bungalows, and one at the east end to serve the tent cabins) would add non-historic facilities within the historic district, resulting in a permanent, major, adverse impact. This impact would be partly reduced through the use of compatible design, retention of original Camp Curry cluster arrangement, and use of compatible materials, thus reducing the intensity of adverse impacts from major to moderate. Construction of employee

housing facilities, a fire station, and the campground check station and recreational vehicle dump station would introduce non-historic facilities adjacent to the historic district, potentially resulting in a moderate, adverse impact. This impact would be reduced through use of compatible design and appropriate screening, thus reducing the intensity of the impact from moderate to minor.

The Ahwahnee: Impacts under this alternative would be the same as Alternative 2. With mitigation, the resultant adverse impact would be permanent and negligible.

Historic Sites

Impacts under this alternative would be the same as Alternative 2, although fewer new campsites would be added to Camp 4 (Sunnyside Campground). With mitigation, the resultant adverse impact would be permanent, minor, and adverse.

Historic Orchards

Lamon, Hutchings, and Curry Orchards would be removed. As in Alternative 1, this would result in loss of the historic resources; therefore, there would be no additional adverse impact. However, this action would result in immediate (rather than eventual) loss. The loss of these resources would be mitigated through initiation of a genetic conservation program and documentation of the orchards; thus, a historical record and representative plants would be preserved, although the orchards would cease to exist.

Out-of-Valley Resources

El Portal

The impact analysis presented below is based on general land-use planning actions for El Portal. The National Park Service would undertake site-specific design studies and environmental review to evaluate options for new housing and administrative facilities in El Portal. The National Park Service would initiate further consultation with the State Historic Preservation Officer, culturally associated American Indian tribes, and the public, as provided for in the Programmatic Agreement. A complete and detailed assessment of potential impacts to historic properties would be presented as part of that review.

As described for Alternative 2, the construction of single-family homes in Old El Portal would not impact any historic structures, nor would constructing housing and a day care center at Rancheria Flat (the three historic Barium Mine houses would be retained).

Similar to Alternative 2, the construction of single-family homes at Hillside West and studio apartments at Hillside East and West would not impact any historic structures. Structures built adjacent to El Portal Chapel (the old school) would be designed to be compatible with the historical setting. Constructing high-density housing and support facilities at Hennessey's Ranch would not impact any historic structures. Prior to design, the National Park Service would inventory and evaluate the importance of potential cultural landscape features at this location, remnants of Hennessey's farming operation. If any significant resources could not be avoided in site design, further environmental review and impact mitigation would be undertaken prior to construction.

Constructing employee and day-visitor parking in the Middle Road area, as well as administrative facilities for the National Park Service and concessioner at Railroad Flat, and a multi-use trail between Rancheria Flat and Village Center (through Hennessey's Ranch), would not impact any historic structures (as described for Alternative 2).

Similar to Alternative 2, the construction of apartments and other community and commercial facilities, at El Portal Village Center could impact historic resources (such as the El Portal Market, the Railroad residences, the old El Portal Store, and El Portal Hotel). The precise nature of impacts on historic resources is unknown, pending the siting and design of the facilities, which would be the subject of future, tiered, site-specific environmental compliance. Every effort would be made to avoid or otherwise mitigate adverse impacts, (e.g., through sensitive, compatible design, and the screening of modern development from historic structures and documentation), thus reducing the intensity of the adverse impacts.

As described for Alternative 2, the historic El Portal Hotel would be adaptively rehabilitated or removed. Adaptive rehabilitation would be undertaken in accordance with the *Secretary's Standards* (USDOI 1983). Because removal of the individually significant historic structure would be a permanent, major, adverse impact, the National Park Service would document the structure and salvage historic materials, in accordance with the Programmatic Agreement, to reduce the intensity of the adverse impact.

Foresta and McCauley Ranch

Impacts under this alternative would be the same as under Alternative 2. There would be no impact as a result of construction of single-family homes. Impacts resulting from other actions, such as road widening, are unknown. The National Park Service would conduct inventory and evaluation studies to identify any significant resources. The National Park Service would avoid adverse impacts to the extent possible, and any potential adverse impacts would be mitigated according to stipulations of the Programmatic Agreement.

Merced River Gorge

Impacts under this alternative would be the same as under Alternative 2. With mitigation, the resultant impacts would be permanent, moderate, and adverse.

Other Areas

As described for Alternative 2, constructing new visitor centers at park entrance stations would have an unknown impact on historic resources. Historic properties would be inventoried and evaluated for National Register eligibility, according to stipulations of the Programmatic Agreement. The National Park Service would avoid adverse impacts to the extent possible, and would mitigate any potential adverse impacts according to the stipulations of the Programmatic Agreement.

Cultural Landscape Resources Conclusion

Proposed undertakings would have varied impacts on historic sites, structures, and cultural landscape resources. Major to minor, adverse impacts would result from the removal or modification of historic buildings and structures, or from the introduction of modern facilities

and development either within historic districts or within sight. Designing new facilities to be compatible with historic structures, and carrying out standard mitigation measures (e.g., HABS/HAER documentation) under the Programmatic Agreement would reduce the intensity of adverse impacts.

Beneficial impacts would result from measures intended to restore native vegetation communities in patterns more in keeping with the cultural landscape and historic setting. The removal of non-contributing facilities and development from historic areas would also have beneficial impacts. The adaptive use of historic buildings would assist their long-term preservation, and would be carried out in accordance with the *Secretary's Standards* (USDOI 1983).

In Yosemite Valley, the new development at Taft Toe under this alternative would result in permanent, major, adverse impacts to many of the significant characteristics of the Valleywide cultural landscape. Historical patterns of land use, circulation, and spatial organization at the Valleywide scale would be dramatically altered. This alternative would also result in adverse impacts to individual features, such as the loss of Superintendent's House (Residence 1), as well as the loss of the Sugar Pine, Stoneman, Superintendent's, and Housekeeping Bridges due to ecological restoration of the Merced River corridor. Other historic structures would be removed, such as the Ahwahnee Row houses, NPS maintenance complex, and the concessioner stable. Beneficial impacts to the Valleywide cultural landscape would result from such actions as meadow restoration, the removal of non-contributing structures, and the ecological restoration of the riparian corridor along Yosemite Creek and the Merced River south of Yosemite Lodge. New development would be designed to be compatible with existing historic districts or settings to the greatest extent possible, and adverse impacts to individual features would be mitigated according to stipulations of the Programmatic Agreement. The impact to the overall character of the Valleywide cultural landscape with mitigation would be reduced from major to moderate.

For some project areas, the impacts on historic properties are unknown until further site-specific historic resource studies have been undertaken, and project designs have been more fully developed. In these instances, the park would carry out any necessary inventories; evaluations of National Register significance; consultation with the State Historic Preservation Officer, culturally associated American Indian tribes and the public; and treatment/mitigation as stipulated in the Programmatic Agreement prior to any construction disturbance.

Cumulative Impacts

Cumulative impacts on historic resources would be the same as under Alternative 2. In Yosemite Valley, implementation of this alternative would result in cumulative, minor, adverse impacts in conjunction with other past, present, and reasonably foreseeable future actions. In a regional context, cumulative, minor, adverse impacts would result from implementing this alternative in conjunction with other past, present, and reasonably foreseeable future actions.

MUSEUM COLLECTION (INCLUDING ARCHIVES AND RESEARCH LIBRARY)

Under this alternative, a new collections storage facility, with appropriate environmental and security control systems, would be constructed adjacent to the present Valley Visitor Center, and

one of the visitor center's two auditoriums would be rehabilitated to serve as a repository for the park's museum collection and archives. The research library would be moved to the new collections storage facility, which would have beneficial impacts on the collections and materials. Eliminating or reducing the need to transport materials from outlying facilities (which often raises the risk of handling or in-transit damage) would further enhance resource protection.

As described for Alternative 2, housing materials in a centralized facility near the park museums would permit more effective management by park staff, facilitating their ability to monitor and maintain the collections and exhibits. This action would also maintain the historic association between the collections and the Yosemite Museum, the first museum in the National Park System. It would also allow park staff to better assist researchers and other staff. Public and research access space would also be greatly improved, and would enhance the visitor experience. Implementing these measures would have overall long-term, moderate to major, beneficial impacts on the materials and public/staff use.

Museum Collection Conclusion

Housing the collection and archival materials in a central facility would have moderate to major, beneficial impacts on the materials, and would significantly improve the park's effectiveness in managing and protecting these resources. Access to the materials would be enhanced for researchers and others, with ample space to carry out research and other activities. The park would be able to comply with the National Park Service *Museum Handbook* (NPS 1990a) and *Director's Order 28 – Cultural Resource Management* (NPS 1998l), as well as the *Draft Director's Order - 24, Standards for National Park Service Museum Collections Management* (NPS 1999e). This alternative also minimizes risk to the collection while in transit by reducing the distance between curation facility and exhibit area.

Cumulative Impacts

Implementing this alternative would have cumulative, minor, beneficial impacts on the museum collection in conjunction with other past, present, and reasonably future undertakings. Housing the resources in a central, rehabilitated facility with adequate environmental and security control systems would assist their protection and long-term preservation. No adverse impacts to the resource would be expected. It is not reasonable to compare the Yosemite Museum Collection with that of other repositories or sites, because of the extent and unique nature of this collection. Facility upgrades and improved management of museum collection and archives within the park would incrementally add to the overall effectiveness of regional curation efforts.

SECTION 106 SUMMARY

As described for Alternative 2, under regulations of the Advisory Council on Historic Preservation (36 CFR 800.9) addressing the criteria of effect and adverse effect, undertakings proposed under this alternative have the potential to adversely affect significant historic properties. Ethnographic resources would be disturbed or destroyed by construction occurring in traditional plant-gathering areas, former village sites, and/or places holding special sacred and spiritual significance to American Indians. Historic sites, structures, districts, and cultural landscape features would also be adversely affected by undertakings entailing substantial facility

alteration or removal, or the introduction of modern non-contributing development within or in proximity to historic districts and sensitive landscape areas. To mitigate adverse effects, the park would carry out HABS/HAER documentation, the salvage of historic materials, cooperative agreement provisions for traditional plant gathering, or other suitable mitigation in accordance with the Programmatic Agreement.

Many archeological resources having varied potential to yield prehistoric and historic information would be affected by ground disturbing activities. To avoid adverse effects to archeological resources, the park would carry out data recovery to retrieve important information, in accordance with the Programmatic Agreement.

No adverse effects to the park's museum collection and archives would result from housing materials in a central facility with adequate environmental and security controls. The rehabilitation and adaptive use of historic buildings, the restoration of vegetation contributing to historic settings and the cultural landscape, and the removal of non-contributing structures and landscape elements would also have no adverse effect on historic properties. Rehabilitation would be carried out in accordance with the *Secretary's Standards* (USDOI 1983)

For project areas lacking sufficient cultural resource data or design information to adequately assess effects, the park would carry out inventories, evaluate identified resources for national register significance, and recommend avoidance or appropriate treatment/standard mitigation measures prior to construction disturbance.

Merced Wild and Scenic River

This assessment is based on the *Merced Wild and Scenic River Plan Comprehensive Management Plan/Final Environmental Impact Statement* (*Merced River Plan*) and its management elements. The applicable Merced Wild and Scenic River segments are 2 (Yosemite Valley), 3A and 3B (Impoundment and Gorge), 4 (El Portal), and 7 (Wawona). See Vol. IA, Chapter 3, Merced Wild and Scenic River, for further discussion on the management elements of the *Merced River Plan*.

Alternatives have been assessed within a river segment with regard to their: (1) impacts on the Outstandingly Remarkable Values (the values for which the river was designated by Congress; (2) compatibility with classifications; (3) compatibility with the Wild and Scenic Rivers Act Section 7 determination process; (4) consistency with the River Protection Overlay; and (5) consistency with management zoning. The *Merced River Plan*, which established the River Protection Overlay, management zoning, Wild and Scenic Rivers Act Section 7 determination process, and the Visitor Experience and Resource Protection framework (within the wild and scenic river boundaries), is discussed as a cumulative project.

Consistency of the *Yosemite Valley Plan* alternatives with the wild and scenic river boundaries are analyzed through the analysis of *Yosemite Valley Plan* consistency with the *Merced River Plan* management zoning.

Outstandingly Remarkable Values Impacts

Outstandingly Remarkable Values for this segment are scenic, geologic processes/conditions, recreation, biological, cultural, and hydrologic processes. A description of Outstandingly Remarkable Values are found in Vol. II, Appendix B. Potential impacts of this alternative to these Outstandingly Remarkable Values are shown in table 4-71 below.

Actions to implement the River Protection Overlay would have beneficial impacts to the scenic, recreation, biological, cultural, and hydrologic processes Outstandingly Remarkable Values. The River Protection Overlay prescription would be an important parameter in implementing the actions listed in table 4-71.

The campground-related actions would have an overall beneficial effect on the scenic Outstandingly Remarkable Value due to restoration of areas visible from the river. These actions would not adversely impact the recreation Outstandingly Remarkable Value because camping opportunities would be retained. The campground-related actions would have an overall beneficial impact on the biological and hydrologic processes Outstandingly Remarkable Values because of restoration of riparian areas and campsites would be removed from highly valued resources and close proximity to the river.

The Housekeeping Camp-related actions would have a long-term, beneficial effect on the scenic Outstandingly Remarkable Value due to restoration of areas visible from the river. Removal of Housekeeping Camp units could have an adverse effect on cultural Outstandingly Remarkable Values due to potential disturbance of river-related archeological resources. The actions at Housekeeping Camp would have a beneficial impact on the biological and hydrologic processes Outstandingly Remarkable Values because of restoration of riparian areas and because Housekeeping Camp lodging units would be removed from highly valued resources and from close proximity to the river. These actions would not have an adverse impact on the recreational Outstandingly Remarkable Value because some Housekeeping units would be retained.

Actions at Yosemite Lodge would have beneficial and adverse impacts on the Outstandingly Remarkable Values. The removal of Yosemite Lodge units, and restoration of the former cabins area and the area between Yosemite Lodge and the Merced River would have a beneficial impact on the biological and hydrologic processes Outstandingly Remarkable Values. The relocation of Northside Drive and construction of parking would have a minor, adverse impact on the hydrologic processes Outstandingly Remarkable Value because they would be placed in the 100-year floodplain, and would interfere with the 100-year flood event, but also an indirect, beneficial impact because lodging units (which impede flood flow more so than roads and parking lots) can be constructed outside of the boundary. As described in the Water Resources section of this chapter, impacts on hydrologic processes would be minimal because flood flow in this area is low velocity, and is not appreciably affected by parking areas or roads. The construction of lodging units would result in minor, adverse radiating impacts on the meadow and riparian communities inside the boundary.

Table 4-71 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Mitigation**	**Impact Magnitude and Type**
Actions to Implement River Protection Overlay					
• Remove Sugar Pine, Housekeeping, Superintendent's, Stoneman Bridges, and Yosemite Creek (pedestrian) bridges • Remove campsites, and campground infrastructure from River Protection Overlay at Upper Pines, Lower Pines, North Pines, Upper River, Lower River, and Backpacker's campgrounds • Remove Housekeeping Units from River Protection Overlay • Remove parking from River Protection Overlay at Camp 6 • Remove former Superintendent's House (Residence 1) from River Protection Overlay • Remove picnic area at Swinging Bridge • Restore areas where development is removed from the River Protection Overlay • Restore River Protection Overlay near Yosemite Lodge	Scenic	Potentially improves view of waterfalls, cliffs, and forest/meadow interface from the river by encouraging restoration	Long-term	NA	Minor, beneficial
	Biological	Condition of river-related habitats (e.g., riparian areas and meadows) would be monitored and visitor use managed; restoration of damaged habitat is encouraged	Long-term	NA	Moderate, beneficial
	Cultural	River Protection Overlay specifically accommodates preservation and protection of significant archeological sites, ethnographic resources, historic structures, and landscape features	Long-term	NA	Minor, beneficial
	Hydrologic Processes	Contributes to restoration of natural flood regime, limits unnatural erosion, stabilizes banks (where applicable); allows for the main channel to link with backwater areas, tributaries, and groundwater systems; and allows river to meander more freely (where applicable) by limiting and potentially removing facilities	Long-term	NA	Major, beneficial
Campgrounds					
• Upper and Lower River, North Pines, Yellow Pines and a portion of Lower Pines Campgrounds would be removed and restored • Former Group Campground (currently abandoned) and Backpackers Campground restored	Scenic	Removal of facilities (i.e., construction equipment) would be visible from river	Short-term	None	Minor, adverse
	Scenic	Some new walk-in and drive-in sites would be visible from the river	Long-term	None	Minor, adverse
	Scenic	Restoration of these areas to natural conditions enhances scenic interface of river, meadow, and forest	Long-term	NA	Moderate, beneficial

Table 4-71 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Mitigation**	**Impact Magnitude and Type**
• New walk-in sites at Upper Pines, Camp 4 (Sunnyside Campground), Tenaya Creek, and Backpackers/ South Camp	Biological	Restoration of riparian, meadow, wetland, and river-related vegetation where campgrounds are removed; visitor use of river originating from campgrounds would decrease, resulting in less trampling of riparian habitat	Long-term	NA	Moderate, beneficial
• New drive-in sites at Upper Pines	Biological	Removal of facilities (restrooms, lateral sewer lines, etc.) would result in disturbance to vegetation communities	Short-term	Revegetation, trenching guidelines	Negligible, adverse
	Biological	River-related vegetation at new campsites would be degraded; impacts associated with visitor use/travel would radiate from the new campsites	Long-term	Fence sensitive areas, campsite definition, path definition	Minor, adverse
	Cultural	Construction of new campground facilities could result in damage to river-related archeological resources	Long-term	Archeological excavation	Minor, adverse
	Cultural	Removal of Upper and Lower River Campgrounds and restoration to natural conditions would result in improved conditions for traditional gathering	Long-term	NA	Minor, beneficial
	Cultural	Construction of new campground facilities could damage traditional use areas	Long-term	Consultation	Minor, adverse
	Hydrologic Processes	Removal and restoration of campgrounds would allow the river to meander more freely; removal of facilities would contribute to restoration of the flood regime	Long-term	NA	Major, beneficial
	Hydrologic Processes	Concentration of visitors at the new campsites would have radiating impacts on the riverbanks due to trampling, resulting in bank destabilization and unnatural erosion	Long-term	Fence sensitive areas, campsite definition, path definition	Minor, adverse
	Hydrologic Processes	Some new walk-in sites and pathways at Upper Pines would be in floodplain	Long-term	Pathways and campsites designed to minimally affect flood flow	Minor, adverse

Table 4-71 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Mitigation**	**Impact Magnitude and Type**
Lodging					
• Remove 212 Housekeeping Camp units and restore area	Scenic	Construction and deconstruction at Yosemite Lodge, Curry Village, and Housekeeping Camp would be visible from the river	Short-term	None	Minor, adverse
• Redevelop Yosemite Lodge area	Scenic	Restored area at Housekeeping Camp and near Yosemite Lodge would be visible from the river, providing enhanced views of interface of river, meadow, and forest	Long-term	NA	Minor, beneficial
• Remove Maple, Juniper, Laurel, Hemlock, and Alder units at Yosemite Lodge from the 100-year floodplain	Recreation	The diversity of recreational opportunities is maintained because of retention of lodging opportunities	Long-term	None	Minor, beneficial
• Area where Yosemite Lodge cabins were removed is restored to natural conditions	Biological	Removal of Housekeeping Camp from the River Protection Overlay would allow restoration of riparian vegetation, visitor use of river originating from Housekeeping Camp would decrease, resulting in less trampling of riparian habitat	Long-term	NA	Moderate, beneficial
• Redevelop Curry Village area, including new lodging, housing, and parking areas	Biological	Retention of Housekeeping Camp units would result in continued radiating impacts to sensitive riparian areas and habitat fragmentation	Long-term	Fence sensitive areas; direct use to more resilient areas	Adverse impacts described in No Action Alternative continue
	Biological	There would be restoration of river-related vegetation at Yosemite Lodge	Long-term	NA	Moderate, beneficial
	Biological	Construction of lodging units would have radiating impacts (associated with visitor use) to the meadow and riparian communities nearby	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse
	Cultural	Construction and demolition activities at Housekeeping Camp, Yosemite Lodge, and Curry Village could result in damage to archeological resources	Long-term	Archeological excavation	Minor, adverse
	Hydrologic Processes	Removal of Yosemite Lodge units from the floodplain would contribute to the restoration of the natural flood regime	Long-term	NA	Major, beneficial
	Hydrologic Processes	Construction of lodging units would have radiating impacts (associated with visitor use) to the riverbanks nearby, including bank destabilization and unnatural erosion	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse

Table 4-71 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Mitigation**	**Impact Magnitude and Type**
	Hydrologic Processes	Small portion of Housekeeping Camp would continue to impede flood flow	Long-term	None	Adverse impacts described in No Action Alternative continue
Roads					
• Remove roads and restore at: - Stoneman Meadow - South Ahwahnee Meadow	Scenic	Removal of roads from Ahwahnee and Stoneman Meadows improve scenic views of the meadows	Long-term	NA	Major, beneficial
	Scenic	Conversion of segment of Northside Drive to multi-use trail improves scenic views from the river due to removal of automobile traffic	Long-term	NA	Minor, beneficial
• Close Northside Drive to motor vehicles from Yosemite Lodge to El Capitan crossover and convert to multi-use trail	Scenic	Retained roads, and the vehicles on them, are visible from riverbank and river; meadows are specifically identified in the scenic Outstandingly Remarkable Value, and roads through meadows impact their scenic quality	Long-term	None	Adverse impacts described in No Action Alternative continue
• Northside Drive rerouted south of Yosemite Lodge, closed to vehicles and converted to multi-use trail west of Yosemite Lodge	Biological	Construction associated with road relocation and conversion to multi-use trails would result in disturbance to river-related vegetation communities	Short-term	Revegetation	Minor, adverse
• Retain roads at: - Southside Drive in the Bridalveil Fall area - Sentinel Meadow - Cook's Meadow - El Capitan Meadow	Biological	Restoration of riparian, meadow, wetland, and river-related vegetation will occur at Stoneman and south Ahwahnee Meadows. Visitor use of river originating from roads and turnouts would decrease, resulting in less loss of vegetative cover	Long-term	NA	Major, beneficial
	Biological	Where roads remain, loss of riparian vegetation and river-related habitats would continue; roads interfere with water movement	Long-term	None	Adverse impacts described in No Action Alternative continue
	Cultural	Removal of roads from meadows restores open character of meadows, an important feature of the cultural landscape	Long-term	NA	Moderate, beneficial
	Cultural	Road relocation and multi-use trail conversion could disrupt archeological resources	Long-term	Archeological excavation	Minor, adverse
	Hydrologic Processes	Removal of impediments to flood flow from Stoneman and south Ahwahnee Meadows would contribute to the restoration of the natural flood regime	Long-term	NA	Major, beneficial

Table 4-71 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Mitigation**	**Impact Magnitude and Type**
	Hydrologic Processes	Existing roads and infrastructure in meadows affect flood flow	Long-term	None	Adverse impacts described in No Action Alternative continue
	Hydrologic Processes	Rerouted Northside Drive at Yosemite Lodge would be in 100-year floodplain and would slightly impede flood flows (see Water Resources section of this chapter for more information)	Long-term	None	Minor, adverse
El Portal Road between Cascades Diversion Dam and Pohono Bridge Reconstructed					
[Note: see Segment 3A/3B for Outstandingly Remarkable Value impacts associated with removal of Cascades Diversion Dam]	Scenic	The road is visible from riverbank and river	Long-term	None	Adverse impacts described in No Action Alternative continue
	Scenic	Construction activities would be visible from the river	Short-term	None	Major, adverse
	Recreation	Improvement of the El Portal Road would decrease the possibility of its failure, and the loss of recreational opportunity that would result from road failure	Long-term	NA	Moderate, beneficial
	Recreation	During construction, approximately 1 mile of the river would be closed to recreational use	Short-term	None	Minor, adverse
	Biological	Retention of this road would continue loss of river-related vegetation	Long-term	None	Adverse actions described in No Action Alternative continue
	Biological	Construction activities would result in a temporary loss of vegetation at staging areas	Short-term	Revegetation of staging areas	Minor, adverse
	Biological	Bank stabilization of road could result in permanent loss of river-related vegetation	Long-term	Sustainable design that allows riparian vegetation to become largely re-established	Minor, adverse
	Cultural	Reconstruction would result in loss of historic features associated with the El Portal Road, and would potentially result in damage to archeological resources	Long-term	Documentation of features and archeological excavation; pursue designs that maintain road's historic character	Minor, adverse

Table 4-71 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Mitigation**	**Impact Magnitude and Type**
	Hydrologic Processes	Bank stabilization materials that support portions of this road segment are currently in the river channel, and interfere with the free-flowing condition of the river; these materials would remain in the river channel after the road is reconstructed	Long-term	Pursue designs that minimize impacts to the free-flowing condition of the river	Major, adverse
	Hydrologic Processes	Construction activities would result in temporary impediments to river and/or flood flow	Short-term	Construction occurs during low flow; banks are stabilized	Minor, adverse
Bridges					
• Remove the following bridges: - Housekeeping - Sugar Pine - Stoneman - Superintendent's - pedestrian/ bicycle bridge north of and parallel to the current Yosemite Creek Bridge	Biological	Where bridges are retained, loss of riparian vegetation and river-related habitats would continue	Long-term	None	Adverse impacts described in No Action Alternative continue
	Biological	At Sugar Pine, Stoneman, Superintendent's and Housekeeping Bridges, river-related environments and habitats would be restored	Long-term	NA	Major, beneficial
	Biological	At the pedestrian/bicycle bridge north of and parallel to the current Yosemite Creek Bridge, river-related environments and habitats would be restored	Long-term	NA	Minor, beneficial
• Retain the following bridges: - Ahwahnee - El Capitan - Sentinel - Clark's - Happy Isles (vehicle) - Swinging - Tenaya Creek - Pohono - Happy Isles (footbridge)	Biological	Displacement of riparian vegetation would occur during construction, but riparian vegetation would be restored	Short-term	NA	Negligible, beneficial
	Cultural	Removal of Sugar Pine, Stoneman, Superintendent's, and Housekeeping Bridges would result in loss of important historic structures and change in historic circulation patterns	Long-term	Structures would be documented	Moderate, adverse
	Cultural	Removal of Sugar Pine Bridge may result in damage to archeological resources	Long-term	Archeological documentation	Minor, adverse
• Construct new vehicle bridge at: - Yosemite Creek (south of existing vehicle bridge)	Hydrologic Processes	At Ahwahnee and Swinging Bridges, the river is prevented from meandering; scouring and unnatural channeling continues; flood flow is impeded	Long-term	None	Adverse impacts described in No Action Alternative continue
• Convert Yosemite Creek vehicle bridge to a multi-use path bridge	Hydrologic Processes	At Sentinel, Clark's, Happy Isles, El Capitan, Yosemite Creek (vehicle) and Tenaya Creek Bridges, the river is prevented from meandering; scouring and unnatural channeling continues; flood flow is impeded	Long-term	None	Adverse impacts described in No Action Alternative continue

Table 4-71 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Mitigation**	**Impact Magnitude and Type**
[Note: See Water Resources section of this chapter for additional information on bridges and the different impact of each bridge].	Hydrologic Processes	At Pohono Bridge, the river is prevented from meandering; scouring and unnatural channeling continues; flood flow is impeded	Long-term	None	Adverse impacts described in No Action Alternative continue
	Hydrologic Processes	Removal of Housekeeping, Sugar Pine, Stoneman, and Superintendent's Bridges, and conversion of Yosemite Creek vehicle bridge to a multi-use trail bridge contributes to the restoration of the natural flood regime; reduces scouring; and allows the river to more freely meander	Long-term	NA	Major, beneficial
	Hydrologic Processes	A new bridge across Yosemite Creek could impact the creek bank and could impede flood flow	Long-term	Design would minimize hydrologic impacts	Minor, adverse
	Hydrologic Processes	During bridge removal or construction, river flows would be affected	Short-term	None	Minor, adverse
Lamon Orchard					
• Fruit trees removed • Area restored	Scenic	Removal of facilities (i.e., construction equipment) would be visible from river	Short-term	None	Minor, adverse
	Biological	Area restored to natural conditions, with restoration of river-related vegetation	Long-term	NA	Major, beneficial
	Cultural	The Lamon Orchard historic site would be lost	Long-term	Orchard would be documented	Moderate, adverse
	Hydrologic Processes	Restoration of drainage patterns would contribute to restoration of natural flood regime	Long-term	NA	Moderate, beneficial
Stock Use and Facilities					
• Concessioner stable removed	Recreation	Diversity of river-related recreational opportunities is diminished by discontinuation of private stock use	Long-term	None	Moderate, adverse
• Private stock use discontinued in Yosemite Valley • Guided trail rides eliminated	Biological	Stock use spreads non-native invasive plant species and contributes to water quality degradation, which impacts riparian vegetation and river-related environments – these impacts would be nearly eliminated (administrative use of stock would continue)	Long-term	NA	Moderate, beneficial
	Cultural	Removal of facilities (stable) would result in a loss of historic structures	Long-term	Structures would be documented	Minor, adverse
	Hydrologic Processes	Stable facilities would be removed, contributing to the restoration of the natural flood regime	Long-term	NA	Moderate, beneficial

Table 4-71 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Mitigation**	**Impact Magnitude and Type**
Historic Superintendent's House (Residence 1) Removed and Area Restored					
	Biological	Removal of buildings and restoration of site would benefit adjacent river-related vegetation	Long-term	NA	Minor, beneficial
	Cultural	Removal would result in the loss of an important river-related historic structure	Long-term	Structures would be documented	Moderate, adverse
	Hydrologic Processes	Removal of buildings would contribute to restoration of flood regime	Long-term	NA	Major, beneficial
Camp 6 No Longer Used for Parking, Area Restored					
	Scenic	Parking at Camp 6 would no longer be visible from river	Long-term	NA	Moderate, beneficial
	Biological	Riparian and river-related vegetation communities would be restored	Long-term	NA	Major, beneficial
	Hydrologic Processes	Parking facility is removed from floodplain; removal would contribute to restoration of natural flood regime	Long-term	NA	Major, beneficial
Yosemite Village					
• Redevelop substantial portion of Yosemite Village	Scenic	Construction activities at Yosemite Village would be visible from the river	Short-term	None	Minor, adverse
	Biological	As a center of visitor activity, there would be radiating impacts to river-related habitats from visitor use	Long-term	Fence sensitive areas; direct use to more resilient areas	Adverse impacts described in No Action Alternative continue
	Cultural	Redevelopment of Yosemite Village could disturb river-related archeological resources	Long-term	Archeological excavation	Minor, adverse
	Hydrologic Processes	In the portion of Yosemite Village closest to Camp 6, structures in the floodplain would be removed (e.g., Concessioner Headquarters Building)	Long-term	None	Minor, beneficial
	Hydrologic Processes	Fewer visitors in the Yosemite Village area would reduce radiating impacts on the riverbanks due to trampling	Long-term	NA	Negligible, beneficial
Picnic Areas (East Yosemite Valley)					
• Retain Sentinel Picnic Area • Remove Swinging Bridge Picnic Area	Scenic	Sentinel Picnic Area is visible from the river	Long-term	None	Adverse impacts described in No Action continue

Table 4-71 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Mitigation**	**Impact Magnitude and Type**
	Biological	Degradation of riparian vegetation and river-related habitats would continue at Sentinel Picnic Area	Long-term	None	Adverse impacts described in No Action continue
	Biological	Removal and restoration of Swinging Bridge Picnic Area would benefit river-related environments and habitats	Long-term	NA	Moderate, beneficial
	Hydrologic Processes	Removal and restoration of Swinging Bridge Picnic Area would stabilize the riverbank and restore hydrologic processes by allowing restoration of riparian vegetation	Long-term	NA	Moderate, beneficial
Parking (East Yosemite Valley)					
• Retain administrative parking at Sentinel Bridge	Scenic	Sentinel Bridge parking area is visible from the riverbank	Long-term	None	Adverse impacts described in No Action Alternative continue
• Parking for Lodge guests constructed in previously disturbed area in floodplain	Biological	Parking at Sentinel Bridge would continue to affect riparian area and fragment habitat	Long-term	None	Adverse impacts described in No Action Alternative continue
	Cultural	Some new parking at Yosemite Lodge would disturb traditional gathering areas	Long-term	Consultation	Minor, adverse
	Hydrologic Processes	Parking at Sentinel Bridge is in floodplain and would imperceptibly alter flood flow	Long-term	None	Adverse impacts described in No Action Alternative continue
	Hydrologic Processes	New parking at Yosemite Lodge would be in 100-year floodplain and would alter flood flow (see Water Resources section of this chapter for more information)	Long-term	None	Minor, adverse
Trails					
• Construct/realign trails: - along Southside Drive between Swinging Bridge and El Capitan crossover	Biological	Loss of vegetative cover and habitat fragmentation associated with new/realigned trails	Long-term	None	Minor, adverse
- along Merced River between Ahwahnee Bridge and bicycle path to Mirror Lake	Biological	Construction of new bicycle path could result in loss of river-related vegetation; increase in habitat fragmentation would be slight, given the proximity of Southside Drive	Long-term	None	Minor, adverse

Table 4-71 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Mitigation**	**Impact Magnitude and Type**
- from The Ahwahnee to bicycle path to Mirror Lake - between Ahwahnee Bridge and Upper Pines Campground - in Upper and Lower River Campgrounds area	Cultural	Grading for multi-use trail would disturb archeological deposits	Long-term	Archeological excavation	Minor, adverse
	Hydrologic Processes	Segments of the new multi-use paved trail would be within the floodplain near Sentinel Creek, although impact to flood flow would be imperceptible	Long-term	None	Negligible, adverse
West Yosemite Valley Parking					
• Construct parking facility and support facilities (e.g., visitor center) for day visitors at Taft Toe (1,622 spaces)	Biological	Construction of parking facility would permanently displace river-related vegetation	Long-term	Facility design	Moderate, adverse
	Biological	Concentration of visitors in the Taft Toe area would have radiating impacts on river-related vegetation due to trampling	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse
	Cultural	Construction of parking facility would damage or destroy archeological deposits and historic American Indian village, and gathering area	Long-term	Archeological excavation	Moderate, adverse
	Hydrologic processes	Concentration of visitors in the Taft Toe area would have radiating impacts on the riverbanks due to trampling, resulting in bank destabilization and unnatural erosion	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse

Table 4-71 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Mitigation**	**Impact Magnitude and Type**
West Yosemite Valley Development (West of Yellow Pine)					
(see also River Protection Overlay Trails, Traveler Information and Traffic Management System, and El Portal Road) • Parking at Bridalveil Fall, Southside Drive in the Bridalveil Fall area, Northside Drive through El Capitan Meadow, and other smaller areas discontinued • Cathedral and El Capitan Picnic Areas redeveloped; new picnic area constructed at base of El Capitan in the vicinity of the North American Wall	Biological	Redevelopment of Cathedral Picnic Area could disturb riparian vegetation	Long-term	Revegetate	Minor, adverse
	Biological	Loss or degradation of river-related vegetative cover increases at some designated trails, social trails, roads (i.e., radiating impacts)	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse
	Cultural	Constructing picnic area at North American Wall could disturb river-related archeological deposits and historic American Indian village	Long-term	Archeological excavation	Minor, adverse
Traveler Information and Traffic Management System Developed					
• Multi-lane traffic check station constructed on Southside Drive near El Capitan crossover	Biological	Construction of traffic check station would result in loss of river-related vegetation	Long-term	None	Minor, adverse
	Cultural	Construction of traffic check station would damage archeological deposits and gathering areas	Long-term	Archeological excavation	Moderate, adverse

NA = Not Applicable

At Curry Village, cultural Outstandingly Remarkable Values could be adversely affected due to potential disturbance of river-related archeological resources during Curry Village redevelopment. There would be no impact on the hydrologic processes Outstandingly Remarkable Value, because Curry Village is located outside of the floodplain. In the wild and scenic river corridor, there would be minor, adverse radiating impacts to river-related vegetation due to trampling.

The road-related actions would have an overall beneficial effect on scenic Outstandingly Remarkable Values due to the removal of roads from South Ahwahnee and Stoneman Meadows and improvements to scenic views from the river due to the conversion of a segment of Northside Drive to a multi-use trail. The road-related actions (the rerouting of Northside Drive in the Yosemite Lodge area is covered above) would have an overall beneficial impact on the biological and hydrologic processes Outstandingly Remarkable Values because some roads would be removed from highly valued resources, and their removal would contribute to the restoration of the natural flood regime. These actions also beneficially impact the cultural Outstandingly Remarkable Value because they contribute to the restoration of the cultural landscape.

Reconstruction of the El Portal Road between Pohono Bridge and Cascades Diversion Dam, and removal of Cascades Diversion Dam would have both beneficial and adverse impacts on the Outstandingly Remarkable Values (see discussion of dam removal in Segment 3A/3B. The existing road has localized, adverse impacts on the biological Outstandingly Remarkable Value because it displaces river-related vegetation, and to the hydrologic processes Outstandingly Remarkable Value because riprap that supports the road is partially in the river channel. However, since this road segment provides a critical visitor access link, its reconstruction would also be beneficial to the recreation Outstandingly Remarkable Value by maintaining access to Yosemite Valley. [Note: These two actions span river Segments 2, 3A, and 3B.]

Removal of bridges would have both beneficial and adverse impacts on the Outstandingly Remarkable Values. These actions would have beneficial impacts on the biological Outstandingly Remarkable Value because the riverbank can be restored, and substantial beneficial impacts to the hydrologic processes Outstandingly Remarkable Value because the free-flowing condition of the river would be improved, and the river would have increased ability to meander. These actions would have adverse impacts on the cultural Outstandingly Remarkable Value because they result in the loss of important historic structures, and change historic circulation patterns.

Removal of parking at Camp 6 would have beneficial impacts on the scenic Outstandingly Remarkable Value by eliminating a facility visible from the river; a beneficial impact on the hydrologic processes Outstandingly Remarkable Value by eliminating a facility from an area that floods relatively frequently (more frequently than the 100-year flood event); and a beneficial impact to the biological Outstandingly Remarkable Value by permitting restoration of river-related (riparian and wetland) vegetation communities.

Redevelopment of visitor services and National Park Service operations in the Yosemite Village area, largely outside of the Merced Wild and Scenic River boundary but in close proximity, would have both beneficial and adverse impacts on the Outstandingly Remarkable Values. Radiating impacts from the concentration of visitors in the area would have a minor, adverse

impact on the biological and hydrologic processes Outstandingly Remarkable Values through trampling of river-related habitats.

A major development would be introduced in west Yosemite Valley with the construction of a parking facility and visitor center at Taft Toe. As a result of the construction of the parking facility, adverse effects on the hydrologic processes and biological Outstandingly Remarkable Values would increase along this segment, largely due to the displacement and degradation of riparian vegetation and radiating impacts associated with visitor use.

Yosemite Valley (Segment 2) Conclusion

For the actions of this alternative, a long-term, moderate, beneficial impact is described for the Outstandingly Remarkable Values, largely due to the removal of facilities that impede flood flow and inhibit the natural meandering of the river; the restoration of substantial areas of highly valued resources in the River Protection Overlay and wild and scenic river corridor; the improvement of the scenic interface of river, rock, meadow, and forest; and the maintenance of the diversity of river-related recreational opportunities. The beneficial impact of this alternative is somewhat offset by the adverse impact on the cultural Outstandingly Remarkable Value resulting from the removal of historic structures, as well as the adverse impacts on biological, cultural, and hydrologic processes Outstandingly Remarkable Values associated with the development of the parking facility at Taft Toe.

Segment-wide, this alternative would be a long-term, moderate, beneficial impact on the scenic Outstandingly Remarkable Value because of the removal of many facilities visible from the river or riverbank, and improvement of the scenic interface of river, rock, meadow, and forest via restoration, campground removal, and road removal/relocation. However, for facilities that are to remain or be redeveloped, some adverse scenic impacts would continue, although at a lesser degree than under the No Action Alternative.

Segment-wide, there are no impacts to the geologic processes/conditions Outstandingly Remarkable Value, because of the absence of actions affecting the U-shaped valley, and moraines of Yosemite Valley. Impacts related to the meandering river are discussed in the Water Resources section of this chapter.

Segment-wide, there would be a long-term, minor, adverse impact on the recreation Outstandingly Remarkable Value because the diversity of recreational opportunities is diminished by the discontinuation of private stock use.

Segment-wide, there would be a long-term, moderate, beneficial impact on the biological Outstandingly Remarkable Value because of the reduction of facilities in general, and the restoration of riparian areas and meadows in particular. Although construction of several new facilities (parking facility, roads, bicycle paths, and picnic areas) would pose some adverse, localized impacts on the biological Outstandingly Remarkable Value, these impacts are outweighed by the substantial restoration actions that would take place throughout this segment.

Segment-wide, there would be a long-term, minor to moderate, adverse impact on the cultural Outstandingly Remarkable Value because of the removal of river-related historic structures and potential disturbance of river-related archeological resources. The historic structures that are

being removed, particularly bridges, adversely affect the hydrologic processes Outstandingly Remarkable Value, and their removal would have major, long-term, beneficial impacts on the hydrologic processes Outstandingly Remarkable Value, and contribute substantially to the restoration of the free-flowing condition of the river.

Segment-wide, there would be a long-term, moderate, beneficial impact on the hydrologic processes Outstandingly Remarkable Value, because of the removal of structures that impede flood flow or inhibit the natural meandering of the river and the restoration of riparian areas in the Wild and Scenic River corridor. Removal of structures would contribute substantially to the restoration of the free-flowing condition of the river and would further the policy established by Congress in the Wild and Scenic Rivers Act to preserve designated rivers in their free-flowing condition. New facilities within the floodplain would have minimal, adverse impacts on the flood regime.

The National Park Service would exert its best efforts to design and reconstruct the El Portal Road between Cascades Diversion Dam and Pohono Bridge with few, if any, additional impacts on the free-flowing condition of the river. If it proves infeasible to design and construct the road in a manner that would avoid direct and adverse impacts to the values for which the river was designated, the National Park Service would report to Congress in accordance with Section 7 of the Wild and Scenic Rivers Act. In either case, further site-specific environmental compliance, including compliance with Section 7 of the Wild and Scenic Rivers Act, would be undertaken for this project.

Cumulative Impacts

Impacts to the Outstandingly Remarkable Values would occur as a result of other past and reasonably foreseeable future actions (see Vol. II, Appendix H for the list of cumulative projects considered in this analysis).

Past Actions

The Merced Wild and Scenic River Comprehensive Management Plan (NPS) established the River Protection Overlay, management zoning, and the Visitor Experience and Resource Protection framework inside the wild and scenic river boundaries. The River Protection Overlay is implemented through this plan, and its beneficial impacts to the Outstandingly Remarkable Values have been assessed as part of the impacts of this alternative. This project also establishes management zoning, which does not directly impact the Outstandingly Remarkable Values. The Visitor Experience and Resource Protection process was designed to protect resources and the visitor experience, and would have a beneficial impact by focusing on protection of Outstandingly Remarkable Values. The Visitor Experience and Resource Protection framework would have a long-term, moderate, beneficial effect on Outstandingly Remarkable Values in this segment.

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

Fork and Merced Wild and Scenic River Implementation Plan does not affect the Outstandingly Remarkable Values of this segment.

Reasonably Foreseeable Future Actions

The National Park Service proposes to reconstruct the trail from Happy Isles to Vernal Falls (NPS). This project would have a beneficial impact on the recreation Outstandingly Remarkable Value due to the provision of an improved trail between Happy Isles and Vernal Falls, which contributes to a spectrum of river-related recreational activities. The net effect of this project would be a long-term, minor, beneficial impact on Outstandingly Remarkable Values.

The Eagle Creek Ecological Restoration project (NPS) would restore the confluence of Eagle Creek with the Merced River and remove riprap at the confluence and along the creek. This project would have a long-term, moderate, beneficial impact on the hydrologic processes and biological Outstandingly Remarkable Values.

The past and reasonably foreseeable future projects would have a long-term, moderate, beneficial effect on Outstandingly Remarkable Values due to the establishment of the *Merced River Plan* Visitor Experience and Resource Protection framework, improved river-related recreation opportunities from Happy Isles to Vernal Falls, and restored riparian habitat and hydrologic processes at the Eagle Creek and Merced River confluence.

For the actions of this alternative, a long-term, moderate, beneficial impact is described for the Outstandingly Remarkable Values, largely due to the removal of facilities that impede flood flow and inhibit the natural meandering of the river; the restoration of substantial areas of high-value resources in the River Protection Overlay and wild and scenic river corridor; the improvement of the scenic interface of river, rock, meadow, and forest; and the maintenance of the diversity of river-related recreational opportunities. The beneficial impact of this alternative is somewhat offset by the adverse impact to the cultural Outstandingly Remarkable Value resulting from the removal of historic structures, as well as the adverse impacts to biological, cultural, and hydrologic processes Outstandingly Remarkable Values associated with the development of the parking facility at Taft Toe. The cumulative projects would have a long-term, moderate, beneficial effect on Outstandingly Remarkable Values due to the establishment of the *Merced River Plan* Visitor Experience and Resource Protection framework, improved river-related recreational opportunities from Happy Isles to Vernal Falls, and restored riparian habitat and hydrologic processes at the Eagle Creek and Merced River confluence. When the impacts of all of the past and reasonably foreseeable future actions described above are considered in combination with the anticipated impacts to the Outstandingly Remarkable Values from this alternative, long-term, moderate, beneficial effects on the Outstandingly Remarkable Values of this segment would likely result.

Consistency with the Merced River Plan

Similar to Alternative 2, the actions of this alternative in this segment of the Merced Wild and Scenic River would comply with the *Merced River Plan* and are consistent with its management elements. The collective actions are consistent with the classification of this segment because accessibility by road or trail would be essentially unchanged and the amount of development in

the watershed and on the shorelines would not substantially change, although development on the shorelines would be reduced through removal of facilities in the River Protection Overlay. The individual actions that are considered to be water resources projects, such as removal of bridges, would be subject to the Section 7 determination process. The River Protection Overlay would be implemented and individual actions would be compatible with the River Protection Overlay prescription, with many facilities being removed from the River Protection Overlay. The individual actions would be consistent with the respective management zones established in the *Merced River Plan.* Some actions, such as the removal of infrastructure from the former Rivers Campgrounds, remove facilities or uses that do not conform with the corresponding management zone prescription.

IMPOUNDMENT (SEGMENT 3A) AND GORGE (SEGMENT 3B)

Outstandingly Remarkable Values Impacts

Outstandingly Remarkable Values identified for the recreational impoundment segment of the river are geologic processes/conditions, and biological. Outstandingly Remarkable Values identified for the scenic gorge segment of the river are scenic, geologic processes/conditions, recreation, biological, cultural, and hydrologic processes.

The impacts of this alternative to the Outstandingly Remarkable Values for this segment would be the same as under Alternative 2 (see Alternative 2, table 4-40, for details).

Impoundment (Segment 3A) and Gorge (Segment 3B) Conclusion

The impacts of this alternative to the Outstandingly Remarkable Values for this segment would be the same as under Alternative 2. This alternative would have a long-term, moderate to major, beneficial impact on Outstandingly Remarkable Values, largely because the removal of Cascades Diversion Dam and implementation of the River Protection Overlay would substantially improve the free-flowing condition of the river; enhance riparian habitat and rainbow trout movement; and improve views of waterfalls and cliffs. This beneficial impact is somewhat offset by adverse impacts to cultural Outstandingly Remarkable Values associated with the increased risk of damage to historic engineering projects resulting from Cascades Diversion Dam removal, and the removal of Cascades Houses (refer to Alternative 2 for more details).

Cumulative Impacts

Cumulative impacts under this alternative would be the same as under Alternative 2. For the actions of this alternative, a long-term, moderate to major, beneficial impact is described for these Outstandingly Remarkable Values, largely because the removal of Cascades Diversion Dam and implementation of the River Protection Overlay would substantially improve the free-flowing condition of the river; enhance riparian habitat and rainbow trout movement; and improve views of waterfalls and cliffs. The cumulative projects would have a long-term, minor, adverse impact, largely through introduction of stabilization materials and loss of riparian vegetation. When the impacts of all past and present actions described above are considered in combination with the anticipated impacts on the Outstandingly Remarkable Values from this alternative, long-term,

moderate, beneficial effects on the Outstandingly Remarkable Values of these segments would likely result (see Alternative 2 for more detail).

Consistency with the Merced River Plan

The consistency analysis for this alternative would be the same as under Alternative 2. Similar to Alternative 2, the actions of this alternative in this segment of the Merced Wild and Scenic River comply with the *Merced River Plan* and is consistent with its management elements. The collective actions are consistent with the classification of this segment because accessibility by road or trail is essentially unchanged, and the amount of development in the watershed and on the shoreline does not substantially change. The removal of the Cascades Diversion Dam is consistent with the recreational classification of the impoundment segment, and would allow this small segment of river to be classified as scenic. The individual actions that are considered to be water resources projects, such as removal of the Cascades Diversion Dam, would be subject to the Section 7 determination process. The River Protection Overlay is being implemented and individual actions are compatible with the River Protection Overlay prescription, including the removal of the Cascades Diversion Dam. The individual actions are consistent with the respective management zones established in the *Merced River Plan*.

EL PORTAL (SEGMENT 4)

Outstandingly Remarkable Values identified for this recreational segment of the river are geologic processes/conditions, recreation, biological, cultural, and hydrologic processes. A description of the Outstandingly Remarkable Values are found in Appendix B.

Outstandingly Remarkable Values Impacts

The impacts of this alternative to the Outstandingly Remarkable Values for this segment would be the same as under Alternative 2, with one exception. No parking would be constructed for day visitors in El Portal; therefore, no loss of riparian vegetation and river-related habitats in the vicinity of Middle Road and Village Center would occur.

El Portal (Segment 4) Conclusion

The impacts of this alternative to the Outstandingly Remarkable Values for this segment would be the same as under Alternative 2, with one exception. No parking would be constructed for day visitors in El Portal; therefore, no loss of riparian vegetation and river-related habitats in the vicinity of Middle Road and Village Center would occur.

For the actions of this alternative, a long-term, minor, beneficial impact is described for the Outstandingly Remarkable Values of this segment, largely because implementation of the River Protection Overlay would limit development on the riverbank, and contribute to the restoration of sensitive riparian vegetation communities (e.g., at Hennessey's Ranch). In addition, the recreation Outstandingly Remarkable Value would be beneficially affected by improved hiking opportunities along the river. The beneficial impact on Outstandingly Remarkable Values for this segment has been offset by the adverse impacts on the cultural Outstandingly Remarkable Value due to possible loss of historic structures and possible disturbance of archeological sites (standard

cultural resource mitigation measures lessen the magnitude of the cultural resources impacts) (see Alternative 2 for more details).

Cumulative Impacts

Cumulative impacts under this alternative would be the same as under Alternative 2. For the actions of this alternative, a long-term, minor, beneficial impact is described for the Outstandingly Remarkable Values of this segment, largely because implementation of the River Protection Overlay would limit development on the riverbank, and contribute to the restoration of sensitive riparian vegetation communities (e.g., at Hennessey's Ranch). In addition, the recreation Outstandingly Remarkable Value would be beneficially affected by improved hiking opportunities along the river. The past and reasonably foreseeable future projects would have a long-term, minor, adverse effect on Outstandingly Remarkable Values due to the adverse impacts to biological and cultural Outstandingly Remarkable Values resulting from the Yosemite View Parcel Land Exchange, largely due to motel construction in close proximity to the river. The adverse impacts resulting from the loss of riparian vegetation associated with the Yosemite View Parcel Land Exchange would outweigh the potential beneficial impact of this alternative resulting from the enhancement/restoration of existing (albeit degraded) riparian habitat in the River Protection Overlay. Consequently, when the impacts of all of the past and reasonably foreseeable future actions described above are considered in combination with the anticipated impacts to the Outstandingly Remarkable Values from this alternative, long-term, negligible, adverse effects to the Outstandingly Remarkable Values of this segment would likely result (see Alternative 2 for more details).

Consistency With The Merced River Plan

The consistency analysis for this alternative would be the same as under Alternative 2. Similar to Alternative 2, the actions of this alternative in this segment of the Merced Wild and Scenic River comply with the *Merced River Plan* and are consistent with its management elements. The collective actions are consistent with the classification of this segment because accessibility by road or trail is essentially unchanged, and the amount of development in the watershed and on the shoreline does not substantially change. The individual actions that are considered to be water resources projects, such as construction of pedestrian bridges, would be subject to the Section 7 determination process. The River Protection Overlay is being implemented, and individual actions are compatible with the River Protection Overlay prescription, including the removal of Cascades Diversion Dam. The individual actions are consistent with the respective management zones established in the *Merced River Plan*. Some actions, such as the restoration of the sand pit, remove existing facilities that do not conform with the corresponding management zone prescription.

WAWONA (SEGMENT 7)

Outstandingly Remarkable Values identified for this scenic segment of the river are scenic, recreation, biological, and cultural.

Potential impacts of Alternative 3 are shown in table 4-72.

Table 4-72 Impacts to Outstandingly Remarkable Values (Segment 7 [Wawona])					
Action	**Outstandingly Remarkable Value Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Intensity**
Adoption of the River Protection Overlay					
	Scenic	Continuation of trends to restore riparian areas would improve the scenic views of Wawona Dome from the river	Long-term	NA	Impacts described in No Action Alternative continue
	Biological	Trends to restore riparian vegetation and river-related habitat would continue	Long-term	NA	Impacts described in No Action Alternative continue

Similar to the No Action Alternative, Alternative 3 adopts the River Protection Overlay, but does not prescribe any actions to implement the River Protection Overlay in Segment 7. However, the continuation of existing trends to restore riparian areas and the preclusion of future development incompatible with the River Protection Overlay would have long-term, minor, beneficial effects on the scenic and biological Outstandingly Remarkable Values for this segment.

Wawona (Segment 7) Conclusion

For the actions of this alternative, long-term, minor, beneficial impacts are described for the Outstandingly Remarkable Values of this segment due to the continuation of trends to restore riparian areas, pursuant to the River Protection Overlay, and the beneficial effects to the biological and scenic Outstandingly Remarkable Values that would result.

Segment-wide, the continuation of trends to restore riparian areas, pursuant to the River Protection Overlay, would improve views of Wawona Dome from the river, and beneficially affect the scenic Outstandingly Remarkable Value.

Segment-wide, there is no impact to the recreation Outstandingly Remarkable Value, because current-day recreational activities would continue without any changes (i.e., maintenance of the diversity of recreational opportunities).

Segment-wide, the continuation of trends to restore riparian areas, pursuant to the River Protection Overlay, would beneficially affect the biological Outstandingly Remarkable Value.

Segment-wide, there is no impact to the cultural Outstandingly Remarkable Value, because river-related archeological sites would not be disturbed, and river-related historic properties would remain.

Cumulative Impacts

Impacts to the Outstandingly Remarkable Values would occur as a result of other past and reasonably foreseeable future actions (see Vol. II, Appendix H for the list of cumulative projects considered in this analysis).

Past Actions

The Merced Wild and Scenic River Comprehensive Management Plan (NPS) established the River Protection Overlay , management zoning, and the Visitor Experience and Resource Protection framework inside the wild and scenic river boundaries. The River Protection Overlay is implemented through this plan, and its beneficial impacts to the Outstandingly Remarkable Values have been assessed as part of the impacts of this alternative. This project also establishes management zoning, which does not directly impact the Outstandingly Remarkable Values. The Visitor Experience and Resource Protection process was designed to protect resources and the visitor experience, and would have a beneficial impact by focusing on protection of Outstandingly Remarkable Values. The Visitor Experience and Resource Protection framework would have a long-term, minor, beneficial effect on Outstandingly Remarkable Values in this segment.

In 1991, the U.S. Forest Service and the Bureau of Land Management developed a joint South Fork and Merced Wild and Scenic River Implementation Plan (USFS and BLM) for the segments of the main stem and South Fork of the Merced River that are under their jurisdiction. The plan is a general management plan with many prescriptive goals and few actions. The South Fork and Merced Wild and Scenic River Implementation Plan does not affect the Outstandingly Remarkable Values of this segment.

Reasonably Foreseeable Future Actions

The South Fork Merced River Bridge Replacement (NPS) would replace the existing two bridges crossing the South Fork on Wawona Road with one single-span bridge. This would have a long-term, minor, beneficial impact on the biological Outstandingly Remarkable Value due to the reduction of development on the riverbank and the restoration of riparian habitat.

The Wawona Campground Rehabilitation (NPS) would have a beneficial effect on the recreation Outstandingly Remarkable Value due to maintaining the diversity of river-related recreational activities, and enhancing the camping experience by providing increased privacy and shade at the campground. The Wawona Campground Rehabilitation would have a beneficial effect on the biological Outstandingly Remarkable Value, because it would relocate campsites outside the River Protection Overlay and would initiate a vegetation management plan that would include shoreline protection. This beneficial effect to the biological Outstandingly Remarkable Value would be somewhat offset by radiating impacts to riparian vegetation due to trampling of river-related habitats resulting from the density of camping in this area (this adverse effect would be negligible since camping is an existing use at this location). The campground rehabilitation could have an adverse effect on the cultural Outstandingly Remarkable Value, should the rehabilitation of the campground disturb archeological resources. Overall, the Wawona Campground Rehabilitation would have a long-term, negligible, beneficial effect on Outstandingly Remarkable Values.

The past and reasonably foreseeable future projects would have a long-term, minor, beneficial impact on the Outstandingly Remarkable Values of this segment due to the implementation of the *Merced River Plan* Visitor Experience and Resource Protection framework; the reduction of development on the riverbank and restoration of habitat associated with the South Fork Merced River Bridge Replacement (NPS); and the relocation of campsites outside the River Protection

Overlay and maintenance of a diversity of river-related recreational activities associated with the Wawona Campground Rehabilitation. The beneficial effects to the Outstandingly Remarkable Values have been somewhat offset by adverse effects associated with moderately impaired views of Wawona Dome from the river at the Wawona Campground, and the potential disturbance of archeological resources during campground rehabilitation.

For the actions of this alternative, long-term, minor, beneficial impacts are described for the Outstandingly Remarkable Values of this segment due to the continuation of trends to restore riparian areas, pursuant to the River Protection Overlay, and the beneficial effects on the biological and scenic Outstandingly Remarkable Values that would result. The past and reasonably foreseeable future projects would have a long-term, minor, beneficial impact on the Outstandingly Remarkable Values of this segment due to the implementation of the *Merced River Plan* Visitor Experience and Resource Protection framework; the reduction of development on the riverbank and restoration of habitat associated with the South Fork Merced River Bridge Replacement (NPS); and the relocation of campsites outside the River Protection Overlay and maintenance of a diversity of river-related recreational activities associated with the Wawona Campground Rehabilitation. When the impacts of all of the past and reasonably foreseeable future actions described above are considered in combination with the expected impacts on the Outstandingly Remarkable Values from this alternative, a long-term, minor, beneficial impact on the Outstandingly Remarkable Values would result.

Consistency with the Merced River Plan

Similar to Alternative 2, the actions of this alternative in this segment of the Merced Wild and Scenic River would comply with the *Merced River Plan* and be consistent with its management elements. The collective actions would be consistent with the classification of this segment because accessibility by road or trail would be essentially unchanged and the amount of development in the watershed and on the shorelines would not substantially change. The individual actions that are considered to be water resources projects would be subject to the Section 7 determination process. The River Protection Overlay would be implemented and individual actions would be compatible with the River Protection Overlay prescription. The individual actions would be consistent with the respective management zones established in the *Merced River Plan*.

Visitor Experience

Visitor experience is also directly affected by actions influencing natural resources such as, air quality, scenic resources, and cultural resources. Though impacts to these resources are not repeated in the analysis of visitor experience, enhancement or degradation of these resources also enhances or degrades the quality of the visitor experience.

ACCESS

Access to Yosemite Valley

Access to Yosemite Valley directly by private automobile to parking at Taft Toe would be available only to 86% of day visitors on a typically busy day (using 1998 visitation levels), which

would be the same as under Alternative 1. Overnight visitors would continue to have the option of driving into the Valley or traveling on existing tour buses or other modes of travel.

Alternative 3 would provide transportation facilities and services designed to accommodate Valley visitation levels on the majority of days in the summer. Assuming that future visitation is unchanged from 1998, day-visitor demand would be expected to exceed the capacity of the parking areas on 7 days during the peak season. On these days, some visitors would not be able to find parking in the Valley. These visitors would have the option of visiting another part of the park; traveling on regional transit or other alternative transportation modes to visit the Valley; or visiting the Valley at another time or on another day. Minor, adverse impacts to the experience of this small number of day visitors would result from a reduction in the ability to make stops en route to the Valley, reduced spontaneity, extra travel time, and the inconvenience of moving personal items to and from bus stops. Adequate infrastructure would be in place to accommodate visitor parking in the Valley; this infrastructure would include in-Valley shuttles, regional transit, and commercial tour buses, as described under Alternative 2.

Access to the Valley by private vehicles would be managed through a traveler information and traffic management system. Impacts associated with a traveler information and traffic management system would be similar to those described under Alternative 2. Overall, the average visitor would experience negligible, beneficial effects on the time required to travel to Yosemite Valley.

Reconstructing the segment of El Portal Road between Pohono Bridge and the intersection with Big Oak Flat Road (the major access to the Valley) would cause short-term, minor, adverse impacts such as traffic delays for many visitors during construction. Short-term, adverse impacts associated with constructing Valley access routes and implementing the traveler information and traffic management system would include detours, having to learn new routes, and having to learn new procedures as they were phased in. Compared to Alternative 1, these impacts would be of negligible intensity.

Circulation within Yosemite Valley

Access by private vehicle to most Valley destinations would be eliminated, as described in Alternative 2. Once vehicles were parked in a day-visitor lot or lodging area, visitors would be encouraged to leave them parked until they left the Valley. Parking would not be provided except at camping and lodging sites, and under this alternative, at the Taft Toe day-visitor parking facility. Turnouts along Valley roads would be available for short stops only. Currently, only small parking areas are provided at visitor destinations away from Yosemite Village. A large number of visitors must ride shuttle buses, walk, or ride a bicycle to reach these destinations today. Therefore, loss of private vehicle access to these destinations is considered a moderate, adverse impact, since a large number of visitors currently use alternative forms of transportation to reach Valley destinations. Compared to Alternative 1, the location of a 1,622-space day-visitor parking area and visitor center at Taft Toe would provide a major, beneficial impact for orientation and trip planning for all day visitors. However, most day visitors would still need to board shuttle buses to reach desired destinations in the east Valley. The requirement for most day visitors to ride shuttle buses would result in a moderate, adverse impact.

Changes to circulation within the Valley would be largely the same as described under Alternative 2. Access to the mid- and west Valley would be increased for visitors arriving by transit because shuttle bus service would be extended, resulting in a major, beneficial impact compared to Alternative 1. Impacts of shuttle service improvements would be the same as described for Alternative 2.

Traffic Congestion, Parking, and Crowding

Traffic would be reduced throughout the Valley below present levels at all times of the year (unless seasonal displacement appreciably increased traffic during present slow seasons). Alternative 3 would reduce the volume of private vehicle traffic associated with travel into and out of the Valley. On average peak-season days, the volume of daily vehicle miles traveled in the Valley would be reduced by 49%. Similar to Alternative 2, this reduction in traffic would have a moderate, beneficial impact on all visitors because there would be greater opportunities for quiet and contemplative recreational experiences. The overall traffic reduction would also have a moderate, beneficial impact on all visitors, because traffic flow would be improved and congestion reduced throughout the Valley, including mid-Valley, where much of Northside Drive would be closed and Southside Drive would be converted to a two-way operation.

This alternative would provide the greatest number of parking spaces (1,622) for day visitors within the Valley. Most day visitors could travel to the Taft Toe parking area and park there until it was full. After the parking area filled, visitors would use other means, such as tour buses, regional transit, hiking, or bicycling to reach the Valley. The traveler information and traffic management system would inform visitors of the parking status prior to their arrival. Overnight visitors would continue to have the option to drive to the Valley. As described for Alternative 2, frequent shuttle service would provide access to Valley attractions.

As described for Alternative 2, the appearance of crowding in the Valley would be reduced by eliminating roadside parking. A moderate reduction in traffic volumes, improved traffic flow, and fewer visual impacts from parked vehicles would have a major beneficial impact on the perceived level of crowding and congestion during peak visitation times for all visitors.

As described for Alternative 2, traffic congestion could increase west of the El Capitan crossover due to possible removal of some turnouts, illegal long-term parking at the remaining turnouts, and the potential for increased pass-through traffic by visitors who could not gain access to the east Valley but still wanted to view Valley features. All of these would have a moderate, adverse impact on perceptions of congestion.

Some existing automobile traffic within the Valley would be replaced with buses, and would cause effects similar to Alternative 2. Notably, the movement of visitors in buses could cause some visitors to feel crowded. Most visitors would travel in larger groups because of the emphasis on bus travel. The overall impact of bus traffic and grouping passengers in buses is expected to have a moderate, adverse impact on the visitor experience, as compared to Alternative 1.

Visitor crowding would be managed as part of implementation of the Visitor Experience and Resource Protection program discussed in Actions Common to All Action Alternatives (See Vol. IA, Chapter 2).

Implementation of management zoning and the Visitor Experience and Resource Protection program would protect the diversity of recreational experiences along the length of the Valley (e.g., managing crowding, maintaining opportunities for solitude and more social experiences, challenge and easier access). While some activities or uses may be redirected from one area to another, the diversity of opportunities would remain available and crowding would be managed within each zone to better meet visitor desires, overall, a major and beneficial impact for the majority of Valley visitors.

Reliability of Yosemite Valley Transportation System

As described for Alternative 2, the implementation of a traveler information and traffic management system under this alternative would alert visitors to whether or not day-visitor parking was available at Taft Toe in the Valley. This would relieve visitor anxiety and time wasted searching for available parking within the Valley as compared to Alternative 1. Because this alternative would provide the greatest number of day-visitor parking spaces and frequent shuttle service between the primary parking area and Valley attractions, the overall impact to the reliability of the Valley transportation system would be major and beneficial.

Access for Visitors with Disabilities

Access and the resulting impacts for visitors with disabilities would be the same as described under Alternative 2. Notably, as fully accessible shuttle buses were placed in operation, visitors with disabilities would use the shuttles rather than private vehicles. Some visitors with disabilities would experience a moderate beneficial impact from the improved accessibility of shuttle services. However, without their private vehicles, other visitors with disabilities would have greater difficulty in moving about the Valley, creating a moderate, adverse impact. Visitors with mobility impairments would not have easy access to locations not directly served by the shuttle bus system. The prescribed universal programmatic accessibility study plan and its implementation would ultimately result in a major, beneficial impact. New accessible trails at popular destination areas would provide access to areas that are not now easily accessible, resulting in moderate, beneficial impacts.

ORIENTATION AND INTERPRETATION

Sense of Arrival

As described for Alternative 2, visitor centers and orientation facilities near each principal park entrance would provide visitors an improved sense of arrival at the park. For day visitors parking at Taft Toe, the sense of arrival in the Valley would be indicated by combining parking and access to a visitor center, with increased convenience for orientation and trip planning. Impacts of the proposed arrival sequence under Alternative 3 would affect most visitors, and would be beneficial and minor in intensity, as compared to those of Alternative 1.

Wayfinding

Improvements to signs and circulation would improve wayfinding for visitors, as described under Alternative 2. Notably, improved and consistent signing at shuttle bus stops would help orient

many visitors. Day visitors would not need to navigate the Valley's existing confusing network of roads, and overnight visitors would be directed to their accommodations by improved signs and printed orientation materials. Moderate, beneficial impacts would result for most Yosemite Valley visitors.

Visitor Centers

As described for Alternative 2, visitors would have opportunities to find out about park programs, the availability of services and facilities, directions, permits, reservations, trip-planning services, interpretive themes and a stewardship ethic, and regulations at park entrances as they arrive. Under this alternative, the new Taft Toe Visitor/Transit Center would assist visitors in Valley orientation and trip planning, and in the interpretation of Valley themes before they entered the east Valley. Compared to Alternative 1, these impacts would be of major benefit to the majority of park visitors who would like to take advantage of exhibits, museums, trip planning, and other interpretive programs.

Overnight visitors would find orientation exhibits at their lodging or campground. Impacts would be beneficial and moderate in intensity (the same as under Alternative 2).

Exhibits and Programs

Improvements to exhibits, programs, the Nature Center at Happy Isles, and trailside exhibits would be mostly as described under Alternative 2. Museum collections, now split in many locations, would be reorganized and made more accessible to the public. A natural history museum would be developed in the existing NPS Administration Building, and the cultural history museum in the existing Museum Building would be expanded. These and other improvements described in Alternative 2 would have a moderate, beneficial impact on the large group of museum-goers and a major, beneficial impact on the small group of researchers.

RECREATIONAL OPPORTUNITIES

Auto Touring

Impacts on auto touring would be the same as described for Alternative 2, except that Taft Toe would be the easternmost limit for auto touring for all day visitors in the Valley. Notably, visitors would no longer be able to park at most features and facilities for extended periods while exploring. These actions would result in moderate adverse impacts to a large number of visitors, and major, adverse impacts would occur to the majority of visitors unable to drive their car into the east Valley.

Reduced traffic east of Taft Toe could contribute to a sense of more relaxed touring; this would be offset by an increase in the number of buses, resulting in a negligible, beneficial impact. Signs would need to be placed at turnouts throughout the Valley identifying appropriate use (e.g., shuttle bus, Valley Floor Tour, short-term parking); introducing these urban-type elements into the touring experience would have an adverse impact that is negligible in intensity, but would affect most visitors.

Bus Touring

Impacts of sightseeing by shuttle bus, as well as impacts to Valley Floor Tours offered by the concessioner, would be the same as described for Alternative 2, except that commercial bus tour passengers would need to transfer to other touring modes east of Taft Toe, resulting in a major, adverse effect compared to those of Alternative 1. Notably, Valley Floor Tours offered by the concessioner would lose the use of two segments of Northside Drive including mid-Valley, and thus access to certain views; however, turnouts would be planned where possible to provide views similar to key Northside Drive views, resulting in a negligible, adverse impact to these users.

Walking and Hiking

More Valley trails away from roads would be available, particularly through the former Upper and Lower River Campgrounds and between Yosemite Lodge and El Capitan crossover on the north side of the river; the experience of trail users would be improved as a result of reduced noise, odors, and glare from passing vehicles. Trails not adjacent to roads, increased usage, conflicts with other users, and trail use dispersal would be the same as described under Alternative 2. However, the elimination of private stock use in Yosemite Valley under this alternative would result in a beneficial, moderate impact for the large user-group of hikers and walkers. An impact of this alternative that would be neither adverse nor beneficial would be the potential displacement of day hikers out of the Valley or onto wilderness trails.

The following trail segments, among others, would be realigned, potentially affecting a large group of park visitors with negligible to minor adverse impacts:

- Rerouting the trail segment north of the river at Ahwahnee/Sugar Pine Bridges would result in a slightly different path, loss of traditional views, and the loss of historic elements due to bridge removal.
- Rerouting the multi-use trail across Ahwahnee Bridge, rather than Stoneman, would lengthen the route between Curry Village and Yosemite Village, with a loss of traditional views and loss of historic elements.
- Removing Housekeeping Bridge would lengthen access to other Valley destinations for Housekeeping Camp guests and would result in the loss of traditional views and the loss of historic elements.
- Removing Superintendent's Bridge would reduce walking trail options in the Yosemite Village area, would move pedestrians wanting a loop trail to the heavily used Sentinel Bridge, and would result in loss of traditional views and loss of historic elements.

Bicycling

Impacts on bicyclists associated with reduced private vehicle traffic but increased bus traffic, potential crowding along multi-use trails, new trails without direct influence of motor vehicles, other new trails, and increased accident risk due to greater trail use would generally be the same as described under Alternative 2. Notably, reduction of vehicle noise, smell, and presence would result in a major, beneficial impact to bicyclists along Northside Drive. Moderate benefits would

result from removal of motor vehicles from the area of the multi-use trail through the former Upper and Lower River Campgrounds.

Climbing

The reduction in opportunities for spontaneous access and other aspects of the climbing experience would be the same as described for Alternative 2. Additionally, day-use parking at Taft Toe would substantially increase intrusions from developed facilities and visitor use in this area. Although it would not likely reduce climbing activity on El Capitan, it would adversely affect the experience, a moderate impact on a moderately sized user group.

Stock Use

The prohibition of private stock access to Yosemite Valley trails under this alternative, in addition to eliminating concession trail rides (as described under Alternative 2), would be a major, adverse impact to the small group of private stock users, compared to that of Alternative 1.

Picnicking

The lack of private vehicle access to most picnic sites would result in overall impacts similar to those described under Alternative 2. Sites at Cathedral Beach near Taft Toe would be expanded, filling a demand for picnicking near the day-visitor parking area, and would mitigate the loss of other sites, reducing impacts to minor. The Swinging Bridge Picnic Area would be removed (the same as under Alternative 2), but picnic facilities at Church Bowl would be retained under Alternative 3. As described for Alternative 2, the North American Wall Picnic Area at the base of El Capitan would provide new opportunities for hikers and bicyclists in the west Valley. Together, these actions would have minor, adverse impacts to picnickers. Sentinel Beach Picnic Area would be accessible by shuttle bus, and thus more accessible to those without their private vehicles, resulting in a moderate, beneficial impact.

River Uses

Changes in raft and kayak access, and resulting impacts, would be the same as under Alternative 2. Notably, lack of private vehicle access to locations along the river would require the use of buses, which would result in moderate, adverse impacts to a moderately large group of visitors.

Swimming

Changes in swimming access and availability would be the same as under Alternative 2, except that the removal of Housekeeping Bridge would reduce access to the swimming area opposite Housekeeping Camp, resulting in an overall moderate but neutral impact.

Fishing

Changes to fishing quality and access to sites would be the same as under Alternative 2. Notably, protection of river banks would result in a moderate, beneficial impact for anglers. A moderate, adverse impact would result from decreased river access.

Winter Activities

Changes to winter activities (ice skating and skiing) would be the same as under Alternative 2. Increased winter visitation and greater use of the ice rink could result in a negligible, adverse impact, compared to that of Alternative 1. Relocation of the ice rink could result in a negligible, beneficial impact.

Photography

Impacts would be the same as described for Alternative 2, except less private vehicle use and an absence of roadside parking east of Taft Toe would result in greater opportunities for photographs without vehicles. This would result in an overall moderate, beneficial impact, compared to Alternative 1.

RECREATIONAL ENVIRONMENT

This section covers impacts of Alternative 3 on the overall recreational environment for visitors, including night sky, and wilderness experience. Impacts of vehicle-related noise, an important element of the recreational environment, are discussed in the Noise section of this chapter. In general, improvements to natural resources under this alternative would provide a more natural appearance to the Valley, resulting in a major, beneficial impact for visitors, relative to Alternative 1.

Night Sky

The addition of parking at Taft Toe would cause a demand for light in a currently unlit area. The potential for light pollution to affect the night environment is high, especially with the reflectivity of the night sky against the Valley walls. This action would have major, adverse impacts.

Changes in the number of lodging units would have impacts similar to those described for Alternative 2. Other changes in lighting, involving the rehabilitation of obsolete architectural lighting and the relocation of facilities, would also be the same as under Alternative 2. (No impacts would result from out-of-Valley parking which is not proposed in this alternative.)

Wilderness Access and Wilderness Experience

Access to wilderness areas would be facilitated under this alternative, as described for Alternative 2, except that wilderness trailheads close to Taft Toe in mid-Valley would see a potential increase in use while other trails might see less use.

As described for Alternative 2, wilderness use is above the Valley floor, and wilderness visitors have a very different perspective on development (or lack thereof) in the Valley. Screening that might be effective from the ground is rarely effective at a higher elevation. Concentrated developed areas could reduce the amount of screening from above with the thinning of hazard trees. Under this alternative, development in the Taft Toe area would be particularly visible to wilderness users on the Pohono and North Rim Trails, as well as to climbers in mid-Valley. Site plans have not yet been fully developed for the Taft Toe facility, but it is estimated that it would lead to minor, adverse impacts for wilderness users.

Sound impacts would be minor and adverse, similar to those described for Alternative 2. Clustering of activities within the Valley would have both beneficial and adverse impacts due to decreased and increased noise levels.

Improved access to trailheads would result in a moderate, beneficial impact and increased use of trails would result in a negligible, adverse impact.

VISITOR SERVICES

Camping

Campsite quantity would be slightly less than at present (449 sites compared to 475 under Alternative 1, about 5% less). Impacts would be minor and adverse. The reduction of 5% of the campsites could shift campers to other seasons, so campgrounds might have to be kept open for longer periods**,** possibly requiring some utility systems to be improved to allow for winter operations; additional staff would also be needed. Campers might also be displaced to lodging, to other park areas, and to U.S. Forest Service and other campgrounds outside the park, increasing the pressure for accommodations at those locations, a negligible and indirect, adverse impact on a large user group (25% of summer visitors stay in Valley lodging) (Gramann 1992).

Improvements in campground conditions due to the greater separation of user types, the redesign of campsites, and riverbank restoration would be largely the same as those described for Alternative 2. The effects of centralized campground check-in and camper services would be the same as for Alternative 2. Notably, campers would receive moderate, beneficial impacts as a result of segregating camping areas by user type. Moderate, neutral impacts would result from relocating camping areas away from the river; and negligible and neutral impacts would result from relocating the amphitheater.

Lodging

This alternative would offer fewer opportunities for overnight lodging in the Valley. This alternative would provide 982 lodging units, compared to 1,260 units under Alternative 1 (a 22% reduction); this would be a moderate, adverse impact on a large visitor group (25% of summer visitors stay in Valley lodging).

Substantial increases in economy units with private baths would address the high demand for this type of room. Replacing rustic units with economy units would also provide more comfortable and numerous off-season accommodations. Both actions would result in moderate, beneficial impacts for this large visitor group, compared to Alternative 1.

In Yosemite Valley the ratio of accessible rooms would be greatly improved, giving visitors with disabilities greater access to the kinds of facilities they need, a moderate and beneficial impact on this small to moderately sized user group. New development would include lodging units, parking, and walkways that would incorporate universal design features to improve and provide accessibility to facilities.

Expanding the number of units at Yosemite Lodge (from 245 to 387, or a 58% increase) would place lodging closer to Camp 4 (Sunnyside Campground) and increase the developed character

of the Lodge area. This would be a minor, adverse impact to Camp 4 (Sunnyside Campground) campers and Lodge guests, combined, a moderately large group of visitors.

A substantial reduction in the number of units at Housekeeping Camp (from 264 to 52, or 80%) would lead to a much more natural environment, with less overall density. This would have a moderate, beneficial impact to the moderately large group of visitors who choose to use this type of accommodation.

Relocating tent cabins at Curry Village would lead to a more natural environment, with greater privacy and less density. This action would have moderate, beneficial impacts for visitors staying in the remaining cabins, a moderately large group of visitors.

Visitor use and experience impacts in the vicinity of Yosemite Lodge and Camp 4 (Sunnyside Campground) would be similar to those in Alternative 2.

Food and Retail Services

The impacts of changes in food and retail services would be substantially the same as those described under Alternative 2. (However, under this alternative, the impacts related to changes in the Yosemite Village grocery store would be substantially reduced compared to Alternative 2.) Notably, developing an employee cafeteria at Curry Village would result in a minor, beneficial impact. A negligible, adverse impact would result from discontinued food service in the Happy Isles area. Increases in food facilities and seating at Yosemite Village would result in a moderate beneficial impact.

CONCLUSION

Alternative 3 would reduce the spontaneity of travel within Yosemite Valley by requiring most visitors to travel by shuttle bus to reach attractions in the Valley. Visitors would experience a minor increase in the time required to travel to the Valley. With a traveler information and traffic management system, visitors would be informed of the status of parking areas at entrance stations and possibly at other sites en route to the park. The parking spaces provided in the Valley would not be sufficient to serve day-visitor demand on seven days in the summer. Visitors who had overnight reservations (and visitors parking at the Taft Toe day-visitor parking area) would be assured of entry and would be directed to designated parking in the Valley; they would not need to search for parking in scattered locations. However, once the Taft Toe lot was full, day visitors could only access the Valley by means such as tour buses, regional transit, hiking, or bicycling. With a fully developed Taft Toe parking and transit facility at mid-Valley, all visitors would arrive close to principal features and services. Visitors would be able to walk to many destinations in the Valley from Taft Toe. Shuttle services in the Valley would be expanded, and there would be a high degree of reliability in the transportation system.

On most days, visitors would find a more tranquil environment, with transit services distributing visitors to more destinations than under Alternative 1, resulting in more opportunities for visitors without cars. Automobile-based experiences in the Valley would be substantially reduced. Visitors on foot or bicycle would find more areas free of motor vehicle traffic, and visitor use of these areas could increase. All commercial and private stock use would be eliminated under this alternative. Opportunities for orientation would be closer to where many visitors seek them, at park entrances

and the day-visitor parking lot, and greater opportunities for participation in interpretive programs in the Valley would be available. Recreation, including touring, would be oriented more toward a shuttle bus system, which would be extended to the west Valley, as well as pedestrian and bicycling activities. Opportunities for staying overnight in Yosemite Valley would decrease modestly for camping (to 449 sites) and decrease substantially for lodging (to 982 units).

Visitors to Yosemite Valley are varied in their expectations and the individual experiences they seek. Also, the quality of the visitor experience is also dependent on the quality of natural resources, cultural resources, air quality, scenic resources, and other elements of the recreational environment (considered separately in this analysis). Therefore, no determination of a net impact on the visitor experience is attempted here.

CUMULATIVE IMPACTS

Access, Orientation and Interpretation, Recreation, and Recreational Environment

The cumulative impacts described under Alternative 2 for access, orientation and interpretation, recreational opportunities, and recreational environment would be generally the same under Alternative 3.

Visitor Services

As described for Alternative 2, the January 1997 flood and subsequent cleanup actions resulted in the loss of 265 lodging units and 284 campsites within Yosemite Valley, displacing visitors to campgrounds or lodging elsewhere in the park or in neighboring communities. This alternative would intensify this impact by further reducing lodging units by 278 and campsites by 26. Proposed new accommodations in the vicinity of the park and campsites outside Yosemite Valley, as described for Alternative 2, could partially alleviate the impact of the reductions. As in Alternative 2, the reductions in lodging in Alternative 3 would continue to adversely affect the many visitors who wanted to stay in Yosemite Valley. However, the benefit of increases in out-of-park lodging would reduce adverse impacts, in that many visitors would seek and obtain substitute accommodations, but impacts would remain adverse and moderate.

While additional campsites could be provided at Yosemite Creek and Tamarack Campgrounds and in the region, as described for Alternative 2, the use of regional campsites by Yosemite day visitors would not likely be great, so the impact of this alternative on campground users would likely remain adverse and minor.

Transportation

Alternative 3 would provide a 1,622-space vehicle parking area in the Taft Toe area; no out-of-Valley parking would be provided. Similar to Alternative 2, this alternative would include a traveler information and traffic management system that would manage access to Yosemite Valley. Overnight visitors would continue to have the option to drive their vehicles into the Valley. Day visitors would travel to the Taft Toe parking area until it was full. When the parking area was full, access to the Valley would only be provided by travel modes such as tour buses, regional transit, hiking, or bicycling. Few visitors who parked at the Taft Toe lot would walk to

destinations in the east Valley. The in-Valley shuttle bus system would be extended, and most visitors would ride shuttle buses to Valley destinations.

Conditions on State Highways Outside Yosemite National Park

The impacts of this alternative on conditions on state highways outside the park would be the same as those described under Alternative 2.

Visitor Access to the Valley

The impacts of reconstruction on the segment of El Portal Road between Pohono Bridge and the intersection with Big Oak Flat Road (the major access to the Valley) would have the same impacts as those described under Alternative 2.

Travel Time

The average time that visitors would spend traveling from entrance stations to the Valley Visitor Center in the peak season under Alternative 3 would be approximately 50 minutes. This constitutes an increase in Valley access travel time of 8 minutes compared to Alternative 1. The resulting long-term impact to travel time would be minor and adverse to peak-season visitors. Table 4-73 presents average travel time to the Valley Visitor Center by corridor; these travel times are weighted by access mode and include waiting at the transit terminal and at shuttle bus stops.

Table 4-73
Average Travel Time From Entrance Stations to Valley Visitor Center

Corridor	Average Weighted Travel Time (min)
North (Highway 120)	49
West (Highway 140)	40
South (Highway 41)	62
Overall Average	**50**
Difference from Alternative 1	**+ 8**

Modes of Access

Under Alternative 3 approximately 12% of all Valley visitors (14% of day-visitors and lodge guests) on typically busy days would access the Valley by transit or alternative modes. There would be a negligible impact on the mode of access for Valley visitors in the long term.

Visitor Circulation within the Valley

Traffic Volume and Vehicle Miles Traveled

This alternative would maintain existing roadways and traffic patterns in the Valley as far east as El Capitan crossover, where day visitors would park. Overnight visitors would continue traveling east on Southside Drive to their accommodations. People not visiting the Valley would use El Capitan crossover to reach Northside Drive to exit the Valley. The parking area at Taft Toe would accommodate 1,622 vehicles. Because the parking area would be near El Capitan Bridge, the distance traveled by private vehicles within the Valley would be reduced compared to Alternative 1. As with the other action alternatives, additional shuttle bus service would

encourage travel by alternative modes. Overnight guests would be discouraged from driving private vehicles when in the Valley. Designated parking, improved signage, and private vehicle management would minimize private vehicle circulation in the Valley. The traveler information and traffic management system would be implemented to assure that vehicles in the east Valley do not exceed the parking supply or road capacity. As a result, visitors would not need to circulate in search of parking spaces.

Alternative 3 would cause a substantial reduction of traffic volumes on roads east of El Capitan crossover. There would be a moderate long-term beneficial impact associated with reduced vehicular travel under this alternative. Daily vehicle miles traveled on typically busy days would be reduced by 49% in the Valley compared to Alternative 1 (see table 4-74). The number of buses entering the east Valley at Yosemite Chapel would increase by 253 per day.

Table 4-74
Daily Vehicle Trips in Summer and Total Vehicle Miles Traveled in the Valley on Typically Busy Days

	Inbound Trips Passing Yosemite Chapel	Vehicle Miles Traveled
Private Vehicle	1,985	31,578
Bus	330	3,362
Total	**2,315**	**34,940**
Percentage Change from Alternative 1		**-49%**

Modes of Travel

Under Alternative 3 visitors would be allowed to circulate through the Valley in private vehicles of Taft Toe. However, similar to Alternative 2, the share of trips within the Valley by transit would be expected to increase substantially compared to Alternative 1. With the exception of west Valley circulation, the only visitor trips made by private vehicles within the Valley would be either entering or departing trips by overnight visitors. The resulting impact to Valley visitors is expected to be major in the long term.

Bus Volumes on Roads

Under Alternative 3, bus service in the Valley would be increased compared to Alternative 1. The planned bus service would result in 3,362 daily bus vehicle miles traveled on major Valley road segments, a major increase (see table 4-75).

Table 4-75
Daily Bus Trips/Vehicle Miles Traveled in the Valley During the Peak Season

	Round Trips	Bus Miles Traveled
Out-of-Valley Shuttle	0	0
Valley Shuttle	384	3,207
Commercial Tours	62	155
Total	**446**	**3,362**

Level of Service

This alternative would maintain the existing Valley roadway system west of El Capitan crossover. Traffic on roads west of El Capitan crossover would be the same as or slightly lower than existing conditions as a result of the traveler information and traffic management system. East of El Capitan crossover, Southside Drive would provide two-way access to Sentinel Road and on to Curry Village. Even though the road would be two-way, the volume of traffic would be reduced because only overnight visitors and Valley shuttle buses would travel east of El Capitan crossover on Southside Drive. El Portal Road would be reconstructed between Big Oak Flat Road and the Pohono Bridge (Segment D) to improve safety and as a result, traffic flow would improve slightly (see table 4-76). Traffic flow at Valley intersections would be improved substantially, along with traffic flow on Northside Drive. The intersections of Sentinel Drive with Northside Drive and Southside Drive would improve to the level of service A during both inbound and outbound peak hours. The level of service on Northside Drive between Yosemite Lodge and Yosemite Village also would improve to level of service A in both peak hours.

Table 4-76
Level of Service Summary (Inbound / Outbound)

Intersections				
	Southside Drive / Sentinel Road	**Northside Drive / Sentinel Road**	**Northside Drive / Camp 6-Village Access**	**Southside Drive / Northside Drive**
Alternative 1	C/B	C/E	A/B	B/A
Alternative 3	A/A	A/A	not an intersection	not an intersection

Road Segments					
	Pohono Bridge	**El Capitan Bridge**	**El Portal Road (between Pohono Bridge and Big Oak Flat Road intersection)**	**Southside Drive**	**Northside Drive**
Alternative 1	E/E	B/B	E/E	D/C	D/E
Alternative 3	E/E	C/C	D/D	C/C	A/A

The actions proposed in Alternative 3 would create a long-term, major, beneficial impact by improving traffic flow.

CONCLUSION

Alternative 3 would change transportation patterns in Yosemite Valley, with day-visitor parking provided only at Taft Toe. The average travel time to access the Valley would increase by about 8 minutes over Alternative 1, which would represent a minor adverse long-term impact to visitors. When parking areas in the Valley were filled, visitors would need to find other means of access to the Valley (tour buses, regional transit, hiking, or bicycling). There would be a moderate decrease in traffic volume and a major improvement in traffic flow compared to Alternative 1. Bus trips entering the east Valley would increase by 253 per day, and bus vehicle miles traveled in the Valley would total 3,362 miles per day in the peak season, a major increase over Alternative 1. Traffic congestion would be reduced at the congested intersections of Sentinel Road with Northside Drive and Southside Drive. Traffic flow would remain relatively unchanged on Southside Drive and would improve substantially on Northside Drive. Overall, there would be a

long-term, major, beneficial impact to traffic operations by reducing traffic and improving traffic flow.

CUMULATIVE IMPACTS

Cumulative impacts would be generally the same as described under Alternative 2, except as noted below.

Transportation and Other Projects within Yosemite National Park

The reconstruction of El Portal Road Segments A, B, and C will facilitate travel by day-visitors in private vehicles, tour buses, or regional transit buses to the parking area at Taft Toe. The resulting cumulative impact with the actions in Alternative 3 would be a negligible improvement in the time required to travel to the Valley.

Noise

VEHICLE NOISE

The major transportation actions affecting sound levels and events in this alternative are:

- Parking for 1,622 day visitor vehicles at Taft Toe near the El Capitan crossover
- A transit center at Taft Toe where day tour buses, regional transit buses, and in-Valley shuttles would stop
- Southside Drive would be converted to two-way traffic from El Capitan crossover to Curry Village, with wider lanes and shoulders where needed
- Northside Drive would be removed between Stoneman Bridge and Yosemite Village
- Northside Drive would be closed to vehicles from Yosemite Lodge to El Capitan crossover and converted to a multi-use paved trail
- Traffic entering the east Valley would be managed at El Capitan crossover to assure that the number of vehicles would not exceed parking or roadway capacity
- No out-of-Valley parking or shuttle service would be provided

Except for tour buses operated by the concessioner for Valley visitors, the only transit vehicles entering the east Valley would be in-Valley shuttles and commercial tour buses serving overnight lodge guests.

Sound Levels

Ambient sound levels associated with vehicle traffic would be reduced along most roadways in Yosemite Valley except El Capitan crossover and on Southside Drive west of Sentinel Bridge. Traffic volumes would be reduced by 73% or more along Northside Drive between Yosemite Village and Yosemite Lodge. The resulting reduction in noise levels would result in long-term, minor, beneficial impacts. Traffic volumes on Southside Drive from El Capitan crossover to Sentinel Bridge would be reduced by about 45% during the inbound peak hour and would be slightly higher than under the No Action Alternative during the outbound peak hour. On balance, the impact to noise along the portion of Southside Drive between El Capitan crossover

and Sentinel Bridge would be expected to be negligible in the inbound peak hour and minor and adverse in the outbound peak hour. Sound levels along Northside Drive from Yosemite Village to Yosemite Lodge and on Southside Drive near the Chapel are shown in table 4-77 and table 4-78. Long-term sound level impacts along the portion of Northside Drive between the Lodge and Yosemite Village would be negligible in the inbound peak hour and minor and beneficial in the outbound peak hour. Traffic would be removed from the portions of Northside Drive between Stoneman Bridge and Yosemite Village and between Yosemite Lodge and El Capitan crossover. In areas where Southside Drive is 400 feet or more from these portions of Northside Drive, it is likely that traffic noise would no longer be heard. The resulting reduction in sound levels associated with traffic would have major, beneficial impacts in the long term.

Table 4-77
Equivalent Constant Sound Levels from Traffic Along Southside Drive

Time of Day	Distance from Centerline of Roadway	Alternative 1 (dBA)	Alternative 3 (dBA)
Inbound Peak Hour	50 feet	64	66
	100 feet	61	62
	200 feet	57	59
	400 feet	54	55
Outbound Peak Hour	50 feet	63	66
	100 feet	59	62
	200 feet	55	59
	400 feet	52	55

Note: These numbers are based on measurements taken between Yosemite Village and Yosemite Lodge on a typically busy day.
dBA= decibel

Table 4-78
Equivalent Constant Sound Levels from Traffic Along Northside Drive

Time of Day	Distance from Centerline of Roadway	Alternative 1 (dBA)	Alternative 3 (dBA)
Inbound Peak Hour	50 feet	61	60
	100 feet	57	57
	200 feet	54	54
	400 feet	51	50
Outbound Peak Hour	50 feet	65	60
	100 feet	62	57
	200 feet	59	54
	400 feet	55	50

Note: These numbers are based on measurements taken near Yosemite Chapel on a typically busy day.
dBA= decibel

Sound Events

West of El Capitan crossover, the sound events on Northside Drive and Southside Drive would be similar to those in Alternative 1. From El Capitan crossover to Sentinel Bridge on Southside Drive, noticeable sound events would be reduced from 15 per hour to 8 per hour due to reduced traffic volumes in this area. An additional 60 events of lesser sound level would occur per hour from the operation of in-Valley shuttles to and from the Taft Toe parking area. The sound impact in this area would be long-term, moderate, and beneficial.

The area along Sentinel Drive and the Camp 6 area would experience a reduction in noticeable sound events from 15 per hour to 8 per hour. Sound events of lesser magnitude would increase

by 30 per hour. The impacts in this area would be long-term, moderate, and beneficial. Between Yosemite Village and Yosemite Lodge, the noticeable sound events on Northside Drive would decrease from 11 per hour to 8 per hour. Lesser-magnitude sound events would increase by 4 per hour. The sound event impacts in this area would be long-term, minor, and beneficial.

Southside Drive from Sentinel Bridge to Curry Village would experience an increase in noticeable sound events from 4 to 8 per hour. Lesser sound events would increase from 10 to 20 per hour. The impact would be long-term, minor, and adverse. Sound events along Northside Drive from Sentinel Bridge to Yosemite Village would decrease from 4 very noticeable events and 10 lesser events to none. The impact would be long-term, minor, and beneficial. Between Yosemite Lodge and El Capitan crossover, all sound events from traffic would be eliminated, resulting in long-term, major, beneficial impacts.

Vehicle Noise Conclusion

This alternative would maintain existing sound conditions west of El Capitan crossover. It would substantially reduce traffic volumes east of El Capitan crossover, resulting in an overall reduction in sound levels from traffic. The reduction in overall sound levels would be noticeable but minor. Additionally, because this alternative would intercept all long-distance buses at Taft Toe, it would reduce the occurrence of noticeable sound events in most east Valley locations, resulting in long-term, minor to moderate benefits. Northside Drive between Yosemite Lodge and El Capitan crossover and between Stoneman Bridge and Yosemite Village would have major benefits in sound reduction from the removal of all traffic.

Cumulative Impacts

Replacing the existing shuttle bus fleet with advanced technology buses (which could reduce the intensity of sound events along the shuttle routes) would have cumulative impacts similar to those described under Alternative 2. Increases in regional transit service by the Yosemite Area Regional Transit System (YARTS) would possibly cause a larger number of sound events along the same routes. These two actions would have cumulative impacts on sound levels in the Valley similar to those described in Alternative 1 (long-term, beneficial). Alternative 3 would not change the vehicle types or operating characteristics of either the new shuttle buses or the YARTS buses.

NONVEHICLE NOISE

Yosemite Valley

Housing

Housing-related noise impacts would be long-term, moderate, and beneficial, essentially similar to those discussed under Alternative 2.

National Park Service and Primary Concessioner Operations

The impact of most National Park Service and concession operations on noise levels would be long-term, moderate, and beneficial, similar to Alternative 2, with the exception of transit operations, which are discussed below.

Transit Center and Day-Visitor Parking

Nonvehicle noise associated with the Taft Toe Visitor/Transit Center would increase, due to maintenance, interpretive (trip planning), and visitor activity at the facility. As at parking facilities in Alternative 1, visitor conversation would represent the most typical nonvehicle noise in this area (60 dB; FICN 1992), and would typically be half as loud as associated vehicle activity. However, this would represent a major onsite change compared to the No Action Alternative, because of the operation of a parking area in a site that currently has a road and visitor parking turnouts only. Local ambient noise levels would increase, as would peak noise associated with mechanical sounds and loud conversation. Ambient noise at Camp 6 would also be reduced, due to the reduction in traffic, but peak noise levels would not necessarily be reduced in that portion of Yosemite Village, because transit operations would continue to deliver visitors to the area. Because Taft Toe is currently only under the influence of road noise and incidental visitor activities, impacts would be long-term, moderate, and adverse, compared to Alternative 1.

Lodging

The impact of lodging-related noise would be similar to that described under Alternative 2.

Campground

Campground-related noise would be similar to that of Alternative 2, except that noise increases at Camp 4 (Sunnyside Campground) would not be as great, in that there would be 15 less campsites. As in Alternative 2, this would result in long-term, minor, beneficial impacts through noise reductions in most campgrounds.

Picnic Areas

Noise related to picnic areas would be eliminated at the Swinging Bridge Picnic Area. Picnic area–related noise, including sounds associated with social interaction (e.g., conversation, laughing, and play), would be introduced at the new picnic area near El Capitan. A long-term, negligible, beneficial impact would be experienced by visitors.

Trails

Trail-related noise would be similar to those described under Alternative 2, except that private stock use would be discontinued in Yosemite Valley. Effects would be the same as in Alternative 2, with long-term, minor, adverse impacts along new trails, as experienced by visitors.

Construction Impacts

Construction-related noise impacts would be similar to those described under Alternative 2, except that noise impacts related to developing transit facilities would be at Taft Toe. Types of construction noise would be the same. Overall, peak nonvehicle-related noises during construction and deconstruction, would have short-term, major, adverse impacts, affecting both visitors and residents.

Out-of-Valley Areas

El Portal

HOUSING

The types and general locations of housing-related noise would be similar to under Alternative 2, but because of an additional 73 employee beds in El Portal, nonvehicle impacts on ambient noise levels would be slightly greater than under the No Action Alternative. In new housing areas and at amenity sites, such as at the Village Center, impacts would be long-term, moderate, and adverse. In existing housing areas, impacts would be long-term, minor, and adverse, primarily affecting residents.

NATIONAL PARK SERVICE AND PRIMARY CONCESSIONER OPERATIONS

Most operations-related noise impacts in El Portal would be similar to those described under Alternative 2 (long-term, moderate, adverse).

OUT-OF-VALLEY PARKING

There would be no out-of-Valley parking in El Portal, thus impacts would be the same as under the No Action Alternative.

TRAILS

Trail-related noise would be similar to that described under Alternative 2 (long-term, negligible, adverse).

Wawona

No new housing is proposed for Wawona in this alternative. Nonvehicle-related noise would not change. Therefore, impacts would be the same as under Alternative 1.

Foresta

Housing- and operations-related noise impacts would be the same as those described under Alternative 2 (long-term, minor, adverse).

South Landing, Badger Pass, Hazel Green, and Henness Ridge

No additional transit or administrative facilities are proposed in these areas. Therefore, impacts would be the same as under Alternative 1.

Construction Impacts for Out-of-Valley Locations

Construction-related noises in El Portal and other out-of-Valley locations would include the same types of noises, and with similar impacts as described above for Yosemite Valley. During construction, short-term, major, adverse impacts would be experienced by residents and visitors.

Nonvehicle Noise Conclusion

Alternative 3 would be similar to Alternative 1, in that the impacts of nonvehicle noise on the human environment would be concentrated primarily around development areas. Reductions in

housing units in Yosemite Valley would result in reductions in ambient noise levels, a long-term, moderate benefit. Likewise, increases in housing numbers in El Portal and Foresta would result in long-term, minor, adverse impacts. New trails would put typical trail-related noises into new areas, but these impacts would be minor. Reductions in campsite and lodging numbers would result in moderate and minor, beneficial effects, respectively. National Park Service and concession operations in Yosemite Valley would be reduced, but with light maintenance for transit being in the Valley, and with new impacts at Taft Toe, benefits would be minor. Overall, the nonvehicle noises would be reduced in Yosemite Valley, but benefits would be minor and long-term, due to the introduction of adverse impacts in some areas. The greatest increases in noise would be in El Portal, where adverse impacts would be long-term and minor.

Cumulative Impacts

The projects that would have cumulative impacts would be the same as described under Alternative 2. When considering the overall minor, beneficial effects of Alternative 3, in combination with the more dominant noises associated with other projects and sources, including vehicles, cumulative impacts of nonvehicle noise in Alternative 3 would remain long-term, minor, and beneficial.

Social and Economic Environments

The social and economic environments, for purposes of this discussion, include characteristics of the affected communities in the region, visitor populations and trends, revenues and expenditures affecting regional economies in connection with employment, visitor expenditures, construction spending, and concessioners and cooperators. Impacts of Alternative 3 on these social and economic environments are discussed below.

LOCAL COMMUNITIES

Potential effects of Alternative 3 on the communities of Yosemite Valley, El Portal, Foresta, Wawona, and Yosemite West are discussed in this section. Factors with the potential to affect the social and economic environments of each of these communities include population, housing location, types and condition of housing, distance of employee commutes from outlying areas, community amenities, and the community structure.

Yosemite Valley

Under this alternative, 588 beds would be removed from Yosemite Valley, as under Alternative 2. Impacts would be largely the same as described under Alternative 2.

The proposed relocation of employees from Yosemite Valley to El Portal, including National Park Service and Yosemite Concessions Services Corporation headquarters and associated employees, would reduce the resident population by almost half and alter the character of the remaining population. Most of the employees moved to El Portal would be year-round employees. As a result, a greater proportion of the employees remaining in Yosemite Valley would be seasonal staff. Impacts on social and community services would be as described under Alternative 2. Impacts would range from long-term, negligible, adverse to major; and relate mostly to the change in community populations.

El Portal

Under this alternative, 588 park employees, mostly primary concessioner employees, would be relocated from Yosemite Valley into new housing in El Portal. An additional 157 bed spaces would be constructed to meet future and currently unmet demand for employee housing. In addition, 80 El Portal residents, currently living at the Trailer Village, Arch Rock, or Cascades, would be relocated into new housing facilities in El Portal. The total net increase in El Portal's residential employee population is projected to be 745 (588 plus 157).

The park's current primary concessioner, Yosemite Concession Services Corporation, provided the primary source of employee demographic information. No similar information was available from the other park concessioners or the National Park Service. More than 95% of the new housing in El Portal would be occupied by primary concessioner employees. Therefore, Yosemite Concession Services Incorporated employee demographic information has been used to project the demographics for all future park employees who would be housed in El Portal under this alternative.

Based on the current demographics of the park employee population, it is estimated that approximately 20% of the permanent employee population would be married. In addition, Yosemite Concession Services Corporation staff estimate that approximately 15% of employee spouses are not employed within the park. Therefore under this alternative, an additional 22 spouses are expected to relocate to El Portal (745 x 20% x 15% = 22). Of these 22 spouses, approximately 17 would be relocated from the Valley and five would be married to new employees.

According to Yosemite Concession Services Corporation, under this alternative 62 managerial personnel currently living in managerial housing would be relocated from the Valley to El Portal, while 28 would remain in the Valley. Yosemite Concession Services Corporation's current managerial population is approximately 210 employees. While a proportion of these staff live outside the park, many managerial staff currently live in non-managerial housing accommodations within the Valley. Yosemite Concession Services Corporation estimates that its managerial staff has approximately 80 children. An estimated 55 children are expected to be relocated. Of the 159 future new employees, 19 are projected to be managerial staff. Based on the current employee demographics, these staff would bring an additional seven children to El Portal.

Including relocated employees, new employees, spouses, and children, therefore, the total increase in El Portal's residential population under this alternative is projected to be 829 (741 + 22 + 55 + 7). Yosemite Concession Services Corporation expects that 10% of the employees housed in El Portal would be seasonal employees. Therefore, the winter residential population in El Portal would increase by approximately 746 (829 x 90%).

It is estimated that the current summer population of El Portal (from the park boundary to the confluence of the South Fork of the Merced River) is approximately 3,000, and the current winter population is approximately 760. Under this alternative, changes in employee housing would result in about a 28% increase in El Portal's summer population and a 98% increase in the

winter population. Both would cause long-term, major, adverse impacts on El Portal's population, although it is expected that this projected future growth would occur gradually.

This alternative also would increase the number of residents and jobs in the El Portal area and the number of commuters to Yosemite Valley along Highway 140. Impacts would be the same as described under Alternative 2.

Wawona

The Wawona social environment would not be affected by this alternative and impacts would be the same as those described for the No Action Alternative. The number of employees living in Wawona would not change, and travel along the South Entrance Road would not be impacted.

Foresta

This alternative proposes reconstruction of the 14 National Park Service houses that were lost in the A-Rock Fire, and potential placement of the National Park Service and concessioner stables at McCauley Ranch. Rebuilding of the 14 burned National Park Service dwellings would have a long-term, negligible, adverse impact on the social environment of Foresta due to a negligible increase in human presence and reduction in solitude. Potential replacement of the stables at McCauley Ranch (depending on outcome of wilderness eligibility determination) would have a long-term, minor, adverse impact due to an increase in vehicle movement and negligible reductions in solitude.

Cascades and Arch Rock

Impacts to the Cascades and Arch Rock communities are expected to be the same as those described under Alternative 2, resulting in a long-term, minor, adverse impact.

Yosemite West

This alternative would have no direct impacts on the social environment in Yosemite West because no actions would occur within the area of influence.

Services and Infrastructure

Schools and Child Care

Impacts to local services and infrastructure are expected to be the same as those described under Alternative 2 with the exceptions noted below.

Impacts to schools and pre-schools in the region would be the same as those described for Alternative 2. Seven additional children would be added to the local population from future growth in managerial staff at the park. These additional students would not increase demand or impact school bus operations.

Law Enforcement

Relocation of concession employees is expected to increase the law enforcement requirements in El Portal. Based on the population shift from Yosemite Valley and future employee growth, it is

estimated that approximately 62 arrests may be necessary in El Portal that would otherwise have been expected to occur within the Valley. Also, the addition of 159 new employees would be expected to add approximately 17 additional arrests a year. This would have a long-term, minor, adverse impact to law enforcement services. However, these projections do not consider the beneficial effects that improvements to employee living conditions and/or the quality of concession employees (attracted by the improved housing El Portal: social impacts) may have in reducing future law enforcement incidents and arrests necessary in El Portal and throughout the park. Providing park housing for some of the ranger staff would ensure that park rangers would be available to respond quickly to any law enforcement needs in the El Portal area during off-duty hours.

There would be no impact to law enforcement aspects of the El Portal social environment related to visitor parking, because all parking would be located in Yosemite Valley at Taft Toe.

The cost of providing additional law enforcement services under this alternative would be the same as those expected under Alternative 2; a long-term, moderate, adverse impact on the county would be expected.

In addition to the impact on law enforcement service, an increase in arrests within the county's legal jurisdiction would also increase the service demands on the county court system. The magnitude of the impact on the court system is expected to be comparable to that on the county law enforcement: long-term, moderate, and adverse.

Other Services

Under this alternative, the Yosemite Valley Medical Clinic would remain in Yosemite Valley, and National Park Service emergency medical service staff and county ambulance services would continue to handle all emergency medical service functions. However, employees relocated to El Portal would need to be transported to the Valley medical clinic or to Mariposa in case of emergency. Therefore, a long-term, minor, adverse impact would occur due to an increase in county ambulance service expected to be associated with the projected growth in the park employee population.

A short-term, negligible, adverse impact on Mariposa County is expected as a result of road improvement and maintenance costs associated with any increase in county road usage in El Portal from the additional residential employee population.

Local Communities Conclusion

Impacts to Yosemite Valley would be as described under Alternative 2. Impacts to services and infrastructure under this alternative are the same as those described under Alternative 2, with the exceptions noted below.

Changes in the employee population would result in an increase of about 28% in El Portal's summer population and a 98% increase in the winter population. Both would cause long-term, major, adverse impacts on the El Portal social environment, although it is expected that this projected population growth would be gradual.

As described for Alternative 2, this alternative would have a negligible impact on most of Mariposa's County infrastructure. All the impacts to county services and infrastructure would be long-term impacts because the proposed housing changes would be permanent. Additionally, the county would provide increased law enforcement and court services for the area; these are expected to have long-term, moderate, adverse impacts on the county. The National Park Service would continue to provide fire protection services for the new employee housing at El Portal; the impacts to the county for these services are expected to be long-term, negligible, and adverse.

Yosemite Valley Medical Clinic would continue to operate within the Valley. As a result, the county ambulance service would experience long-term, minor, adverse impacts due to the increase in service demand.

This alternative would have a long-term, minor, adverse impact on the Foresta social environment. The placement of 14 dwellings at Foresta and the National Park Service and concessioner horse stables at McCauley Ranch would increase traffic and reduce solitude in the Foresta area thereby causing a long-term, minor, adverse impact.

Cumulative Impacts

Cumulative impacts on local communities under this alternative would be as described in Alternative 2.

Overall, projects described under the cumulative impacts analysis of Alternative 1 would have both beneficial and adverse short and long-term impacts when combined with the alternative's actions. Local communities of El Portal, Wawona, and Foresta would each experience impacts ranging between negligible to major. When considered in combination with the effects of Alternative 3, the impacts would be moderately beneficial to moderately adverse. However, they would represent a relatively small proportion of the total impact.

VISITOR POPULATIONS

Day Visitors

Under this alternative, it is projected that on the busiest days in the summer up to 13,029 day visitors could be accommodated by the proposed parking and transit facilities. This level of visitation exceeds the 1998 summer season average daily visitation of 10,950 visitors. As discussed in Appendix J, 1998 average visitation has been used as the baseline condition for the impact analysis. In addition, for purposes of the analysis it has also been assumed that future Yosemite visitor demand would not change. This is a conservative assumption that recognizes the uncertainties of future visitation. As a result, under this alternative, no change in future day visitation is projected. Considerable additional day visitor capacity would exist, and future day visitation growth could be accommodated if future visitor demand increased.

Currently, park visitation peaks on weekends during the summer. As a result, it may be possible that during the busiest peak days, the proposed parking and transit facilities may be unable to accommodate all the visitors who otherwise might have entered the park under Alternative 1. In this case, some visitors may be displaced from accessing the park during peak hours on typically busy days. However, this adverse impact could be mitigated by the planned traveler information

and traffic management system. This system could forewarn potential visitors when day-visitor parking was approaching full capacity and encourage and direct visitors to visit during nonpeak periods. In this case, no net reduction in total visitation would occur because peak-period visitation would theoretically be shifted to less busy days (weekdays).

Overnight Visitors

Lodging

Under this alternative, several changes to the park's lodging facilities are proposed, and it is expected that these changes could affect overnight visitors. The total number of lodging units would be reduced from 1,260 to 982, a decrease of 278 lodging units or a 22.1% decrease in lodging. While a variety of types of lodging would remain, the number of rustic lodging units would decrease by more than 70% while the number of economy units would increase by almost 114%. In addition, 26 campsites are proposed to be removed from the Valley.

The specific lodging and camping impacts are identified below:

YOSEMITE LODGE

This alternative would add 142 new motel rooms at Yosemite Lodge, increasing the total number of rooms at the Lodge to 387. There would still be fewer rooms than the 495 operated at Yosemite Lodge before the 1997 flood, although many of those were rooms without bathrooms.

It is estimated that the additional rooms would have 92% occupancy. This reflects the strong year-round demand for Yosemite Lodge accommodations and is consistent with past Yosemite Lodge occupancy during 1994, 1996, and 1998. As a result, approximately 47,700 additional room-nights would be gained by the proposed Yosemite Lodge expansion. This increase would allow nearly 151,200 additional visitors to stay overnight in the Valley annually (assuming an average of 3.17 guests per room).

CURRY VILLAGE

This alternative would reduce the total number of lodging units at Curry Village from 628 to 420, a decrease of 208. It is projected that approximately 200 room-nights would be gained annually (occurring during the off-season). This increase would add approximately 600 overnight visitors to the Curry Village annual total (assuming an average of 3.17 guests per room). The projected increase in overnight stays at Curry Village would occur because the majority of eliminated units would be the less popular tent cabins. Under this alternative, there would be a net increase of 149 cabin rooms, which are more popular and suitable for year-round use. As a result, while the total number of lodging units would decrease, additional off-season lodging would be gained, and would be expected to be occupied during the off-season since Yosemite Lodge is not proposed to be rebuilt to its greater pre-flood capacity.

HOUSEKEEPING CAMP

This alternative would remove 212 Housekeeping units, leaving 52 units in operation. Based on pre-flood visitor demand, the occupancy of the Housekeeping units is estimated to be 75%.

Although these units currently operate at full occupancy only during the months of July and August, the proposed reduction would decrease the lodging capacity so that all remaining Housekeeping units would operate at full occupancy and guests would be displaced throughout their operating season (mid-May to early October). Approximately 26,000 room-nights would be lost, displacing approximately 104,000 overnight visitor stays (assuming an average of four guests per room). In this alternative, overnight visitation at Housekeeping Camp would decrease by nearly 74%.

CHANGES IN LODGING TYPES

In addition to reducing the Valley's lodging capacity this alternative would also alter the variety of lodging styles and prices available to overnight visitors. The predominant changes are: (1) a reduction in rustic-style accommodations from 691 to 202 units (at Housekeeping Camp and the Curry Village Tent cabins), a loss of 489 units representing an approximately 70% decrease in units; (2) growth in economy accommodations from 181 to 387 units at Yosemite Lodge and Curry Village, a gain of 206 units, an approximate increase of 114%; and (3) an increase in mid-scale accommodations from 265 to 270 units, an increase of five units that represents a 1.9% increase.

Some visitors may be affected by the changes in lodging types available in the Valley. Overnight visitors would likely be displaced and impacted if replacement lodging alternatives were different from the lost facilities. However, if replacement lodging units are considered comparable by most overnight guests, the new facilities would not substantively impact their overnight lodging experience.

This alternative provides limited lodging substitutes for many overnight visitors. Current Housekeeping Camp guests would face a nearly 75% reduction in lodging availability. However, for some overnight visitors (including displaced Curry Village Tent cabin guests), the economy units may provide an adequate substitute.

Based on past occupancy levels, rustic accommodations have the lowest average annual occupancy of the Valley's different lodging facilities. In contrast, Yosemite Lodge generally operates near capacity year-round, and reservations are booked months in advance. This suggests that current visitor demand for rustic facilities is weaker. Therefore, removal of the less popular lodging facilities could be partially offset by new replacement facilities that are more popular with a majority of overnight visitors. This would represent a long-term, minor, adverse impact.

Camping

Under this alternative, 26 campsites would be eliminated, leaving a total of 449 campsites within Yosemite Valley. This represents a 5.51% decrease from the current 475 Valley campsites.

Based on pre-flood visitor demand for Valley campsites, it is estimated that the lost campsites would have an average occupancy rate of nearly 95%, for operations between mid-April and mid-October. Accordingly, 4,500 overnight campsite stays would be lost, displacing approximately 18,000 visitors from camping overnight within the Valley annually (assuming an average of four overnight visitors per campsite). This would be a long-term, moderate, adverse impact.

Table 4-79 summarizes the overnight visitation changes expected under this alternative. A moderate net increase in overnight park visitation is projected, despite a major net reduction in overnight accommodations of 304 units (based on a net lodging decrease of 279 units and camping decrease of 25 sites). The combined impact of the lodging and campsite changes is estimated to be a net increase in 17,400 room-nights annually. This represents an increase of 30,700 overnight visitor stays within Yosemite Valley annually, a 2.6% increase from 1998 overnight visitation. This represents a long-term, moderate, beneficial impact on overnight park visitation.

Table 4-79
Estimated Potential Overnight Visitation Impacts

Lodging	Change in Units	Projected Change in Room-Nights	Projected Change in Overnight Visitor Stay
Yosemite Lodge	142	47,700	151,200
Curry Village	(208)	200	600
Housekeeping	(212)	(26,000)	(104,000)
Camping	(26)	(4,500)	(18,000)
Total	**(304)**	**+17,400**	**+30,700**

Note: These are conservative future estimates of overnight visitation demands since they are based on the pre-1997 demand for in-park lodging. As a result, they do not assume any visitor demand increases from factors such as reduced vehicle congestion, natural resources restoration, improved lodging facilities or population growth.
Note: Apparent inconsistencies in the table are the result of replacing seasonal units with year-round units.
Note: ( ) =decrease

Minority and Low-Income Visitors/Environmental Justice

Impacts on minority and low-income populations would be as described under Alternative 2.

Visitor Population Conclusion

Under this alternative, Yosemite Valley's lodging and camping is proposed to decrease by 304 lodging units. However, due to the increase in the Valley's nonpeak lodging capacity, an annual net increase of 30,700 overnight visitor stays is projected. This is equivalent to a 2.6% increase to 1998 overnight visitation, which represents a long-term, moderate, beneficial impact. Day-visitation would remain unchanged. However, due to the limitations of available data and the potential influence of other factors, impacts to low-income and minority visitors are qualitatively determined to be long-term, negligible, and adverse.

REGIONAL ECONOMIES

Visitor Spending

No changes in Yosemite visitor spending behavior are projected, because this alternative proposes no changes that would alter the type of goods and services available to visitors. Furthermore, no change in the character of the park visitor population is expected. Therefore, visitor spending patterns and estimates based primarily on the 1998 Yosemite Area Regional Transit System (YARTS) survey have been used to estimate future visitor spending behavior.

The primary effects on visitor spending within the region would be related to changes in park visitor population projected under this alternative. As discussed in the previous sections, the decrease in overnight visitation within the park is the only quantifiable impact on park visitation

associated with this alternative. It is projected that approximately 30,700 visitor overnight stays would be added under this alternative.

It is possible that these additional park overnighters could be attracted away from lodging in the region outside the park. If these vacated rooms are not occupied by new visitors or day visitors, relocation of these overnight guests from lodging outside the park into the Valley would have no net economic effect on the region's economy, because no new spending would be attracted into the area. However, given the high demand for lodging in the region (especially during the peak season), it is expected that some day visitors would likely choose to stay overnight in the region. As a result, the net economic impact on the regional economy from the additional overnight stays would be the net increase in daily visitor spending of $35.76 per capita ($61.30 – $25.54, the difference between overnight visitor spending and day-visitor spending) multiplied by the increased overnight visitation (30,700), which would equate to approximately $1.1 million in visitor spending. This represents a long-term, negligible, beneficial impact to Yosemite visitor spending.

This is a conservative estimate of the beneficial spending impact on the county economy. The additional lodging capacity proposed under this alternative would still be lower than the Valley's pre-flood levels; therefore, it might be expected that increasing the Valley lodging capacity would bring back overnight visitors to the park who otherwise would remain displaced by the 1997 flood. The analysis has conservatively assumed that the additional overnight visitors will be gained from current day visitors; therefore, no net change in park visitation is expected. However, if new park visitors were instead attracted to stay overnight in the park, there would be an even greater growth in visitor spending.

There would also be potential for future growth in day visitation under this alternative. It is estimated that an additional 64,400 day visitors per month could be accommodated during weekdays in July and August in the Valley, assuming that these additional visitors would come to the Valley on weekdays and less busy weekends. In addition to visitor spending growth based on increased park visitation, the region could also increase visitor spending by encouraging more of the existing park visitors to stay longer or to stay overnight in the region. Increased length of stay would increase visitor spending, which would have a beneficial impact on the region's economy.

The proposed changes to the Valley's overnight lodging facilities is projected to increase the future overall overnight visitation within the Valley. This would have a long-term, negligible, beneficial impact on Yosemite visitor spending by increasing the number of visitors (and hence visitor spending) that can be accommodated overnight in the Valley each year.

Table 4-80 presents the estimated total visitor spending impacts of lodging changes proposed under this alternative. Estimated impacts of this alternative on Yosemite visitor spending would not exceed 1% in any of the five counties within the Yosemite region. This represents a long-term, negligible, beneficial impact. Overall, visitor spending within the five-county region is expected to increase by approximately 0.5%, representing a long-term, negligible, beneficial impact.

Table 4-80 Estimated Visitor Spending Impacts			
County	Estimated Total Yosemite Visitor Spending ($million/yr)	Estimated Impact on Spending ($million/yr)	Impact on Spending as a Percentage of Total Yosemite Visitor Spending
Madera	$38.1	$0.06	0.1%
Mariposa	$143.4	$0.91	0.6%
Merced	$4.8	$0.02	0.3%
Mono	$30.8	$0.03	0.1%
Tuolumne	$22.2	$0.07	0.3%
All	**$239.3**	**$1.1**	**0.5%**

Note: All monetary figures are in 1998 constant dollars. Totals may not add up exactly due to rounding.

Table 4-81 shows the total direct and secondary visitor spending expected under this alternative. The expected change in overnight capacity and associated visitor spending under this alternative would cause total regional output to increase by about $1.7 million dollars annually. Much of this change would be driven by an approximately $1.4 million increase in the annual output of Mariposa County. The portion of this spending increase expected to occur in the county's lodging sector would result in an increase of approximately $52,000, or 1%, in the county's recent average annual hotel occupancy tax revenues, a long-term, minor, beneficial impact.

Table 4-81 further indicates that impacts to employment in Madera, Merced, Mono, and Tuolumne Counties would be negligible. Mariposa County would experience an increase of about 27 jobs, an approximately 0.3% increase in recent countywide employment. This represents a long-term, negligible, beneficial impact to Mariposa County.

Table 4-81 Estimated Total (Direct And Secondary) Visitor Spending Impacts within the Affected Region			
County	Estimated Impact on Spending ($million/yr)	Estimated Spending-Associated Impact on Annual Output ($million/yr)	Estimated Spending-Associated Impact on Annual Employment (FTE)
Madera	$0.06	$0.09	1.9
Mariposa	$0.91	$1.38	27.0
Merced	$0.02	$0.03	0.6
Mono	$0.03	$0.05	1.2
Tuolumne	$0.07	$0.12	2.7
All	**$1.1**	**$1.67**	**33.3**

Note: All monetary figures are in 1998 constant dollars. Totals may not add up exactly due to rounding.
FTE= Full Time Equivalents

Construction Spending and Employment

Construction costs proposed under this alternative would total $413.5 million in 2000 dollars. In 1998 dollars this cost corresponds to $389.7 million. The capital cost estimates would include approximately about $9.0 million for a bus fleet in 1998 dollars. This spending is expected to occur outside the affected region. In addition, a considerable portion of this construction spending would occur outside the affected region. As a result, it is estimated that total expected construction spending within the five-county affected region would be approximately $247 million. The expected average annual construction spending within the affected five-county

region by five-year phase is presented in table 4-82. Total regional output and employment impacts expected to result from those expenditures are also shown.

During the first five-year phase of project implementation, project construction spending would generate an estimated $31.0 million of additional output per year in the five-county region's construction sector. This is equivalent to a 4.3% increase over recent regional construction sector output and represents a short-term, moderate, beneficial impact. During the same period, project construction spending would increase total annual industrial output (direct and secondary) in the affected region by approximately $46.1 million in 1998 dollars (including construction and nonconstruction sector output). This is equivalent to a 0.36% increase over recent regional industrial output and represents a short-term, negligible, beneficial impact.

Table 4-82 also shows that during the first five-year phase of project implementation, project construction spending would generate an estimated 360 full-time-equivalent jobs in the region's construction sector. This is equivalent to an almost 4.0% increase in recent regional construction sector employment and represents a short-term, moderate, beneficial impact. During the same period, project construction spending would cause the region's total employment (directly and secondarily) to increase by an estimated 553 jobs (including construction- and nonconstruction-sector jobs). This translates to a 0.34% increase in total employment in the region and represents a short-term, negligible, beneficial impact.

Table 4-82
Estimated Average Annual Construction Spending[1] and Associated Output/Employment Impacts

Period (Years)	Average Annual Construction Spending ($million/year)	Direct Construction Sector Output Impacts ($million/year)	Total Construction Spending-Associated Output Impacts[1] ($million/year)	Direct Construction Sector Employment Impacts (FTE)	Total Construction Spending-Associated Employment Impacts[2] (FTE)
1 – 5	31.0	31.0	44.3	360	553
6 – 10	15.2	15.2	21.7	176	270
11 – 15	3.1	3.1	4.5	36	56
Total	**246.6**	**246.6**	**352.4**		

Note: All monetary figures are in 1998 constant dollars. Totals may not add up exactly due to rounding.
1. Impacts include both direct and indirect spending-related impacts. Cost estimates exclude estimated engineering/planning costs.
2. Total impacts include both direct and indirect spending-related impacts. Employment impacts expressed in terms of Full Time Equivalents (FTE).

Estimated average annual construction spending and associated output and employment impacts in Mariposa County are shown in table 4-83. During the first five-year phase of project implementation, project construction spending would generate an estimated $6.8 million of output per year in Mariposa County's construction sector. This is equivalent to an increase of about 19% over recent output in that sector and would represent a short-term, major, beneficial impact. During the same period, project construction spending would cause total annual industrial output (direct and secondary) in the county to increase by approximately $9.7 million in 1998 dollars (including both construction sector and nonconstruction sector output). This is equivalent to a 1.9% increase in the county's total industrial output and would represent a short-term, minor, beneficial impact.

Table 4-83 also shows that during the first five-year phase of project implementation, project construction spending would generate an estimated 81 full-time–equivalent jobs in Mariposa

County's construction sector. This represents an approximate 17% increase in recent employment in that sector and would be a short-term, major, beneficial impact. During the same period, project construction spending in the county would cause the county's total employment (directly and secondarily) to increase by an estimated 123 jobs. This translates to about a 1.5% increase in total employment in the county and would be a short-term, minor, beneficial impact.

Output and employment generated would decrease by over 50% during the second five-year construction phase and 90% during the final five-year construction phase, compared to the first five-year construction phase. All regional output and employment impacts of the project would end after 15 years.

Table 4-83
Estimated Average Annual Construction Spending/Associated Output and Potential Employment Impacts in Mariposa County

Period (Years)	Average Annual Construction Spending ($million/yr)	Direct Construction Sector Output Impacts ($million/yr)	Total Construction Spending-Associated Output Impacts[1] ($million/yr)	Direct Construction Sector Employment Impacts (FTE)	Total Construction Spending-Associated Employment Impacts[2] (FTE)
1 – 5	6.8	6.8	9.7	81	123
6 – 10	3.3	3.3	4.7	40	60
11 – 15	0.7	0.7	1.0	8	12
Total	**53.7**	**53.7**	**77.2**		

Note: All monetary figures are in 1998 constant dollars. Totals may not add up exactly due to rounding.
1. Impacts include both direct and indirect spending-related impacts. Cost estimates exclude estimated engineering/planning costs.
2. Total impacts include both direct and indirect spending-related impacts. Employment impacts expressed in terms of Full Time Equivalents (FTE).

Following implementation of actions proposed under Alternative 3, it is expected that approximately $12.8 million (1998 dollars) a year would be permanently spent within the affected region to operate and maintain the new in-Valley visitor transit system, to meet staffing requirements of expanded park visitor facilities and employee housing, and to pay for additional operations and maintenance expenses incurred by the concessioner on project-associated visitor and employee housing facilities. Table 4-84 indicates that this spending would generate about $19.6 million of output per year and 317 jobs within the affected region. This would be a long-term, negligible, beneficial impact on the region's economy.

Table 4-84 also indicates that new park operations-related spending is expected to generate $11.3 million in additional output per year within Mariposa County. This would represent a 2.2% increase over recent county output, a long-term, minor, beneficial impact to the county's economy. Furthermore, park operations-related employment is expected to increase employment in Mariposa County by 221 jobs (including 116 National Park Service positions), a 2.7% increase over recent county employment levels. This would be a long-term, moderate, beneficial impact on the county's economy.

Table 4-84 Estimated Average Annual Park and In-Valley Transit System Operations Spending				
County(s) (in park)	Annual Park and Transit System Spending1 ($million/yr)	Total Operation Spending-Associated Output Impacts2 ($million/yr)	Additional National Park Service Employees (FTE)	Total Operation Spending-Associated Employment Impacts3 (FTE)
Mariposa	$6.7	$11.3	116	221.1
Yosemite Region	$12.8	$19.6	116	316.8

Note: All monetary figures are in 1998 constant dollars. Totals may not add up exactly due to rounding.
1. Spending in Mariposa County calculated as the sum of estimated increased project-associated National Park Service operating costs and estimated spending on in-Valley component of transit operations.
2. Includes direct and secondary output (includes new National Park Service employee spending).
3. Includes direct and secondary employment (includes new National Park Service employee spending).
FTE= Full Time Equivalents

Other Revenues

Detailed analysis on the retail spending habits of National Park Service and Yosemite Concession Services employees is unavailable; therefore, the quantitative extent of retail trade resulting from employees living in Yosemite Valley, Wawona, or at the El Portal Administrative Site is not known. However, it is known that many employees do rely on local stores for groceries and other items. It is not known where other trade occurs. Experience indicates that it is likely that employees living in the Valley or El Portal travel either south or west along Highways 140 or 41 to the communities of Mariposa, Oakhurst, Merced, or Fresno to purchase supplies they cannot obtain in the park. Although it is not possible to quantitatively assess how this alternative would affect retail and sales revenues in Mariposa County, some qualitative assessments can be made.

No changes to employees' income are expected to be associated with relocations (except for the additional income from the housing incentives), and no changes in employee spending behavior are expected. However, Mariposa County's economy may experience long-term, minor benefits if: (1) relocated employees shift some of their spending to Mariposa and Merced from Oakhurst and Fresno, (2) there is net growth in the park employee population, and (3) employee spending increases as a result of increased housing incentives.

Under this alternative, approximately 487 park employees and family members (420 employees, 12 spouses, and 55 children) would be relocated from the Valley to El Portal. Although retail facilities in El Portal are limited, most of the relocated employees would continue to work within the Valley and would likely purchase goods there. Employees relocated to El Portal would also be approximately 30 minutes closer to Mariposa and Merced and approximately the same distance from Oakhurst and Fresno. As a result, relocated employees would have comparable access to spending opportunities and may be expected to shift some of their spending to Mariposa. While the magnitude of any such changes in employee spending cannot be estimated, the impacts to Mariposa and Madera Counties are expected to be long-term, negligible, and beneficial.

Under this alternative, additional housing for 254 new park employees would likely increase spending incrementally. In addition, housing for 24 new employees not currently living in the Valley would be developed at Wawona. Spending by these additional park employees, for the most part, would represent new spending income for Mariposa County (although because many would be seasonal employees, the spending benefits to the county would be limited). The primary

direct benefit to the county's economy would be from additional sales tax revenues from this employee spending.

The average employee spending in Mariposa County is not known. Under this alternative, approximately 831 relocated park employees, new employees, and family members would move to El Portal. Impacts under this alternative, therefore, would be the same as described under Alternative 2: long-term, negligible, and beneficial.

Spending by these additional park employees would mostly represent new spending income for Mariposa County (although many would be seasonal employees, so the spending benefits to the county would be limited). The primary direct benefit to the county's economy would be from additional sales tax revenues from this employee spending.

Mariposa County currently assesses a 1.25% tax on all retail and restaurant sales within the county including the majority of the concessioner sales within Yosemite National Park. The average concessioner employee's wages are low, and it is estimated that the annual earnings of the new additional employees would be approximately $2.1 million. Of these wages, only a small proportion would be available for purchasing taxable goods and services. For example, if 10% of total gross income were spent on goods within Mariposa County, the county sales tax revenues would be only $2,600, which would have a long-term, negligible, beneficial impact on the county's economy.

The primary concessioner would also be expected to pay approximately $500,000 in housing incentives annually for employees relocating out of the Valley to El Portal. This additional spending would have a long-term, negligible, beneficial impact on the county's economy.

Overall, the future change in local sales tax revenues is projected to be long-term, negligible, and beneficial because no significant change in local spending by park employees is expected as a result of this alternative.

Mariposa County does not individually tax employees of the park's primary concessioner for possessory interest. Instead, the county assesses Yosemite Concession Services (YCS) operations annually to determine its possessory tax payment owed to the county. If Yosemite Concession Services financial situation is impacted adversely by this alternative, then its possessory tax payments to the county are expected to decrease. However, the magnitude of Yosemite Concession Services' current possessory tax payments to the county is proprietary information, and the county would not project the magnitude of the likely change to its revenues under this alternative. It is possible, however, that long-term, major, adverse impacts to the county's tax revenues could occur if Yosemite Concession Services' operations were impacted significantly.

No county building or permit fees would be generated by the proposed construction on federal land within Mariposa County. However, the county's possessory interest tax revenues would be affected by net changes to permanent National Park Service and non-Yosemite Concession Services employees' housing facilities. The county assesses possessory interest taxes to these park employees based on the value of their housing. Under this alternative, it is estimated that the National Park Service would add approximately 30 bed spaces for permanent National Park Service and non-Yosemite Concession Services employees in El Portal. Currently, the Mariposa County Assessor's Office estimates that the annual possessory tax revenues associated with the

properties to be removed are approximately $7,000. The assessed value of the replacement employee housing is estimated to be $2.5 million, which would result in approximately $25,000 in possessory tax revenues to Mariposa annually. Therefore, it is projected that the county would obtain net possessory tax revenues of $18,000 once all the replacement housing for the National Park Service and other concessioner employees is completed. This additional revenue would have a long-term, negligible, beneficial impact on the county's tax revenues.

No change in housing demand from park employees currently living in privately owned housing is expected as a result of this alternative. The new employee housing in El Portal is planned to accommodate primarily permanent, hourly workers who otherwise would be housed in the tent cabins within the Valley. These employees are not likely to be able to afford unsubsidized housing. Any increase in private housing demand would be associated with the small population of middle and upper management Yosemite Concession Services employees. It is expected that only the 90 managerial concessioner employees currently living in the Valley would be able to consider purchasing a home locally. Relocation of Yosemite Concession Services headquarters would reduce the commute time for any concession office staff living in privately owned housing in Mariposa.

Even if a number of concession employees purchase private homes as a result of the proposed employee housing changes, there would only be a net increase in the county's real estate tax revenues if house prices have risen since the property was previously purchased. According to local real estate agents, after a period of appreciation in local home values during the early and mid-1980s, local house prices have not changed much over the last 10 years. As a result, the net tax revenue impact to the county from any house sales would be long-term, negligible, and beneficial.

Regional Economies Conclusion

Economic impacts of this alternative on the affected environment would result primarily from project construction spending. During the first five years of development, approximately $31.0 million in annual spending would expand the regional economy by about $44 million of output. This would represent a short-term, negligible, beneficial impact. In Mariposa County, however, the estimated $9.7 million project-related increase in annual output during the project's first five years of implementation would have a short-term, minor, beneficial impact on the county's overall economy. In addition, during the first five years of development, it is estimated that approximately 553 total jobs would be generated in the region. This represents a short-term, negligible, beneficial impact on regional employment. In Mariposa County, however, the estimated 123 jobs generated directly and secondarily by project spending would have a short-term, minor, beneficial impact on that county's employment.

Impacts on employment would occur as new jobs were created from construction spending and visitor spending. Assuming the unemployed labor force in the Yosemite region would fill the majority of these new jobs, unemployment rates would drop significantly under this alternative. This would represent a short-term, major, beneficial impact on the region's economy. Housing impacts would be negligible under the assumption that new jobs would be filled by existing residents of the Yosemite region.

Redevelopment of the park's lodging and campsite facilities also would affect the regional economy by changing visitor spending in the region. Completion of these visitor facility changes is expected to occur 10 years after the start of project construction. During this 10-year period, park overnight capacity would not be allowed to fall below current levels. Once full build-out is completed, it is estimated that annual visitor spending would increase by about $1.1 million in 1998 dollars. The economic impacts on each of the surrounding county economies would be long-term, negligible, and beneficial. It is expected that Yosemite visitor-spending impacts to the regional economy will be long-term, negligible and beneficial.

The overall economic impacts of the changes from visitor spending and operational spending to the regional economy would be long-term, negligible, and beneficial. This impact would result primarily from the long-term, negligible, beneficial impact associated with the spending and employment effects from the increased park operations.

For Mariposa County, the overall economic impacts of the changes from visitor spending and operational spending change would be long-term, minor, and beneficial. This overall impact would result from the combined effect of the moderate, beneficial impact to the county from the increased park operations and the long-term, negligible, beneficial impact from the expected visitor spending increases.

Cumulative Impacts

Although none of the projects identified in Appendix H would be expected to attract additional visitors to the park, these projects would be expected to change the lodging patterns of the visitor population. As described under Alternative 1, the new lodging units identified would be expected to accommodate approximately 525,500 overnight stays per year, and these stays would be filled by park visitors who would otherwise have been day visitors. Combined with the net increase of 30,700 stays described above, the cumulative impact would be an increase of approximately 556,200 overnight stays per year.

Visitor Spending

In addition to the increase in overnight capacity in the Valley under this alternative, there would also be an increase in lodging in the region from the projects identified in Appendix H. As described under Alternative 1, the projects in Appendix H would generate approximately $18.8 million in direct annual visitor spending in the region. Thus, the total annual change in visitor spending would be approximately $19.9 million under this alternative.[2]

Secondary impacts generated by $19.9 million in additional direct visitor spending would be estimated to be $11.0 million. At full buildout, therefore, the total estimated spending-associated impact on annual output under this alternative would be $30.9 million, a long-term, moderate, beneficial impact on the regional economy. If new visitors are attracted to the region by the increase in lodging, visitor spending would be higher and the impact would be greater.

[2] Assuming the proposed changes in Alternative 3 would cause overnight visitor spending to increase by $1.1 million when all lodging and camping construction/removal is complete.

Construction Spending

Local construction spending from the projects identified in Appendix H is estimated to average $255.0 million annually. Under this alternative, an additional $16.4 million per year in local construction spending would occur on average from the proposed renovation of campsites, and the development and relocation of housing, parking, and other structures. Total construction spending on the projects under the proposed action and outlined in Appendix H, therefore, would be approximately $269.8 million per year under this alternative.

Additional construction spending would generate secondary output impacts as a result of local spending on material inputs and wage spending by project labor. For annual construction spending of $269.8 million, secondary impacts would be estimated at approximately $115.7 million. The total change in annual output (direct and secondary) would therefore be $385.5 million, a short-term, major, beneficial impact on overall industrial output in the region. Of this increase, approximately 88% would be associated with housing construction in Merced County.

New park operations–related spending is expected to generate an additional $19.6 million in output per year in the Yosemite region.

Employment

The equivalent of up to 581 jobs would be supported by the increase in visitor spending in the region.[3] In addition, the equivalent of approximately 2,900 to 9,200 full-time jobs would be supported each year from construction spending, including all projects in this alternative and other reasonably foreseeable, regional future projects, depending on the phase of construction. An additional 317 jobs would be generated by new park operations spending. Much of the general labor and raw materials would probably come from local sources. Unemployed labor (i.e., the available workforce) in the surrounding region (22,180) would outnumber the projected number of new jobs created from construction and visitor spending. A labor shortage is not expected because of the large number of unemployed workers in the region. However, employment needs also could be met by residents of neighboring counties outside the affected region, such as Fresno, particularly for the large construction projects in Merced County such as the proposed housing development and University of California campus development. In such a case, the economic benefits identified would instead be gained outside the region.

As discussed under Alternative 1, several other projects would create temporary and full-time employment opportunities within the region in the reasonably foreseeable future. Because the local workforce is expected to fill the majority of new employment opportunities, no significant influx of workers is expected. Therefore, it is projected that no new housing would be needed to accommodate employment impacts from this alternative or projects in Appendix H (Vol. II).

Overall, impacts on employment would occur as new jobs are created from visitor spending, construction spending, and operations spending. Assuming the unemployed labor force in the Yosemite region would fill the majority of these new jobs, unemployment rates would drop significantly under this alternative. This would represent a short-term, major, beneficial impact

[3] This assumes the proposed actions in Alternative 3 would cause the number of jobs created by visitor spending to increase by 33 Full Time Equivalents when all lodging and camping construction/removal is complete.

on the region's economy. Under the assumption that new jobs would be filled by existing residents of the Yosemite region, there would be no impacts on housing in the region.

CONCESSIONERS AND COOPERATORS

Yosemite Concession Services

The changes to park facilities and operations proposed under this alternative would affect both Yosemite Concession Services operations and its finances. The National Park Service used detailed information provided by the current concessioner to analyze existing concession operations and the proposed alternatives to estimate future operational and financial impacts on concession operations within the park. The impact analysis assumes that there would be no change in park visitation and visitor spending behavior, in order to make conservative projections of the concessioner's future operational and financial conditions.

- It is expected that the majority of in-Valley housing would be for seasonal employees. The reduced number of housing units that would remain in Yosemite Valley would have an adverse impact on future concession operations because there would be insufficient housing for a full shift of employees to be based in the Valley. In-Valley employee housing should be sufficient to provide housing for approximately 72% of employees necessary to staff concession operations for one shift. As a result, the concessioner's ability to meet visitor service needs under circumstances such as road closures or other commuting difficulties (such as fire or flood conditions preventing employees from commuting in and out of the Valley) would be reduced. This would represent a long-term, minor, and adverse impact on the concessioner's future operations.
- It is expected that future out-of-Valley employee housing would be occupied predominantly by year-round employees. These employees also would be required to commute into the Valley using an employee transit system. However, from a visitor service perspective, year-round employees should ideally remain close to the work site for maximum guest service benefit and operational needs. As a result, the concessioner's ability to meet visitor service demand would be reduced.
- It is expected that several adverse impacts could remain after proposed employee housing changes were implemented under this alternative. The concessioner's ability to recruit qualified and experienced management may continue to be constrained by the limited availability of housing for management personnel. Because a major proportion of the employee housing would be relocated to El Portal, one of the concessioner's greatest recruiting attractions would be reduced: namely, enabling employees to live, work, and recreate in Yosemite Valley. However, future housing designs would attempt to accommodate future employee housing needs. Furthermore, the quality of all new replacement housing would be improved compared to the current housing facilities. The combined impact of these factors would be expected to have a long-term, minor, adverse impact on the concessioner operations.
- Relocation of the National Park Service and concessioner stables to McCauley Ranch would eliminate the commercial horseback riding service to visitors beginning trips in the

Valley. Under this alternative, packhorses would be moved by trailer in and out of the Valley daily to continue support service for the high country camps. This would represent a long-term, minor, adverse impact on the concessioner's future operations.

- Relocation of the Village Garage to El Portal would adversely affect the concessioner's towing service. Disabled vehicles would need to be towed to El Portal which would result in increased response time for towing service. Additional heavy-duty tow trucks would have to be purchased, operated, and maintained to provide roadside assistance to buses and other large vehicles (e.g., shuttle bus and recreational vehicles) over longer distances. This would represent a long-term, minor, adverse impact on the concessioner's future operations.

Three types of financial impacts are expected under this alternative: (1) changes to the concessioner's gross revenue (sales receipts); and profitability, (2) employee housing and relocation-related cost increases including furniture, fixtures, and equipment expenses, and (3) annual repair and maintenance cost on new facilities. The magnitude of these impacts would depend on whether the impacts occur during the remainder of the current concessioner's contract (i.e., until 2008) or under a subsequent contract. The estimated financial impacts discussed below are expressed in terms of stabilized annual revenues and costs. These impacts are also generally represented as net impacts compared to the concessioner's 1998 financial conditions.

Gross revenue impacts reflect changes to the concession's sales resulting from the proposed change to visitor services. The furniture, fixtures, and equipment impact represents the initial cost of outfitting the proposed new facilities to make them operational, and the subsequent replacements of the new fixtures and facilities as they wear out (typically after 7 years of use).[4] Maintenance and employee housing cost impacts represent the additional expenditures necessary to operate under the new configuration of facilities. The profit impact clearly shows the financial impacts on the concessioner's business because it includes changes in both annual revenues and costs.

The concession impact analysis includes an evaluation of whether concession profits would be adequate to allow the concession operator to earn a reasonable return relative to its investment and operating risk. To evaluate the impacts of the alternatives presented in the *Yosemite Valley Plan* on the concessioner, the analysis began by evaluating the concession's current capacity to earn a profit, and then considered how each aspect of the *Yosemite Valley Plan* alternatives would impact that capacity.

The concessioner's profit capacity may be understood as consisting of two components—its present profit plus the amount of its federal contribution. In other words, the concessioner's financial contribution to the federal government represents the amount of money it is able to pay after earning a reasonable return. It is important to note that this judgment is based on the fact that the current Yosemite concessioner obtained the concession contract in a fair market

[4]The series of periodic future investments in furniture, fixtures, and equipment can be viewed as equivalent to an annual average investment. In this way, the annual impact of the furniture, fixtures, and equipment expense increase can be represented in the concessioner's resulting profit performance. Indeed, if the furniture, fixtures, and equipment purchases are financed with debt, as might be expected, the debt service would be an annual cost

competition in which it presumably is retaining reasonable profits that are neither insufficient nor excessive.

If the changes in concession operations induced by the *Yosemite Valley Plan* do not erode all of the concessioner's ability to make financial payments to the government, a reasonable profit would remain available to the concessioner. On the other hand, if the *Yosemite Valley Plan* eliminates the concessioner's ability to make any federal contribution, the concessioner may still earn a reasonable return as long as their profits are not also eroded. However, if the concessioner was unable to make any payments to the federal government and was also unable to earn a reasonable profit, that situation could not be sustained. The concessioner would choose to discontinue operations.

The total profit impact on the next concessioner's operations associated with the proposed alternative is projected to be a decrease in its annual profits of $6.5 million. This projection is based on the combined profit impacts associated with: (1) changes to the concessioner's gross revenue (sales receipts) and profitability; (2) employee housing and relocation-related cost increases including furniture, fixtures, and equipment; and (3) annual repair and maintenance costs on new facilities.

The changes to visitor services proposed under this alternative are projected to generate additional net operating profits of $3.4 million annually. These profits would be obtained from annual revenue increases of approximately $7.4 million. The profit gains would primarily result from increasing the highly profitable Yosemite Lodge accommodations and the additional commercial visitor services to be located at the Taft Toe Visitor/Transit Center.

Future employee housing and relocation cost increases are projected to be approximately $4.7 million per year. These consist primarily of increases in the annual costs for: furniture, fixtures and equipment replacement ($1.5 million), heat and utilities ($800,000), employee transportation ($300,000), insurance ($500,000), and wage increases to encourage employees to relocate out of the Valley ($500,000). Additional housing-related staff needs are estimated to cost less than $200,000 million. Other associated costs would total approximately $0.9 million. It is estimated that the future average annual cost for repair and maintenance for the new concession-related facilities would be approximately $5.2 million.

In summary, based on the analysis of changes proposed under this alternative, future concession operations would be expected to experience a $6.5 million decrease in annual profits ($3.4 million – $4.7 million – $5.2 million = –$6.5 million).

This profit decrease would result in the concession operating at a loss due to the concessioner's expected additional financial and contractual obligations to the federal government. This loss could be offset by reducing the current or any future concessioner's federal contribution from its current level of $9.9 million annually to cover the concessioner's projected profit reduction. In this case, it is estimated that the current or any future concessioner would be able to make a net contribution of approximately $3.4 million to the federal government annually. This would represent a long-term, negligible, adverse impact on concession operations.

Table 4-85 shows the projected financial impacts to Yosemite Concession Services under Alternative 3.

Table 4-85 Projected Annual Financial Impacts to Yosemite Concession Services ($ Million)			
Impact	**Alt 1**	**Alt 3**	**Net Change**
Revenue	$0	$7.4	$7.4
Profit from Operations	$0	($6.5)	($6.5)
Concessioner's Govt. Contribution	$9.9	$9.9	$0
Net Profit Impact & Government Contribution	$9.9	$3.4	($6.5)

Note: All monetary figures are in 1998 constant dollars.
Negative figures denoted by ( ).

The projected revenue impact would represent an 8.4% increase in the concessioner's 1998 revenues, which would be a long-term, moderate, beneficial impact. If the concessioner's governmental contribution were used to offset the projected profit losses from its operations, then the alternative would have a long-term, negligible, adverse impact on the concession operations because the concessioner's net profits would be unaffected by the reduction of its federal contribution. However, the annual financial return to the federal government from concession operations would be reduced from $9.9 million to $3.4 million, a reduction of 66%, which would be a long-term, major, adverse impact on the federal government.

Yosemite Medical Clinic

Under this alternative, the medical clinic would remain in its current location. Most of the proposed changes to the park's operations and facilities are not expected to have any direct impacts to the clinic's operations. While most of the proposed park improvements are expected to improve park safety, the reduction in the need for medical services from most of these changes (e.g., reduced vehicle traffic or elimination of public horseback riding) cannot be quantified.

Under this alternative, changes to the park's annual visitation and population may be expected to have a corresponding effect on the clinic by altering its customer base. As a result, future medical service provision by the medical clinic is expected to be affected by: (1) the proposed future reductions in park overnight visitation, and (2) relocation of park employee housing in El Portal.

Under this alternative, it is projected that approximately 17,400 room-nights would be gained with an annual increase of 30,700 overnight stays within the Valley. While this represents an approximate 2.6% increase in park overnight stays, it corresponds to only a 1.0% increase in park visitation (compared to 1998 visitation levels). This would represent a long-term, minor, beneficial impact on the clinic.

Although relocation to El Portal might encourage some employees to seek medical attention at other clinics outside the park, the majority of these employees would continue to work in the Valley, and may continue to seek medical attention at the Valley Medical Clinic. However, the net effect and future magnitude of these impacts on the concession's future sales cannot be quantified.

The Ansel Adams Gallery

Under this alternative, The Ansel Adams Gallery would remain in its current location. Proposed modifications for the Yosemite Village Area include expansion of fast food facilities at the Village

Grill and Degnan's, removal of public parking throughout the Yosemite Village area, and the transformation of the Yosemite Village area as an interpretive hub. A new transit and visitor center would be located at Taft Toe. All day-visitors would be required to use the Valley transit system to enter the east end of the Valley.

While the new transit and visitor center is located mid-Valley and visitors may disperse from that point, the Yosemite Village area is expected to continue to be an important part of most park visitors' travel itinerary. It is expected these actions would have a long-term, minor, adverse impact on the Ansel Adams Gallery since potential customers will not be initially directed to the Yosemite Village area. The adverse impact could be decreased if future signage and visitor orientation programs increased public awareness of the Gallery's location, operations, and history.

While the proposed natural resources restoration actions may improve the Valley's visual appearance and enhance overall visitor experience, these changes would not be expected to affect the gallery's business. However, removal of nearby parking may reduce the Gallery's annual sales because many visitors may be reluctant to make purchases if they must use shuttle buses to return to their cars or overnight accommodations. In addition, any changes to the park's annual visitation may also be expected to have a corresponding effect on sales by altering the Gallery's customer base. However, the net effect and future magnitude of these impacts on the concessioner's future sales cannot be quantified.

Yosemite Association

Employee housing is the primary issue affecting the Yosemite Association's future operations. The Association currently experiences a shortage of employee housing, and any increase in future employees would increase the problem. This alternative proposes that some housing would be available for Yosemite Association employees; if this occurred it would have a long-term, moderate, beneficial impact on the Association's ability to recruit and retain staff.

The proposed changes to the Valley Visitor Center are expected to produce mainly long-term, moderate, beneficial impacts to the Yosemite Association. Under this alternative, the Valley Visitor/Transit Center would be relocated to the site of the Yosemite Village Store. The existing Yosemite Village Store building would either be rehabilitated or replaced. The new Visitor/Transit Center would also serve as a transit center for park visitors.

As a result, visitor use at the new visitor center may be expected to increase compared to use of the existing visitor center, which is inconveniently located and has limited and poor display space. Relocation of the visitor center to a larger and more readily accessible site would improve the Association's ability to provide effective information and orientation service as well as retail sales. It is estimated that annual sales at the new visitor center could double from its current revenues of $0.75 million. This would represent a long-term, major, beneficial impact to the Association. It is also expected that these revenue increases would exceed any decreases in sales that may be associated with any reduction in park visitation (e.g., from lodging reductions).

Under this alternative, the Yosemite Association's Valley office would be converted for use as a natural history museum. This would allow improvement of the existing cultural history museum within the existing museum building. The Yosemite Association expects these changes to have a

long-term, moderate, beneficial impact on its finances because it would be able to enlarge and improve the existing Museum Store and open an additional store at the new national history museum.

Increases in Yosemite Association retail sales may require hiring additional retail employees. While the Yosemite Association cannot project the necessary staff increase, it does expect costs to be covered by the increased sales. This would be a long-term, minor adverse impact. Also, staff increases would exacerbate the housing problems noted above, potentially causing a long-term, minor adverse impact.

Yosemite Institute

Numerous impacts to the Yosemite Institute are expected due to proposed changes to overnight accommodations, administrative park operations, transportation, research library, archives, and museum.

Overnight Accommodations

The reduction in the number of Curry Village tent cabins and elimination of cabins without baths may affect the Yosemite Institute, which currently occupies approximately 80 units between September and June. Under this alternative, economy accommodations are proposed at Curry Village suitable for Yosemite Institute's use throughout the winter. As a result, lodging capacity for Yosemite Institute participants is expected to be adequate.

It is expected that Yosemite Institute would be required to pay higher room rates to Yosemite Concession Services for rooms with bath. Based on Yosemite Concession Services' current rate structure and depending on the availability of the remaining Curry Village tent cabins for Yosemite Institute's use in September and June, it is estimated that the Institute's average lodging costs would increase between 16% and 25%. This is equivalent to an average lodging cost increase of $1.80 to $2.70 per person per night. Based on an average annual total of 40,122 person-nights spent in Yosemite Concession Services accommodations by Yosemite Institute participants, Yosemite Institute's total lodging costs may be expected to increase between $72,000 to $108,000 (in 1999 dollars). This would represent a long-term, moderate, adverse impact on Yosemite Institute's program.

Transportation

Proposed transportation plans would have a long-term, negligible, adverse impact on Yosemite Institute's program, because most participants rely on commercial buses for their transportation needs, and all student visitors are overnight visitors. Yosemite Institute employees would welcome the opportunity to use public transportation to and from locations outside the Valley.

Administrative Park Operations

Under this alternative, Yosemite Institute's administrative offices would be relocated outside the Valley into government provided facilities in El Portal. The National Park Service would work with the Yosemite Institute and the primary concessioner to provide adequate facilities for the Institute's field operations that operate in the Valley during the off-season. The purpose of these facilities would be provide an adequate staging area and base of operations so the Yosemite

Institute could provide the essential support necessary for its field operations. Relocation of the administrative park operations would represent a long-term, minor, adverse impact on Yosemite Institute's education programs.

In addition, under this alternative, Yosemite Institute would experience a long-term, negligible, beneficial impact from the new educational opportunities provided by the natural resources restoration in the east end of the Valley and the improved access to the west end of the Valley.

El Portal Chevron Station

Under this alternative, the overall number of visitors entering along Highway 140 is not expected to change. The majority of day visitors would continue to drive into the park. No satellite parking is proposed at El Portal under this alternative. As a result, visitor fuel sales would be expected to be unchanged, which would have a negligible impact on the station's annual revenues. Therefore, overall it is expected that this alternative would have a long-term, negligible, and adverse impact on the El Portal Chevron station.

El Portal Market

Under this alternative, the El Portal Market would remain at its current location, and its facilities and operations would be unchanged through the term of the existing and contract. The store's primary source of customers is from park visitor traffic along Highway 140, which will continue under this alternative.

Although past population increases have not resulted in increased sales at the market, it is possible that the increase in employee housing at El Portal would result in a minor increase in revenues. Therefore, overall this alternative is expected to have a long-term, minor, beneficial impact on El Portal Market's sales.

Concessioner and Cooperators Conclusion

Under this alternative, the proposed changes to park facilities are expected to have long-term, minor, adverse impacts on the primary concessioner operations mainly associated with locating new employee housing outside the Valley. This action would require many employees to commute into the Valley using the employee transit system, reduce the number of staff available for work during road closures or other commuting difficulties, and may reduce the concessioner's ability to recruit future employees. In addition, relocation of the concessioner stable and primary garage service out of the Valley would require additional staff and equipment for these services.

The future primary concession operations would be expected to experience a $6.5 million decrease in annual profits. This loss could be partly offset by reducing the current or any future concessioner's federal contribution from its current level of $9.9 million annually to cover the concessioner's projected profit reduction. In this case, it is estimated that the current or any future concessioner would be able to realize a reasonable profit and contribute approximately $3.4 million to the federal government and the Valley.

The net impacts on the Ansel Adams Gallery from proposed changes in visitor parking and visitation are indeterminate.

The proposed changes to visitor interpretation facilities are expected to have a long-term, major, beneficial impact on the Yosemite Association by providing improved and increased retail sales opportunities. However, associated increases in employees and the limited employee housing for the Yosemite Association staff may have a long-term, moderate, adverse impact on the organization.

Reductions in Curry Village tent cabins would have a long-term, moderate, adverse impact, because program participants would need to use other newly built but more expensive lodging facilities. Relocation of the program's administrative office out of the Valley is expected to have a long-term, minor impact.

This alternative would have a long-term, negligible, and adverse impact on the El Portal Chevron Station. The alternative would have a long-term, minor, and beneficial impact on the El Portal Market.

Cumulative Impacts

Yosemite Concession Services

The cumulative impacts would be as described under Alternative 1. The primary concessioner would be expected to assume costs of additional future "repair and maintenance" on *existing* park facilities used for its operations, an estimated annual cost of $1.7 million. As a result, under this alternative, a total cumulative impact resulting in a net federal contribution of $1.7 million by the concessioner is projected. This reduction is the difference between a $3.4 million projected federal contribution by the concessioner and the $1.7 million additional repair and maintenance cost on existing park facilities used by the concessioner. This would represent a long-term, negligible, adverse impact on the concessioner, because its net profits would be unaffected by the reduction in its future federal contribution.

Potential mitigation approaches and their expected impacts were discussed in the impact analysis for Yosemite Concession Services earlier in this section.

Other Concessioners and Cooperators

Cumulative impacts would be the same as described under Alternative 1.

Park Operations

NATIONAL PARK SERVICE OPERATIONS

Superintendent's Office

This alternative would have no impact on the Superintendent's office staff or its annual funding requirements.

Maintenance Operations

Buildings and Grounds

To provide the levels of service considered necessary, it is estimated that approximately 22 additional buildings and grounds personnel would be needed under this alternative. This would represent approximately $825,000 in additional salary and operations costs annually. Construction of new shuttle bus stops, buildings, housing units, and changes in building functions from administrative to public use would require additional custodial service and facility maintenance.

The rehabilitation of historic districts would require additional staffing and associated funding.

The traveler information and traffic management system, once implemented, could displace visitors to outlying districts or expand visitation to off-peak seasons. This would cause a long-term, minor, adverse impact on buildings and grounds operations in outlying districts, in that the levels of maintenance and custodial services required for peak season operations would be needed for a longer period of the year.

Roads and Trails

To provide the levels of service considered necessary, it is estimated that approximately 17 additional roads and trails person would be needed. This would represent approximately $637,500 in additional salary and operations costs annually.

A new parking lot in the mid-Valley would require additional winter maintenance (equipment and staffing) for snow removal.

An increase in trails in the Valley and El Portal would create an additional workload that would impact the trails and forestry operation. Snow removal in the winter, and hazard tree removal and trail repairs throughout the year would continue for the life of the new trail system.

If the stable were to move to McCauley Ranch it would increase the travel time for packers to get to Valley trailheads but would decrease travel times to destinations in the Tioga Road corridor. Additional staffing and salary would be required to provide more pack trips or longer work shifts to handle the added travel time for pack trips leaving from Yosemite Valley trail heads.

There would be an increased demand for trash pickup in the El Portal area due to the relocation of administration functions and the increase in the number of housing units.

Utilities

It is estimated that approximately six additional utilities personnel would be needed to provide appropriate levels of service. This would represent approximately $225,200 in additional salary and operations costs annually. Moving functions, constructing new buildings, and relocating utilities out of highly valued resource areas would require the utilities branch to install additional or longer service lines. New service connections and, in the case of the Taft Toe Visitor/Transit Center, an entirely new utility system, would require an increase in the annual maintenance and operational costs to provide these additional levels of service and to meet state and federal regulations for public utility systems.

Moving the stable to McCauley Ranch would increase the travel time for the backcountry utilities operation to Valley trailheads but would decrease travel times to destinations in the Tioga Road corridor. However, it would increase logistical maneuvering when leaving from Yosemite Valley trailheads.

The overall impact to maintenance operations would be long-term, moderate, and adverse until funding is provided to meet the need. Once funding and staffing are provided, the impacts would be long-term, negligible, and neutral.

Visitor and Resource Operations

Visitor and Resource Protection

It is estimated that approximately 31 additional visitor protection personnel would be needed to provide appropriate levels of service. This would represent approximately $1,162,500 in additional salary and operations costs annually. Removing the court system and the detention facility and relocating them to El Portal, would increase costs because of the time required for rangers to be away from their duty stations. During the summer months as many as eight rangers and two corrections officers would be in El Portal on a daily basis.

Relocating the base of operations for Search and Rescue from Yosemite Valley to El Portal would have the potential for long-term, minor, adverse impacts upon incident costs, in that activities in Yosemite Valley, where most complex rescues occur, would have more logistical costs than under Alternative 1. Coordination of Yosemite Valley operations would be more difficult, while coordination of activities in other parts of the park would potentially improve.

Interpretation

Greatly expanded interpretive and educational facilities and programs would require a large increase in staffing for the Interpretation Division. The new museum and library with expanded public access would also require increased staffing. The Interpretation Division would have to operate additional visitor contact facilities and conduct additional interpretive programs. It is estimated that approximately 26 additional interpretive personnel would be needed to provide prescribed levels of service. This would represent an additional $975,000 in additional salary and operations costs annually.

Resources Management

Restoration of impacted areas, continued monitoring of restoration efforts, mitigation measures to facilitate restoration resulting from changing visitor-use patterns, and expanded efforts working with American Indian programs would require an increase in staffing. Staffing and funding would be needed to implement the Visitor Experience and Resource Protection (VERP) program. It is estimated that approximately seven additional resources management personnel would be needed to provide the prescribed levels of service. This would represent approximately $262,500 in additional salary and operations costs annually.

Overall, the impacts to Visitor and Resource Operations would be long-term, moderate, and adverse until funded. Once funded, impacts would be long-term, negligible, and neutral.

Administration

Valley administrative operations would be shifted to El Portal. This would have a long-term, minor, adverse impact on administration operations as a result of increases in logistic maneuvering. Administrative support would be increased by five positions and $187,000 to support park operations.

Concessions Management

Management and monitoring of new concession operations and facilities would require two additional staff at $37,500 annually. There would be additional costs for increasing the level of service necessary under this alternative to manage revised and refined concession services.

Depending on the location chosen by the park's principal concessioner for its headquarters, coordination and communication would potentially be more difficult than under Alternative 1. However, the adverse impact of communication and coordination difficulties would likely be moderate over the short term, becoming minor as both operations adjust to the new working environment.

CONCESSIONERS AND COOPERATORS

Impacts on park concessioners are evaluated under the section of this chapter titled Social and Economic Environments.

TRANSIT OPERATIONS

The annual recurring costs for operations and maintenance of the bus fleet for this alternative would be $2,739,000.

CONCLUSION

This alternative would require that approximately 115 additional park personnel be added to current staffing levels in the Maintenance Operations, Protection Operations, Interpretation, Resources Management, and Administration Divisions. This would require an additional $4,312,500 annually (or approximately $37,500 per person) in additional park funding for salary and operations costs above those discussed under Alternative 1. The cost for the additional park personnel would represent a long-term, moderate, adverse impact until fully funded. Once funded, impacts would be long-term, negligible, and neutral.

CUMULATIVE IMPACTS

In this alternative, only in-Valley transit systems would be needed in the park. There would be no out-of-Valley parking areas, yet the costs would remain moderate, when compared to Alternative 1. Cumulative impacts would result from other park planning projects and regional activities. The workloads of the Maintenance Operations, Interpretation, and Resources Management divisions could moderately increase as a result of the transit system developed by the Yosemite Area Regional Transit System (YARTS) due to increased facility maintenance, custodial services, visitor education, and resource monitoring. There would be a long-term, moderate, adverse impact because of workload increases. YARTS operations would result in a long-term, minor,

beneficial impact on Protection Operations due to the alleviation of traffic congestion. These moderate effects, in combination with the moderate impacts of implementing in-Valley transit systems, would result in operational impacts that are long-term, major, and adverse compared to Alternative 1.

The redesign of the South Entrance and Mariposa Grove areas would increase the workload of the Protection Operations, Maintenance Operations, and Resources Management Divisions during initial planning and implementation. This would cause a short-term, minor, adverse impact. However, this project would require a long-term commitment from and an increased workload for the Interpretation Division. As a result, this project would have a major and adverse effect on the workload of the Interpretation Division. The Protection Operations and Maintenance Operations Divisions would achieve long-term, moderate, positive benefits when the project is completed due to decreased workloads for their operations. These effects, when considered in combination with the major impact of providing more interpretive services at improved visitor information centers, would result in long-term, moderate, adverse operational impacts.

Fire Management planning and Wilderness Management planning would increase the workloads of the Protection Operations and Resources Management divisions. These would have short-term, major, adverse impacts on both divisions. The workload of fire management staff would increase over the long term as a result of this planning effort. This alternative would create the need for planning, design, and program refinement, which would also have short-term, major, adverse impacts; cumulative impacts would remain major and adverse, but of a short-term duration.

Numerous proposed residential and commercial developments along each entrance corridor would have no long-term impacts on operations, assuming that a traveler information and traffic management system would be developed and that the park would not provide emergency services to those areas. Should the park be required to provide emergency services to these areas, impacts would be incurred unless cooperative agreements were adopted and financial support was available from the involved county governments. Moderate to major short-term, adverse impacts would be expected during times of construction. Considered in combination with the actions in this alternative, adverse effects upon Protection Operations would remain moderate to major and long term.

A research station for the University of California, Merced (UC Merced) would have a moderate to major benefit over the long term, resulting from educational and research support and the creation of a viable recruitment pool for new employees.

Many other in-park actions, such as major campground rehabilitation, development concept planning, and water treatment plant rehabilitation (including water and wastewater improvements at Tuolumne Meadows and White Wolf), would have short-term, major, adverse impacts on staff availability during times of construction or development. When considered in combination with the actions in this alternative, the cumulative effect of these activities on park operations would remain short-term, major, and adverse.

Energy Consumption

Under Alternative 3, housing beds would be relocated from Yosemite Valley to El Portal and Foresta, and additional beds would be added to El Portal to accommodate present unmet needs and potential future growth as a result of operational changes associated with this alternative. No additional beds would be added to Wawona. Table 4-86 shows existing housing and estimated propane consumption for Alternative 1 and provides data for Alternative 3.

Table 4-86
Changes in Housing and Propane Consumption

Location	Alternative 1		Alternative 3	
	No. of Beds	Propane (gal/yr)	No. of Beds	Propane (gal/yr)
Yosemite Valley	1,277	260,510	689	140,600
El Portal	290	59,160	1,049	214,000
Wawona	112	22,850	112	22,850
Foresta	4	820	14	2,860
Cascades and Arch Rock	12	2,450	0	0
Total	**1,695**	**345,790**	**1,864**	**380,310**

Under Alternative 3, there would be an increase of about 260% in propane consumption in El Portal, a small increase in Foresta, and a decrease of about 45% in the Valley. However, when combined, the overall propane consumption increase as a result of implementation of Alternative 3 would be 34,520 gallons per year, or 10%, which would represent a minor, long-term, adverse impact on propane consumption.

Table 4-87 lists estimated fuel consumption for visitor-related travel to and from the Valley due to the Alternative 3 transportation plans, and additional out-of-Valley employee commuting due to the relocation of residences from the Valley to El Portal. By 2015, Alternative 3 would result in a 23% decrease in visitor-related gasoline consumption and a 16% increase in diesel (or alternative) fuel consumption. This increase would be associated with new shuttle buses operating in the expanded Valley shuttle system.

Table 4-87
Vehicle Fuel Consumption

Alternative	Total (Gal/Yr)		Total Fuel Consumption (Gal/Yr)
	Gasoline	Diesel or Alternative Fuel	
2000			
Alternative 1	2,905,800	230,200	3,136,000
Alternative 3	NA	NA	NA
2005			
Alternative 1	2,696,100	224,500	2,920,600
Alternative 3	2,084,800	260,400	2,345,200
2010			
Alternative 1	2,555,400	219,100	2,774,500
Alternative 3	1,976,000	253,800	2,229,800
2015			
Alternative 1	2,480,800	213,800	2,694,600
Alternative 3	1,918,300	247,500	2,165,800

A 23% decrease in gasoline consumption by the year 2015 would represent a savings of 562,500 gallons over Alternative 1, whereas the 16% increase in diesel (or alternative) fuel consumption would represent an increase of 33,700 gallons over Alternative 1. Overall, Alternative 3 by the year 2015 would yield a combined savings of 528,800 gallons of fuel. This is a net decrease from Alternative 1 in motor fuel consumption of approximately 20%, and would represent a minor, long-term, beneficial impact. Similar energy savings would be achieved for years 2005 and 2010 as well.

Conclusion

Employee housing space-heating consumption would decrease in the Valley, but would increase at El Portal during the 2000-2015 time frame. Overall, there would be a minor increase in total housing units for Alternative 3 and an associated minor, long-term, adverse impact on home energy consumption.

The reduction in gasoline consumption in 2015 relative to Alternative 1 reflects the shift by park visitors from private vehicles to shuttle buses, as well as a fleet turnover to vehicles with improved fuel economy over time. The increase in diesel (or alternative) fuel consumption would be attributable to the deployment of shuttle buses for visitors. The combined motor fuel consumption savings for Alternative 3 in 2005, 2010, and 2015 would represent a minor, long-term, beneficial impact.

Cumulative Impacts

Other actions in the immediate area and greater San Joaquin Valley may have cumulative impacts. The cumulative impact on energy consumption under Alternative 3 would be associated with new housing and lodging developments outside the park. A moderate, long-term, adverse impact would result from these reasonably foreseeable future projects in the region, as described for Alternative 2. Alternative 3, however, would represent a minimal contribution to the incremental effect on the overall cumulative impact because the net increase in employee housing for Alternative 3 would be only about 1% of new housing projected for the region.

Alternative 4

Taft Toe and Out-of-Valley Parking

El Portal,
Badger Pass,
and South Landing

Final Yosemite Valley Plan

Supplemental EIS

Photo on previous page by Ralph Anderson, courtesy of Yosemite Museum

There have been 11 winter floods on the Merced River in Yosemite Valley since 1916 that have caused substantial damage to property. However, floodwaters recharge meadows as they spread over the broad floodplain in the east valley. This was the case in Cook's Meadow in November 1950.

ALTERNATIVE 4
TAFT TOE AND OUT-OF-VALLEY PARKING (EL PORTAL, BADGER PASS, AND SOUTH LANDING)

The analysis of potential impacts from actions implemented under Alternative 4, Taft Toe and Out-of-Valley Parking (El Portal, Badger Pass, and South Landing), are presented in this section.

Water Resources

This section analyzes impacts to water resources: hydrology, including floodplain values, and water quality. Impacts to water resources are described by area (i.e., Yosemite Valley, El Portal, Wawona, and out-of-Valley parking locations) and are characterized as long-term alterations or restoration of hydrologic processes (e.g., water flow and flood regime) or water quality (e.g., turbidity, and non-point source pollution from vehicles or recreational use).

YOSEMITE VALLEY HYDROLOGY

Actions to implement the River Protection Overlay include the removal of development within 150 feet of the river. These actions would restore the river to more natural geomorphologic conditions through restoration of stream banks (i.e., streambank stability) and the 100-year floodplain. The River Protection Overlay would allow natural processes to prevail in the river and floodplain and minimize the alterations of the floodplain due to existing and future facilities. Further, removal of development from the River Protection Overlay would potentially reduce visitor degradation of stream banks and the river channel by concentrating visitor use away from the river. Examples of these areas include Housekeeping Camp, certain meadow roads and turnouts, and riverside campgrounds. Removal of facilities from the River Protection Overlay would allow natural floodplain alterations and lateral movement of the river channel (i.e., meandering), and increase opportunities for restoration of riparian vegetation, which would reduce unnatural erosion and deposition. Ultimately, the implementation of the River Protection Overlay would result in a regional, long-term, major, beneficial impact on hydrology and floodplain values.

Camp 6 would be restored between Northside Drive and the Merced River, allowing for restoration of some of the oxbows and cut-off channels that once existed in the area. Changes to the existing river dynamics through restoration of oxbows and braided streams could, over time, become more locally pronounced and eventually contribute to restoration of natural stream flow conditions downstream of the area. Restoration actions at Camp 6 would result in localized, long-term, major, and beneficial impacts on hydrology and the floodplain values.

The construction of a parking facility and transit center at Taft Toe would alter surface hydrology by the removal of vegetation and replacement with an impervious surface. In addition, riverbank

instability (soils compaction and vegetation loss) could be the result of radiating impacts associated with the increased concentration of visitors. As a result of these alterations to hydrology, there would be a localized, minor, long-term, and adverse impact on hydrology.

The parking facility and transit center at Taft Toe would be constructed largely outside of the 100-year floodplain, but the concentration of visitors would have radiating impacts to the river and its hydrologic processes. This would be a long-term, minor, and adverse impact.

The construction of a picnic area at the location of the former Superintendent's House (Residence 1) would have a long-term, minor, and adverse impact on hydrology due to radiating impacts of increased visitor use to a sensitive stretch of riverbank.

At Yosemite Lodge, Northside Drive would be rerouted to the edge of the 100-year floodplain and parking would be reconfigured, but would remain in the 100-year floodplain. This would result in a long-term, minor, adverse impact on hydrology because flood flow would be altered.

The removal of three structures at Ahwahnee Row that are located in the 100-year floodplain would have a localized, long-term, minor, beneficial impact on floodplain values by removing impediments to flood flow (particularly pooling in this area).

Restoration areas include the portions of Yosemite Lodge (including motel units that impede flood flow and the former cabins area), Upper and Lower River Campgrounds, North Pines Campground, and roads from Stoneman and Ahwahnee Meadows that are in the 100-year floodplains. Removal of these facilities and restoration would restore the hydrologic process of flooding, and would be a long-term, moderate, beneficial impact on hydrology.

The presence of a bridge as a fixed structure within a river course can cause alterations in river flow and result in localized morphologic changes to the beds and banks of the river. Morphologic changes attributable to bridge placement, and that are most readily observable, would include scour holes on the downstream side of the abutment, formation of deposition bars downstream of the scour holes, bank instability, unnatural erosion and deposition, changes in flow velocity, and localized channel widening. Removal of these fixed structures would provide for restoration of natural erosion and deposition process; allow the river to meander and naturally alter course; and reduce flooding potential by removing flow impediments. The impacts of bridge removal would be noticeable as the scour holes and downstream deposition bars caused by their in-river abutments diminish and the riverbank is reestablished by natural flow patterns. Bridge removal would continue to improve natural river flow dynamics along extended reaches of the river, and the impacts would be observable for years to come.

Sugar Pine Bridge constricts the river severely, largely because this bend of the river immediately downstream of the Tenaya Creek confluence has always been dynamic. The approach road that connects Ahwahnee Bridge to Sugar Pine Bridge eliminated the numerous small cutoff channels that existed prior to construction in 1929. The loss of the numerous small cutoff channels, combined with the constriction of the river by Sugar Pine Bridge, has forced the creation of a single large cutoff channel immediately adjacent and parallel to the approach road. Removal of Sugar Pine Bridge and the approach road and restoration of the riverbank (vegetation, bank slope, channel width) would be a localized, long-term, major, beneficial impact on the Merced

River's hydrology, by reducing unnatural erosion and scouring, reducing unnatural deposition downstream of the bridge, and allowing the river to meander.

Stoneman Bridge constricts the river severely, causing increased velocities during high flow and the resultant formation of a downstream scour pool and mid-channel bar. The presence of the bar has caused erosion rates to increase unnaturally along the left (southern) bank. The constricted channel width has also had upstream impacts, with flood waters backed up behind the bridge causing erosion on both banks. Removal of Stoneman Bridge and restoration of the riverbank (vegetation, bank slope, and channel width) would be a localized, long-term, major, beneficial impact on the Merced River's hydrology, by reducing scouring and unnatural erosion both upstream and downstream of the bridge, by reducing unnatural deposition downstream of the bridge, and by allowing the river to meander.

Housekeeping Bridge moderately constricts the river and has three center piers in the river channel that cause increased velocities, formation of three scour holes at the bridge, and downstream erosion (particularly at the left bank). Removal of Housekeeping Bridge and restoration of the riverbank (vegetation, bank slope, and channel width) would be a localized, long-term, moderate, beneficial impact on the Merced River's hydrology by reducing scouring and unnatural erosion.

Superintendent's Bridge minimally constricts the river, but has center piers in the river channel that interfere with transport of large, woody debris. Removal of Superintendent's Bridge would be a localized, long-term, minor, beneficial impact on the Merced River's hydrology by allowing free movement of large, woody debris.

Removal of these four bridges would also be a localized, long-term, major, and beneficial impact on floodplain values by removing impediments to flood flow, particularly large flood events such as the January 1997 flood event. Local, short-term, minor, adverse impacts to hydrology may occur during bridge removal due to construction activities in the main channel.

At Yosemite Creek, the human built rock rubble pile blocking the western channel would be removed, as would the pedestrian bridge and its abutments immediately upstream of the Yosemite Creek Bridge (vehicle). Removal of these impediments would restore hydrologic processes such as annual spring runoff, particularly restoration of flow to the western channel of the braided stream network, and would be a long-term, minor, beneficial impact on hydrology. Local, short-term, negligible impacts to hydrology may occur during removal due to construction activities in the western channel during construction.

A new vehicle bridge would be constructed downstream of the existing Yosemite Creek Bridge. The abutments of the new bridge would be outside of ordinary high water and would minimally impact hydrologic processes. This would result in a long-term, minor, adverse impact on hydrology. Local, short-term, minor, adverse impacts on hydrology may occur during bridge construction due to construction activities in the main channel.

The possible reconstruction of Swinging Bridge would have long-term, localized, minor, beneficial impacts on the Merced River's hydrology, because the bridge abutments would be removed from the riverbank (although some piers would remain in the river). Local, short-term,

minor, adverse impacts on hydrology would occur during reconstruction due to construction activities in the main river channel.

Cascades Diversion Dam was constructed in 1917 to impound water for the intake structure that diverted river flows to a downstream powerhouse. Use of the powerhouse to generate hydroelectric power was discontinued in 1985, as was the diversion of river flows. The dam is located at a natural breakpoint in the channel gradients: upstream of the dam the gradient is .01 feet/feet; downstream of the dam the gradient is .06 feet/feet. The pool and backwater created by the dam extend upstream from the dam about 550 feet. The dam is in danger of failure: outside of spring snowmelt runoff and rain-on-snow winter floods, water flows under the dam instead of through the spillway or over the dam. Failure of the dam would result in unmitigated release of the sediment trapped behind the dam, and materials that comprise the dam. Removal of the dam would have a localized, long-term, major, beneficial impact on the Merced River's hydrology by preventing the adverse impacts of dam failure and restoring the free-flowing condition of the river: sediment transport would be unimpeded; natural low-water and flood flow would be restored; and riparian vegetation currently displaced by the pool and backwater would be restored on the riverbanks.

Removal of Cascades Diversion Dam would also be a localized, long-term, major, beneficial impact on floodplain values by removing a substantial impediment to flood flow: both annual spring runoff, and large flood events such as the January 1997 flood event.

Reconstruction of the El Portal Road between the Cascades Diversion Dam and Pohono Bridge could have a beneficial impact on hydrology if the footprint of the existing bank stabilization in the river is reduced, or could have an adverse impact to hydrology if the footprint of the existing bank stabilization in the river is increased. Additional environmental compliance, including a Wild and Scenic River Act Section 7 determination, would be necessary before this segment of road can be reconstructed.

YOSEMITE VALLEY WATER QUALITY

Actions to implement the River Protection Overlay would remove sources of pollutants and reduce erosion and sedimentation by removing facilities and limiting activities associated with facility use and maintenance. These activities include vehicle maintenance, roadwork, and construction projects. Additionally, the possible realignment or relocation of roads, trails, and visitor facilities could reduce the introduction of refuse and bacteria by visitors. The removal of the concessioner stable and the Swinging Bridge Picnic Area and restoration to natural conditions would reduce a source of nutrients, coliform, turbidity, and other water pollutants from the Merced River. Actions to implement the River Protection Overlay would limit or remove development that is immediately adjacent to the river, thereby providing a buffer to impede the migration of non-point source pollutants from discharge areas to the Merced River.

The removal of parking spaces from Curry Orchard, Yosemite Falls, the concessioner stable, Camp 6, and roadside areas throughout the Yosemite Valley would substantially reduce the potential sources of non-point source pollution that are inherent in areas with heavy, concentrated vehicular use. Vehicles can release pollutants onto pavement, including asbestos, heavy metals, petroleum-based products, and other chemicals such as ethylene glycol. Some fraction of these

chemicals can be carried by surface-water runoff to streams, and eventually the Merced River. A formalized parking facility would be established at Taft Toe, with stormwater pollution controls incorporated into its design (possible treatment methods include sand filters, underground water collection and treatment tanks, or oil/water separators). The construction of a parking facility at Taft Toe would introduce a new non-point pollution source to the west Valley, although stormwater pollution controls would be incorporated into the design of the facility to minimize the pollution. This facility would have a localized, long-term, minor, adverse impact on water quality. Replacing the existing parking areas listed above with a formalized parking facility at Taft Toe would improve water quality by reducing non-point source pollution from stormwater runoff from large, paved surfaces, resulting in a regional, long-term, moderate, and beneficial impact on water quality.

The increased use of shuttle buses would reduce the number of vehicle miles traveled in the Valley, and allow the removal of some roads (e.g., roads through Stoneman and Ahwahnee Meadows). This would have long-term, minor, beneficial impacts on water quality by reducing non-point source pollution.

EL PORTAL HYDROLOGY

As a result of a U.S. Army Corps of Engineers study (1998), the flood protection levee (hereafter, "levee") in the Hennessey's Ranch area would need to be raised and extended in order to protect employee housing, the impacts of which would be two-fold.

First, the levee would limit and possibly redirect natural river flow through a localized reach of the river during a 100-year flood event, reducing channel width and increasing flows or eddies depending on floodwater velocity and height. The levee is above the normal high water line and would not affect the river flow during normal spring runoff periods. Increasing the length and height of the levee would be a localized, long-term, minor, adverse impact on the river's hydrology because this reach of river has low susceptibility to bank scour, erosion, and slope instability.

Secondly, any structure intended to prevent flooding has the potential to limit the natural formation and function of that river's floodplain. Most of the Merced River in El Portal is confined within a bedrock gorge channel, and the floodplain is narrow due to the river gradient and resistant bedrock. Consequently, the majority of the floodplain is more resilient and less susceptible to adverse impacts of altered river flow. The area at Hennessey's Ranch is one of the few flat, alluvial floodplain sections adjacent to the Merced River at El Portal. The alluviated area was formed through years of river sediment deposition. After construction of the existing flood protection levee, this area was isolated from further sediment deposition because the levee height prevented inundation by large flood flow such as the January 1997 flood event, which was the largest flood event in the 80+ years of stream gauge data at the Pohono gauging station. When compared to the impact of the existing flood protection levee, increasing the length and height of the levee would be a localized, long-term, minor, adverse impact on floodplain values because only flood flow greater than the January 1997 flood event would be affected.

Removal of housing from the River Protection Overlay at Hennessey's Ranch and restoration of the area would have long-term, minor, beneficial impacts on hydrology by restoring river-related communities and hydrologic processes.

Construction of new housing in the 100-year floodplain but outside of the River Protection Overlay would require the modification of the levee (discussed above), and would result in radiating impacts to the riverbank due to increased employees living in the area. These radiating impacts would have a long-term, minor, adverse impact.

Two pedestrian bridges would be constructed in the vicinity of Hennessey's Ranch. The bridges and their abutments would be designed to not interfere with the free-flowing condition of the river, and the banks of this river reach are relatively stable and resilient. The two pedestrian bridges would have localized, long-term, minor, adverse impacts on the river's hydrology and floodplain values. Local, short-term, minor, adverse impacts on hydrology may occur during construction due to construction activities in the main channel.

El Portal Water Quality

Actions to implement the River Protection Overlay would reduce discharge of non-point source pollutants into the river by providing a buffer area where development is removed (e.g., at Hennessey's Ranch) and future development is constrained (e.g., at Village Center and Railroad Flat). Water quality could be adversely impacted at Village Center by runoff associated with increased parking spaces for both visitors and employees, although this impact would be mitigated by non-point source pollution controls at large paved areas. The increase in employees living in El Portal would likely result in increased recreational use of the river and subsequent increase in fecal coliform and bacteria levels, resulting in a regional, long-term, minor, adverse impact on water quality. Wastewater from all new buildings (e.g., housing, park headquarters, etc.) would be connected to the existing sanitary sewage system and would meet all applicable water treatment requirements. The impacts of this alternative on water quality in El Portal would be localized, long-term, minor, and adverse due to increased non-point source pollution resulting from increased development.

Foresta Hydrology and Water Quality

The project site at Foresta is approximately three-quarters of a mile from Crane Creek, but has no rivers, streams, or other hydrologic features, and surface runoff is the only pertinent hydrologic process. A Volunteers-in-Parks campground, 14 houses, and a new National Park Service stable at McCauley Ranch would be constructed (depending on the outcome of the Wilderness Feasibility Study) in the Foresta area. These actions would have a localized, long-term, negligible, adverse impact on hydrology, resulting from reduced ground cover and potentially increased runoff. These actions would result in increased non-point source pollution, which would be mitigated through stormwater pollution controls at the parking facility, and have a localized, long-term, minor, adverse impact on water quality.

South Landing Hydrology and Water Quality

South Landing has no significant hydrologic features, and surface-water runoff is the only pertinent hydrologic process. The construction of a parking facility would have localized, long-term, minor, adverse impacts on hydrology resulting from reduced ground cover and potentially increased runoff. Construction of a parking facility would increase non-point source pollution, which would be mitigated through stormwater pollution controls, and would have a localized, long-term, minor, adverse impact on water quality.

Badger Pass Hydrology and Water Quality

The project site at Badger Pass has several springs, seeps, and wetlands that form the headwaters of Grouse Creek. The hydrology of these headwaters and surface water runoff are the only pertinent hydrologic processes. The construction of a parking facility that is approximately the same size as the current parking lot and expanded visitor use facilities would have a localized, long-term, minor, adverse impact on hydrology resulting from reduced ground cover and potentially increased runoff associated with the expanded visitor use facilities. This parking facility would have a localized, long-term, minor, adverse impact on water quality resulting from increased non-point source pollution due to use of the parking area for longer periods of time.

Big Oak Flat, Tioga Pass, and South Entrance Hydrology and Water Quality

The locations of these entrance stations have no major rivers, streams, or other hydrologic features. Surface-water runoff is the only pertinent hydrologic process. A visitor center and associated visitor service facilities would be constructed, resulting in reduced ground cover and potentially increased runoff. These actions would have a localized, long-term, negligible, adverse impact on surface water hydrology. These actions would have a localized, long-term, negligible, adverse impact on water quality resulting from increased non-point source pollution associated with development.

Conclusion

The collective actions of this alternative have regional, long-term, moderate, beneficial impacts on hydrology and water quality, largely due to the removal of facilities in Yosemite Valley from the River Protection Overlay and the 100-year floodplain and removal of the bulk fuel storage facility in El Portal. The beneficial impacts of removing four bridges, Cascades Diversion Dam, campsites, Housekeeping Camp units, etc., have been weighed against the adverse impacts on hydrology and water quality in El Portal due to increased development near the river.

Cumulative Impacts

This section assesses the impacts of past, present, and reasonably foreseeable future actions to water resources. The actions identified below have generally occurred within the watershed of the Merced River—both main stem and South Fork.

Past Actions

The water resources of the Merced River have been historically affected by a variety of actions within the floodplain since Euro-American settlement. In Yosemite Valley, the transportation network interferes with flooding and surface-water flow, and lodging, campgrounds, and other structures have been constructed in and immediately adjacent to the river channel. In El Portal, a large portion of the riverbank has been artificially stabilized to protect primary roads and buildings immediately adjacent to the river. Because artificial stabilization of the riverbank began in the 1800s, the Merced River has been separated for decades from substantial portions of its floodplain. During spring runoff floods, this riprap serves to keep the channel from moving, and quickly conveys the water downstream. During winter floods, artificial bank stabilization prevents damage to dwellings and roads in the best-protected sections, but increases bank destruction where there is little or no artificial bank stabilization.

Present Actions

The El Portal Road Improvement Project (NPS) is currently under way from the park boundary to the Cascades Diversion Dam, and affects river-related communities of the Merced River immediately adjacent to the roadway. Natural resources are protected during construction by implementation of a compliance monitoring program, erosion and sediment controls, hazardous materials controls, revegetation and reclamation, and excluding construction from sensitive habitats. Between El Portal and Yosemite Valley, riprap has been placed in some locations along the north bank of the Merced River to protect the reconstructed El Portal Road, altering the overall flow regime of the river.

Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions proposed in the region are separated below into four general categories: (1) projects expected to have a net beneficial impact; (2) projects expected to have both beneficial and adverse impacts; (3) projects expected to have a net adverse impact; and (4) projects that have no impact relative to the actions of this alternative.

Reasonably foreseeable future projects that could have a net beneficial impact on water resources of the Merced River include:

- The Merced River at Eagle Creek Ecological Restoration Project (NPS)
- Merced Wild and Scenic River Comprehensive Management Plan (NPS)
- Yosemite Wilderness Management Plan Update (NPS), which will address land management issues within the wilderness
- Fire Management Plan Update (NPS)
- Potential Land Use and Management on Lands Adjacent to Yosemite National Park (Sierra Nevada Framework for Conservation and Collaboration).
- Several transportation-related projects (e.g., Yosemite Area Regional Transportation System [inter-agency]), which have the general goals of increasing transportation options and reducing reliance on automobiles in the area

- Replacement/Rehabilitation of Yosemite Valley Sewer Line (NPS)
- South Fork Merced River Bridges Replacement (NPS)
- Bridalveil Horse Camp Rehabilitation (NPS)
- Yosemite Creek Campground Restoration (NPS)
- Wawona Campground Rehabilitation (NPS)

These projects would have net beneficial impacts on water resources through improved coordination of resource management activities and restoration, although there might be site-specific or short-term, adverse impacts.

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

- Merced River Canyon Trail Acquisition (BLM)
- Mariposa Grove Roadway Improvement and Giant Sequoia Restoration (NPS), which would remove parking from the Lower Mariposa Grove of Giant Sequoias, restore the area, and realign the intersection at the South Entrance Station.
- Rogge – Ackerson Fire Reforestation (Tuolumne Co.), which would improve slope stability and reduce sedimentation by reforesting 5,000 acres; however, activities could also adversely impact water quality by burning, tilling, and herbicide application.
- A-Rock Reforestation (USFS, Stanislaus), which would improve slope stability and reduce sedimentation by reforesting 4,500 acres; however, activities could also adversely impact water quality by burning, tilling, and herbicide application.

These projects would have beneficial impacts on water resources by removal of facilities, restoration, and slope stabilization, and adverse impacts on water resources through increased non-point source water pollution.

Reasonably foreseeable projects that could have a net adverse impact on water resources include:

- The Yosemite View Parcel Land Exchange, El Portal (NPS)
- Merced River Canyon Trail Acquisition (BLM)
- Yosemite Motels Expansion, El Portal (Mariposa Co.)

These projects would have adverse impacts on water resources through increased use and facility development, which could result in stream bank instability and increased non-point source water pollution.

Beneficial impacts on water resources of past, present, and reasonably foreseeable future projects on the Merced River watershed would be related to removal of facilities from the riverbanks and floodplain, restoration of previously developed areas and areas significantly impacted or altered by visitor use, removal of channel obstructions, and reduced human-related impacts. Adverse impacts of these projects on the Merced River watershed would be related to increased use and facility development, which could result in stream bank erosion, soil compaction, loss of vegetation, refuse accumulation, non-point source pollution generation, and degradation of stream characteristics and water quality in the Merced River. Overall, the past, present, and

reasonably foreseeable future projects would have a long-term, minor, beneficial impact on water resources. The actions of this alternative would have a long-term, minor, beneficial impact on water resources. The actions of this alternative, in combination with past, current, and reasonably foreseeable future projects, would have a long-term, minor, beneficial impact on water resources.

Floodplains

This evaluation identifies non-exempted[1] actions within the floodplain that could increase or decrease risk to human life and property by adding or removing housing and facilities from floodplains. The proposed removal and addition of non-exempted facilities from the floodplain are listed below by area and summarized in table 4-88; all impacts would be long-term unless otherwise noted (see plate E for Yosemite Valley flood extent). For related effects on floodplain values and hydrology, see the Water Resources section in this chapter.

YOSEMITE VALLEY

Cascades Diversion Dam

Dam safety engineers have classified the Cascades Diversion Dam as a "high hazard potential structure" and assigned a Safety of Dams condition of "unsatisfactory." This classification requires immediate corrective action. The removal of the dam would be a long-term, localized, major, beneficial impact to human health and safety.

Concessioner Stable Area

A moderate, beneficial impact would result from the removal of houses and tent cabins (49 employee beds) and the concessioner stable from the floodplain. This beneficial impact would be related to reduced risk to both human life and property during a flood event. The removal of the kennel from the floodplain would result in a negligible, beneficial impact because potential property damage due to flooding would be reduced.

Housekeeping Camp

The removal of 212 housekeeping units and retention of 36 units in the 100-year floodplain would result in a moderate, beneficial impact because overnight lodging within the 100-year floodplain would be reduced, decreasing flood-related risk to both human life and property. Compared to the No Action Alternative, the beneficial effect related to human life would be limited, however, because the units are not in use during the winter flood season.

Yosemite Village

Removal of the Concession Headquarters, Indian Creek employee housing (14 employee beds), and three Ahwahnee Row houses (three employee beds) from the floodplain would result in an

[1]Non-exempted facilities are those that are not exempt from National Park Service *Floodplain Management Guideline*. These include Class I and Class II Actions, such as administrative, residential, warehouse and maintenance buildings, overnight parking facilities, schools, hospitals, fuel storage facilities, and emergency services. Exempted facilities include campgrounds, picnic areas, day-visitor parking, etc.

overall moderate, beneficial impact because fewer people would be living and working within the floodplain, and flood hazard related to human safety would be reduced. Redevelopment of this area would minimize placement of structures in the floodplain and include mitigation measures to protect people during flood events. With mitigation, in accordance with National Park Service *Floodplain Management Guideline*, risk to both human safety and property would be a minor, adverse impact.

Table 4-88
Non-exempted Facilities in the Floodplain

Facility Location	Development Change In The Floodplain[1]	Impact Intensity/Type[2]
Yosemite Valley		
Cascades Diversion Dam	• Remove Cascades Diversion Dam	• Localized, Major, beneficial
Concessioner Stable Area	• Remove Stables and associated housing (49 employee beds) and restore area • Remove Kennel and restore area	• Moderate, beneficial • Negligible, beneficial
Housekeeping Camp	• Remove 212 lodging units out of the floodplain. Retain 36 lodging units in the floodplain and 16 lodging units out of the floodplain.	• Moderate, beneficial
Yosemite Village	• Remove 3 Ahwahnee Row houses (3 employee beds) • Remove Concession Headquarters • Redevelop Concession Headquarters as parking/visitor services • Remove Indian Creek employee housing (14 employee beds) • Redevelop Indian Creek employee housing area as parking/visitor services	• Moderate, beneficial • Moderate, beneficial • Negligible, adverse • Moderate, beneficial • Negligible, adverse
Yosemite Lodge Area	• Remove the Superintendent's House (Residence 1) and restore area • Remove 5 motel units • Relocate Wellness Center and nearby custodial cabins out of the floodplain • Develop new overnight parking	• Moderate, beneficial • Moderate, beneficial • Minor, beneficial • Negligible, adverse
El Portal		
Village Center	• Redevelop for necessary support facilities and commercial services • Adaptively reuse El Portal Hotel (remove 12 employee beds) and Yosemite Institute Office • Remove bulk fuel storage facility • Remove El Portal Motor Inn cabins (remove 24 employee beds)	• Negligible, adverse • Moderate, beneficial • Moderate, beneficial • Moderate, beneficial
Hennessey's Ranch	• Add 656 employee beds • Remove 68 employee beds at Trailer Village • Remove 4 employee beds at Abbieville	• Moderate, adverse • Moderate, beneficial • Moderate, beneficial

1. Development may be in or surrounded by the floodplain
2. Impact intensity listed is after implementation of mitigation. All impacts would be long-term unless otherwise noted.

Yosemite Lodge Area

Removal of the Superintendent's House (Residence 1) and five motel units from the floodplain would result in a moderate, beneficial impact because overnight lodging within the floodplain and the associated risk to human safety and property would be reduced. Relocation of the Wellness Center and nearby custodial cabins outside the floodplain would also result in a minor, beneficial impact because the number of facilities and people working within the floodplain would be reduced, resulting in a reduction in the flood hazard related to human safety and property. New overnight parking would be developed that incorporates design standards to minimize the effect on floodflow and allow for runoff, resulting in a negligible, adverse impact. Adverse effects in the

Yosemite Lodge area would be further reduced by designs that minimize impacts on natural flood processes and flood damage to structures, and by preparation of evacuation plans and routes (evacuation routes would be located outside the floodplain).

EL PORTAL

Village Center

Moderate, beneficial impacts at the Village Center would result from the adaptive reuse of El Portal Hotel (removal of 12 employee beds and relocation of Yosemite Institute Office), and the removal of the Motor Inn cabins (24 employee beds) because overnight occupation of the floodplain would be reduced. Removal of the bulk fuel storage facility would result in a moderate, beneficial impact on human safety because the number of people working within the floodplain would be reduced. Adaptive reuse of these facilities would include mitigation consistent with National Park Service *Floodplain Management Guideline* to reduce the risk of property damage due to flooding.

Parts of the Village Center area that would be redesigned to support commercial services and parking would be placed out of the floodplain where possible. For new structures constructed in the floodplain an evacuation and safety plan would be developed. With these mitigation measures in place, there would be a minor adverse impact.

Hennessey's Ranch

The construction of 656 new employee beds at Hennessey's Ranch would be a major, adverse impact on human safety because employee beds would be constructed within the 100-year floodplain. However, because mitigation would be incorporated into the design to protect employees and structures during flood events (e.g., raising and extending the levee, evacuation planning), the overall impact would be reduced to moderate and adverse.

WAWONA

There would be no impact to the South Fork Merced River floodplain because the employee housing considered for Wawona would be outside the floodplain.

CONCLUSION

Beneficial impacts in Yosemite Valley would include removal from the floodplain of 212 housekeeping lodge units, the kennel, concessioner stables and associated housing (49 employee beds), the Superintendent's House (Residence 1), five Yosemite Lodge motel units, the Wellness Center and nearby custodial cabins, and 14 employee beds at Indian Creek. The Concession Headquarters and Indian Creek employee housing would be redeveloped as parking/visitor services, and new overnight parking would be developed at Yosemite Lodge which would have a minor, adverse impact on the floodplain. Overall, the aggregate impact of these actions in combination with mitigation in Yosemite Valley would be moderate and beneficial, because the flood-related risk to human safety and property would be reduced.

Actions in El Portal would include removal from the floodplain of 36 employee beds (moderate, beneficial) and the bulk fuel facility (moderate, beneficial), removal or adaptive reuse of El Portal Hotel (employee housing and Yosemite Institute Office; moderate, beneficial), 656 employee beds at Hennessey's Ranch (moderate, adverse), and redevelopment of Village Center (minor, adverse). Beneficial impacts would be related to reduction of in the flood-related hazard to human safety. Adverse effects to both human safety and property associated with new development or redevelopment/adaptive reuse within the floodplain would be minimized by mitigation (e.g., design and siting specifications, extending and raising existing levees, and a mandatory evacuation plan) resulting in a net minor, adverse impact.

The total net effect of Alternative 4 would be moderate beneficial, because the number of people working and overnight lodging/housing within the floodplain would be reduced (reducing flood-related risks to human safety), and mitigation would be implemented to reduce adverse effects on human safety and property associated with development/redevelopment within the floodplain.

CUMULATIVE IMPACTS

The impacts of past, present, and reasonably foreseeable actions to floodplain values discussed herein are based on analysis of past, present, and reasonably foreseeable future actions in the Merced River watershed from its source near the crest of the Sierra Nevada to Briceburg Bridge. The actions identified below include those projects that have the potential to affect the floodplain of the Merced River.

Past Actions

The Merced River has been historically affected by a variety of actions within the floodplain since Euro-American settlement. In El Portal, from the park boundary to Briceburg Bridge, a large portion of the riverbank has been artificially manipulated. Much of this manipulation is riprap used to stabilize the riverbanks by the California Department of Transportation to protect Highway 140. The National Park Service and Yosemite Motels also placed riprap in the Merced River channel to rebuild roads (e.g., Foresta Road) and protect buildings immediately adjacent to the river. Because stabilization of the riverbank began in the 1800s, the Merced River has been separated for decades from substantial portions of the floodplain in the Merced River Canyon. During spring runoff floods, this riprap serves to keep the channel from moving, and quickly conveys the water down to Lake McClure. During winter floods, bank stabilization prevents damage to dwellings and roads in the best-protected sections, but increases bank destruction where there is little or no bank stabilization.

Present Actions

No current actions are increasing or decreasing flood-related risk to human life. Between El Portal and Yosemite Valley, riprap has been placed in some locations along the north bank of the Merced River to protect the reconstructed El Portal Road. This riprap would have essentially no flood-related risk to life or property.

Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions that could have a potential cumulative beneficial or adverse effect on risk to human life and property during flood events are:

- El Portal, Trailer Village Closure (NPS)
- Yosemite Motels Expansion, El Portal (Mariposa Co.), (approximately 148 new hotel units)
- Yosemite View Parcel Land Exchange (NPS)

Cumulative effects of past, present, and reasonably foreseeable future actions would have both beneficial (e.g., implementation of the Trailer Village Closure Plan) and adverse (i.e., increased development of overnight lodging units and offices within the floodplain at El Portal) impacts on human life and property during flood events. In El Portal, approximately 59 employee trailers with 68 employee beds at Hennessey's Ranch (currently Trailer Village) would continue to be scheduled for removal from the 100-year floodplain. This action which occurs outside the scope of actions considered in the *Final Yosemite Valley Plan/SEIS*, is in accordance with the current provisions of the Trailer Village Closure Plan (NPS 1993b). Cumulative adverse impacts of these potential future projects on the floodplain hazard of the Merced River would be related to increased overnight use and facility development. In El Portal, potential overnight residents and hotel visitors would slowly increase from approximately 1,300 to about 1,600 beds because of the Yosemite Motel's expansion and the Yosemite View parcel land exchange. This represents an increase of approximately 25% in the number of people potentially affected during a flood.

Overall, the past, present, and reasonably foreseeable future actions listed above would have a long-term, moderate, adverse effect on risk to human life and property due to the amount and type of new development planned within the floodplain. The total net effect of Alternative 4 would be moderate and beneficial, because overnight lodging/housing within the floodplain would be reduced (reducing flood-related risk to human safety), and mitigation would be implemented to reduce adverse effects on human safety and property associated with development/redevelopment within the floodplain. Effects associated with this alternative, in conjunction with other past, present, and reasonably foreseeable future cumulative actions, would be long-term, minor, and adverse, because potential flood-related impacts to human safety and property from cumulative actions outside the scope of the *Final Yosemite Valley Plan/SEIS* (e.g., increased overnight lodging within the floodplain in El Portal would increase flood-related risk to human safety and property) would outweigh the beneficial impacts of this alternative.

Wetlands

In this section, wetlands were evaluated in the following locations: Yosemite Valley, El Portal, Badger Pass, Foresta, South Entrance, and Tioga Pass. The Wawona and Big Oak Flat Entrance locations have no wetlands, and are not discussed below. No actions are proposed at South Landing, Hazel Green, or Henness Ridge in this alternative.

SIZE

Yosemite Valley

Wetland impacts would take place in the wetland types shown on table 4-89. Acres of impacts are estimated based on geographic information system analysis of acres of meadow and riparian vegetation types from the Yosemite Valley vegetation map (NPS 1994e). In Yosemite Valley, about 149 acres of wetlands would be restored, seven acres of new development in wetlands would take place, and 11 acres of redevelopment in potential wetlands would occur under this alternative (table 4-89). Overall, this would be a long-term, major, beneficial impact on the size of wetlands in Yosemite Valley.

Table 4-89
Summary of Impacts by Wetland Type in Yosemite Valley

Wetland Type	Restoration (Beneficial Impact) (acres)	New Development (Adverse Impact) (acres)	Redeveloped (Potential Adverse) (acres)
Palustrine Emergent	52	0	3
Palustrine Scrub Shrub	45	4	1
Palustrine Forest	45	3	7
Riverine Upper and Lower Perennial	7	0	0
Total	**149**	**7**	**11**

Restoration of wetlands would take place primarily at Yosemite Lodge, River Protection Overlay and highly valued resource areas at Housekeeping Camp, Upper and Lower River Campgrounds, Camp 6, parts of Lower Pines Campground, North Pines Campground, Backpackers Campground, Group Campground, and Swinging Bridge Picnic Area.

New development in wetland areas would take place on seven acres. Wetland delineation would be completed prior to the planning and design phase for Curry Village, where potential wetlands have been identified, to maximize opportunities for wetlands avoidance and minimization of adverse impacts. If wetlands are present in the area, adverse impacts would be avoided during site design and minimized through design modifications to the greatest extent practicable. If potential adverse impacts on wetlands are disclosed in subsequent planning efforts, additional compliance documentation would be completed as appropriate.

Potential impacts to wetlands would require a Wetland Statement of Findings in accordance with Director's Order #77-1. Wetlands proposed for restoration by the *Final Yosemite Valley Plan/SEIS* would be counted toward the compensation of wetlands if needed for future compliance. A wetland delineation and a functional analysis would be included in each Statement of Findings. A U.S. Army Corps of Engineers 404 permit would be prepared as required.

Redevelopment in potential wetlands under Alternative 4 would total about 11 acres (see table 4-89). The larger areas of redeveloped wetland would occur at Sentinel Picnic Area and Upper Pines Campground. Wetland delineation would be completed prior to the design phase for the Sentinel Beach Picnic Area, where potential wetlands have been identified. Wetland delineation would be completed prior to the design phase for the Sentinel Beach Picnic Area, where potential wetlands have been identified. Wetland delineation has been completed for Upper Pines Campground (Kleinfelder 1998). Redevelopment within wetland boundaries would be avoided in

the Upper Pines Campground area. Redevelopment in areas adjacent to wetlands would occur primarily at the former cabin area at Yosemite Lodge, the proposed road south of Yosemite Lodge, Yosemite Village, and the Ahwahnee parking lot (see table 4-89). Minor beneficial impacts could take place on neighboring wetlands if water flows that sustain adjacent wetlands are improved in project design.

Redeveloped wetlands may be considered an adverse impact if the sites still qualify as wetlands. Procedural Manual #77-1, Section 5.4 states that "development activities proposed for wetland sites that have been modified or degraded as a result of human activities" (but still meet the wetland definition) are considered "new actions" subject to Director's Order #77-1 and other statutes. Consequently, degraded wetlands should not be treated as preferred development sites simply because they are already in an impacted condition.

Out-of-Valley Areas

No impact on the size of wetlands would occur in El Portal, Badger Pass, Tioga Pass Entrance, or Foresta.

INTEGRITY

Yosemite Valley

The integrity of wetlands would be improved by actions proposed in Alternative 4 in terms of the ratio of non-native to native species in palustrine emergent wetlands, and with restoration of soils, hydrology, and native wetland plant species along the Merced River. The removal of roads in low-lying areas would likely improve water flows, and restore naturally high water tables that sustain wetland conditions. Implementation of the River Protection Overlay and restoration of former and existing campgrounds to natural conditions would decrease foot traffic along the Merced River and allow riverside vegetation to become reestablished.

Foot traffic in the vicinity of Taft Toe would increase in nearby wetlands along the Merced River resulting in major, adverse impacts to wetlands in this relatively undisturbed area. The elimination of guided trail rides (though not private stock use) could benefit wetlands by eliminating associated manure, which could flow into wetlands and result in unnaturally high levels of nutrients that could harm wetland functions.

Road- and trail-related activities that could benefit wetland integrity include the removal of roads through Stoneman Meadow and the south part of Ahwahnee Meadow and restoration of the area.

Road- and trail-related activities that could have adverse impacts on wetlands include widening Southside Drive from El Capitan crossover to Curry Village to accommodate two-way traffic, constructing a multi-use trail from Swinging Bridge to El Capitan crossover, realigning Northside Drive along the southern perimeter of Yosemite Lodge, and constructing a new bridge across Yosemite Creek. These new roads and trails would directly impact some riverine and palustrine forest and scrub shrub wetlands at Sentinel Creek and along the Merced River and Yosemite Creek. All new roads, multi-use paved trails, and road widening would be designed to accommodate natural water flow patterns to mitigate direct and indirect impacts. Under

Alternative 4, the removal of roads from meadows and the implementation of the River Protection Overlay would have a major, long-term, beneficial impact on the integrity of wetlands Yosemite Valley.

Out-of-Valley Areas

In El Portal, implementation of the River Protection Overlay and protection of existing wetlands at Hennessey's Ranch through site design would minimize impacts to wetland integrity. Rebuilding the levee could have direct adverse impacts to the wetlands with the levee alignment, but these impacts would be minimized by restoration of the river corridor between the levee and the river's edge through this area. Should parking be constructed near the El Portal Community Hall, site design would protect the palustrine forest wetlands in the historic river channel. Overall impacts on wetlands in El Portal are expected to be long-term, minor, and adverse, and would not affect the overall viability of wetlands in the area.

No wetlands would be directly impacted at Badger Pass or Tioga Pass Entrance, though impacts on adjacent wetland integrity could occur as a result of increased foot traffic. Foot traffic would be directed away from wetlands, though some additional foot traffic is expected to continue in the wetland area, with minor, adverse impacts. Impacts on the integrity of wetlands would occur in Foresta through increased use of the area through the relocation of stable operations to McCauley Ranch and the addition of 14 employee houses. The site design would avoid wetlands adjacent to McCauley Ranch. Radiating impacts that could result from additional nutrients and potential non-native plant species introductions would be avoided with aggressive management of stock waste and feed.

CONNECTIVITY

Yosemite Valley

Wetlands along the entire Merced River corridor in Yosemite Valley would be restored, reconnected, and protected from future degradation with restoration of Upper and Lower Rivers and other campground and facilities, resulting in major, beneficial impacts to riverine and palustrine forest and scrub shrub wetlands. Roads would be removed from Stoneman and Ahwahnee Meadows. The actions proposed in Alternative 4 would connect palustrine emergent wetlands in the east Valley from Stoneman Meadow and Royal Arch Meadow to Bridalveil Meadow. This would be a long-term, major, beneficial impact on wetland connectivity in Yosemite Valley.

Out-of-Valley Areas

No additional adverse impacts on wetland connectivity would occur in El Portal, Foresta, Badger Pass, South Entrance, or Tioga Pass Entrance beyond those described in Alternative 1.

CONCLUSION

Under Alternative 4 there would be a 131-acre net gain in the size of wetlands. Implementation of the River Protection Overlay and the removal of roads in Stoneman and Ahwahnee Meadows would substantially enhance the integrity of existing palustrine emergent wetlands. This would

enhance natural processes such as flood interactions between the main Merced River channel and riverine wetlands, riparian borders of palustrine forest and scrub shrub wetlands, and palustrine emergent wetlands that are necessary to sustain healthy wetlands. Wetlands in the vicinity of Taft Toe would be impacted by increased visitor use. The actions that are proposed in Alternative 4 would have a long-term, major, beneficial impact on the size, integrity, and connectivity of wetlands in Yosemite Valley. Minor, adverse impacts to wetland integrity would occur to out-of-Valley areas at the El Portal, Foresta, Badger Pass, and Tioga Pass Entrance with implementation of mitigation measures.

CUMULATIVE IMPACTS

Past, present, and reasonably foreseeable future actions that could impact wetlands are all considered to be long term.

Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS); U.S. Forest Service management plans for adjacent wilderness; the Wilderness Management Plan Update (NPS); and the Fire Management Plan Update (NPS) could provide benefits to the size, integrity, and connectivity of wetlands. Cooperation among land management agencies would increase the opportunity to share common objectives and improve resource protection. These plans could also increase knowledge of resources and recreational use; they have the potential to have long-term, moderate, beneficial impacts on wetlands, though the proposed management direction has not been finalized. The Merced Wild and Scenic River Comprehensive Management Plan would have long-term, major, beneficial impacts on wetlands through zoning and management designed to protect and restore the river system and adjacent wetlands.

The Tuolumne Meadows Water and Wastewater Improvements (NPS) project and the Mariposa Creek Pedestrian/Bike Path (Mariposa Co.) project are in the early planning stages. Until the scope of these projects is determined, it is not possible to determine the extent of impacts on wetlands in these areas.

Other projects approved or planned for construction that could have beneficial effects on wetlands include campground rehabilitation projects in Tamarack, Yosemite Creek, Bridalveil, and Hodgdon Meadows Campgrounds, and the Merced River at Eagle Creek Ecological Restoration Project (Yosemite Valley). Erosion control and mitigation as a result of these projects could enhance and strengthen palustrine forest and palustrine scrub shrub wetlands. The Eagle Creek project would revegetate currently impacted riverbanks with benefits to palustrine forest and palustrine scrub shrub wetlands. The erosion control and restoration projects would have long-term, localized, and therefore minor, beneficial impacts on wetlands.

Projects approved or planned for construction that could have adverse effects on wetlands include the Yosemite View Parcel Land Exchange (NPS), University of California Merced campus (Merced Co.), and the Hazel Green Ranch (Mariposa Co.) project. The Yosemite View Parcel Land Exchange could directly impact existing palustrine forest and palustrine emergent wetlands along the Merced River corridor. A wetland zone traverses the Hazel Green Ranch site which could be impacted by radiating use, though proposed new development would not take place within the wetland corridor. The long-term direct, impacts on wetlands would be moderate and

adverse due to the relative rarity of undeveloped wetlands between the elevations of 1,000 and 3,000 feet and the relative importance of remaining wetland habitat in the Sierra Nevada. Foothill areas below about 3,300 feet appear to have the greatest loss of wetlands of any region in the Sierra Nevada (UC Davis 1996a) and are particularly important in terms of their productivity and diversity.

The actions that are proposed in Alternative 4 would amount to a net gain of 131 acres of wetland in Yosemite Valley. Wetlands in meadows and along the Merced River would be enhanced by removal of roads and development such as campgrounds. Large-scale benefits to wetlands could take place as a result of regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced River Plan. Should substantial or full implementation of the actions included in these plans occur over time, long-term cumulative impacts on wetlands may, on balance, be moderate and beneficial. These regional plans are tempered by adverse impacts that include existing infrastructure to divert water away from wetlands in Yosemite Valley, the potential direct loss of wetland habitat at the Yosemite View Parcel Land Exchange (NPS), and with continued widening of the Merced River in the east Valley.

When the impact of the past, present, and future actions are combined with the actions proposed in Alternative 4, there would be a moderate, beneficial, cumulative impact on wetland size, integrity, and connectivity.

Soils

The following discussion identifies and characterizes the soils impacts expected from implementation of Alternative 4. Impact intensities are based on the size, type, and disturbance history of the soil resources impacted; soil resources are identified as highly valued resource (HVR), resilient (R) or other (O). The primary activities that would affect soil resources are discussed for each of the project areas. Generally, adverse impacts to soils would include a combination of soil removal, profile mixing, compaction, erosion, and contamination. Beneficial impacts would occur as a result of soil restoration. Construction-related impacts (such as compaction from equipment and erosion) would be expected to be short-term and temporary, because they would be minimized through the use of Best Management Practices and would occur for a limited time. All other impacts are expected to be long-term unless otherwise noted.

YOSEMITE VALLEY

Approximately 291 acres would be affected by actions proposed under Alternative 4. Of this acreage, 141 acres would be highly valued resource soils, 112 acres resilient soils, and 38 acres other soils. Of the total area affected, 193 acres would be restored while 98 acres would be associated with new development. Construction-related (short-term) impacts would be negligible to minor because Best Management Practices would be used to minimize erosion and to contain construction activities to the immediate area. Some minor discrepancies between acreages in the text and table may occur due to rounding, differences in mapping sources, and because impacts less than 1 acre are not mentioned in the text. A summary of affected soils is found in table 4-90.

Curry Village

Approximately 28 acres would be affected by actions proposed under Alternative 4: 12 of these acres would be restored (O = 12); and 16 acres would be developed (R = 8, O = 8). Alternative 4 would restore approximately three-fourths as much area as would be impacted by new development. All of the beneficial impacts associated with restoration would occur on other soil types (551 Miwok – Half Dome complex). No highly valued resource soils would be restored. Beneficial impacts were evaluated as minor. Development and redevelopment of lodging units, campgrounds, and development of a new picnic area would have adverse effects on 16 acres. Approximately half of those impacts would occur on other soil types (551 Miwok – Half Dome complex). Development impacts were evaluated as minor and adverse. Overall, the adverse effects outweigh the beneficial effects, with a net result of negligible, adverse impacts in Curry Village.

Yosemite Lodge

Approximately 51 acres would be affected by actions proposed under Alternative 4: 48 of these acres would be restored (HVR = 23, R = 24, O = 1); and 3 acres would be developed (R = 3). Nearly all of the impacts at Yosemite Lodge would be related to restoration activities. Additionally, a large portion of the soils to be restored (23 acres) would be highly valued resource soils. Restoration activities would have a major, beneficial effect at Yosemite Lodge. The adverse effects associated with building construction would impact only a small acreage of resilient soils. Adverse effects were evaluated as being negligible. The overall impact at Yosemite Lodge would be major and beneficial.

Yosemite Village

Less than 14 acres would be affected by actions proposed under Alternative 4: 13 of these acres would be restored (HVR = 12, O = 1); and less than 1 acre would be developed (R = 1). Essentially all of the impacts at Yosemite Village would be beneficial, because the development activities would be focused on areas that are currently developed. All of the restoration would occur on highly valued resource soil types, including 151 El Capitan fine sandy loam and Leidig fine sandy loam. Overall, the proposed activities at Yosemite Village would have a moderate, beneficial impact on soil resources.

Table 4-90
Summary of Soil Types Affected

Soil Type	Resource Type [1]	Development Limitations[2]	Affected Area (acres)	
			Restored	Developed
101 Riverwash, 0-2%	HVR	F (frequent), SBE, HWT	9	–
102 Riverwash, 1-4%	HVR	F (frequent), SBE, HWT	–	–
104 Aquandic Humaquepts, 0-2%	HVR	F (frequent), HWT	5	–
105 Histic Haploaquols	HVR	HWT	–	–
151 El Capitan fine sandy loam, 0-2%	HVR	F (occasional), SBE, HWT (moderate)	66	–
152 Vitrandic Haploxerolls, 0-3%	O	F (occasional), D, LOS	–	–

Table 4-90 Summary of Soil Types Affected				
Soil Type	Resource Type [1]	Development Limitations[2]	Affected Area (acres)	
			Restored	Developed
201 Leidig fine sandy loam, 0-2%	HVR	F (occasional), HWT (moderate)	56	–
301 Vitrandic Haploxerolls, coarse loamy, 0-2%	HVR	F (rare), HWT, LOS	–	–
401 Sentinel loam, 0-2%	R	F (rare), LOS	–	24
412 River course	HVR	F	2	–
501 Miwok complex, 1-5%	R	F (rare), SBE	36	51
502 Miwok sandy loam, 0-3%	O	F (rare), SBE	–	–
504 Mollic Xerofluvents, 1-5%	O	F (frequent), SBE	1	10
551 Miwok – Half Dome complex, 5-15%	O	SE, LOS, D, C, AC	11	7
552 Mollic Xerofluvents, 5-15%	O	F (frequent)	–	1
590 Terric Medisaprist, 0-3%	HVR	F (occasional), HWT, SBE	–	–
601 Half Dome complex, 25-60%	O	SE, LOS, D, AC	2	3
602 Half Dome extremely stony sandy loam, 10-25%	O	SE, LOS, D, AC	1	2
610 Rubble land – Half Dome complex, 25-60%	O	SE, D, AC	–	–
620 Half Dome complex, warm phase, 25-60%	O	SE, LOS, D, AC	–	–
630 Rubble land – Half Dome complex, warm phase, 25-60%	O	SE, LOS, D, AC	–	–
701 Vitrandic Haploxerolls, 4-30%	R	SE (moderate), LOS	1	–
702 Vitrandic Xerochrept, 4-30%	HVR	SE (moderate), LOS	3	–
900 Rock outcrop	O	B	–	–
Total Area Affected			**193**	**98**

1. HVR = Highly valued resource soil, R = Resilient soil, O = Other soil (non-HVR and non-resilient)
2. F=Flooding, SBE=Stream Bank Erosion, SE=Slope Erosion, HWT=High Water Table, D=Doughty (low water holding capacity), LOS=Loss of Organic Surface, C=Compaction, AC=Active Colluvium, B=Bedrock West Valley
Source: Soil survey of Yosemite National Park, Yosemite Valley, California (SCS 1991)

West Valley

Approximately 54 acres would be developed by actions proposed under Alternative 4 (R = 42, O = 12). All of the activities proposed for west Valley would result in adverse impacts. Nearly all of these impacts would occur at Taft Toe as a result of parking facility construction. Resilient (Sentinel loams) and other soil resources would be primarily affected. Due to the relatively large area and type of soil resources affected, the overall impact would be moderate and adverse in the west Yosemite Valley.

Campgrounds

Approximately 144 acres would be affected by actions proposed under Alternative 4: 120 of these acres would be restored (HVR = 106, R = 12, O = 2); and 24 acres would be developed (R = 23, O = 1). Restoration of campground areas and the 150-foot River Protection Overlay would have major, beneficial impacts on soil resources in the Valley. These impacts would occur on highly valued resource soils, whereas adverse impacts would occur on resilient soils. The overall impact of campground restoration in Alternative 4 would be major and beneficial.

Roads and Trails

Transportation corridors such as multi-use paved trails and roadways have the potential to affect multiple soil types. Generally, trail construction would occur adjacent to existing linear corridors such as roads or utilities, or would be upgrades of existing informal trails. The impact of new trail construction would be adverse; however, the impact would be minor since the impacts would primarily be in linear segments of previously disturbed soils. New trails would be constructed to accommodate surface and subsurface water flow. Additionally, upgrades to existing trails would decrease erosion in high-use areas. Overall, the construction of new roads and trails would have minor, adverse effects.

OUT-OF-VALLEY

Soils information is limited for many of the out-of-Valley locations. The following discussion is based on the general soils information available or extrapolated from other local soil surveys. It is assumed that out-of-Valley impacts would likely occur on resilient soil resources, because the geographic features outside of the Valley tend to be less constricting than those in the Valley. Disturbance to highly valued resource soils would be avoided as practicable, to reduce the likelihood of impacts on highly valued resource soils. General Best Management Practices and design requirements would reduce potential impacts to other soils. The following discussion is based on the premise that the majority of adverse impacts would occur on resilient soil resources, where feasible.

El Portal

All of the impacts at El Portal would be long term and adverse. Impacts would be related to the construction of parking facilities and employee housing. Soils within the El Portal area tend to be susceptible to mass movement and erosion, and have substantial development limitations. Construct techniques would require special measures to prevent erosion and soil movement. Due to the size of the proposed activities and the limited space available for construction, Alternative 4 would have a moderate, adverse impact on soil resources in the El Portal area.

Badger Pass

The soils at Badger Pass tend to be resilient and within the project area are mostly already disturbed. Provided that Best Management Practices are incorporated into the construction and design, additional impacts to soils would be minimized. Potential problems tend to be associated with moderate to steep slopes and erosion control. Construction of the parking facility would result in locally minor, adverse impacts.

South Landing

The site of the proposed parking facility has been previously used for slash piling/burning and contractor staging. The slopes within the area have a low to moderate erosion potential, and are not prohibitive for the proposed development. Generally, soils that would be impacted are previously disturbed and resilient. No impacts to highly valued resource soils would occur. This alternative would have a moderate, adverse impact on soil resources at South Landing due to its size.

Foresta

Impacts to soils in Foresta would occur if the National Park Service and concessioner stables are relocated to McCauley Ranch, and as a result of the reconstruction of employee beds destroyed in the 1990 A-Rock fire. However, impacts would be minor and adverse, because soils in these areas tend to be resilient and the area of impact would be relatively small.

Entrance Stations

Development and/or redevelopment of visitor centers near the existing entrance stations would result in adverse impacts to soil resources. The centers would be developed adjacent to existing stations, and generally would be located in areas suitable to the proposed use. The size of impact for each facility would be relatively small in relation to the surrounding soil resources. The impact due to construction of visitor centers would be negligible and adverse.

CONCLUSION

Three out of the five Valley locations would have overall beneficial impacts under Alternative 4, which proposes restoration of 193 acres and new development of 98 acres. West Yosemite Valley would have the largest adverse impact, largely due to construction of parking and circulation facilities at Taft Toe. This adverse impact would be offset to a large extent by the restoration of 142 acres of highly valued resource soils, 37 acres of resilient soils and 15 acres of other soil resources. All of the proposed development would occur on resilient or other soil resources. Thus, the overall in-Valley impact of Alternative 4 would be moderate and beneficial.

Overall, Alternative 4 would have beneficial impacts on 193 acres and adverse impacts on approximately 98 acres within Yosemite Valley and up to 70 acres out-of-Valley. The primary areas of beneficial impacts would be in highly valued resource soils at campgrounds, whereas adverse impacts would be concentrated in highly valued resource soils in West Yosemite Valley and at South Landing. Generally, the facilities that would be relocated outside of the park would disturb less sensitive resources than are currently being affected in the Valley. Furthermore, facility design and construction would use current technologies and Best Management Practices to minimize impacts. Out-of-Valley impacts would be locally moderate and adverse, but would occur on resilient soil resources at all locations except for El Portal. The overall impact for Alternative 4 would be minor and beneficial.

CUMULATIVE IMPACTS

The impacts of past, present, and reasonably foreseeable future areawide projects would be the same as described under Alternative 2, minor and adverse. In relation to the expected impacts resulting from areawide projects, the beneficial impacts related to restoration under this alternative would be substantial because they would be the primary beneficial impacts on soil resources that would occur in the region. Thus, the proposed project would serve to offset some of the adverse cumulative effects of other projects in the vicinity of the park. Therefore the cumulative impact of Alternative 4, in conjunction with other areawide projects, would be negligible and beneficial.

Vegetation

All impacts on vegetation are considered long-term unless otherwise noted. Short-term impacts would occur during construction or implementation of actions. Based on the mitigation measures to be taken (see Vol. IA, Chapter 2), all short-term impacts are expected to be negligible.

The plant communities within out-of-Valley areas do not directly relate to the grouped vegetation types defined for Yosemite Valley due to elevation, terrain, and species composition differences. For example, the dominant plant species within a riparian vegetation type in El Portal would not be the same as those found within a riparian vegetation type in the Valley. Therefore, the vegetation types in each of the distinct out-of-Valley locations analyzed for this section are described separately from the vegetation types described for the Valley.

YOSEMITE VALLEY

The actions proposed under Alternative 4 would result in a net gain in all plant community types except upland and other. Table 4-91 summarizes the total areas of each vegetation type that would be adversely and beneficially impacted by this alternative. Minor discrepancies in totals between table and text are due to rounding to the nearest acre. It should be noted that the size of the area affected was only one of the factors used to evaluate impact magnitude. The continuity, productivity, structure, and diversity of the vegetation type were also factors considered in this impact analysis.

Table 4-91
Yosemite Valley Vegetation Impacts

General Vegetation Types	Acres Impacted	
	Beneficial	Adverse
Upland	19	84
California black oak	25	7
Meadow	52	0
Riparian	97	7
Other	0	4
Totals	**+ 193**	**- 102**
Net Impact	**+ 91**	

Note: Acreages presented in this table do not include impacts due to linear features such as roads and trails. These impact types are discussed separately in the text.

Approximately 91 acres of existing developed or disturbed areas within the Valley would be restored to natural vegetation through the actions described below. These would result in a major, long-term, beneficial impact to the vegetation of Yosemite Valley.

Due to their linear nature, transportation corridors (such as multi-use paved trails and roadways) would have the potential to affect multiple vegetation types. Therefore, rather than repeating this discussion under each vegetation type, road and trail impacts are described here. Under this alternative, new multi-use paved trail segments would be constructed. Generally, these trails would either parallel existing linear corridors such as roads or utilities, or would be located within areas that have been previously disturbed by past actions or social trails. The purpose of these new trail segments would be to provide connections to existing trails, thus improving the overall paved trail network for alternative modes of transportation through the Valley, and minimizing the need for cars. The impact of new trail construction would be adverse to vegetation; however, the

impact would be minor to moderate given the small amount of vegetation impacted (8 acres). The impacts would occur primarily in previously disturbed uplands (non-highly valued resource), and the trails would be designed to avoid as many mature trees as possible as well as accommodate surface and subsurface water flow, although habitat fragmentation would be increased. Similarly, the three segments of realigned roadway and the one widened roadway would also have minor, adverse impacts on vegetation (3 acres). The new bridge over Yosemite Creek would effect a small area of California black oak vegetation (0.5 acre) adjacent to the existing bridge, resulting in a moderate, adverse impact.

Restoration of meadow (3 acres) and California black oak (0.5 acre) areas would occur as a result of removing Northside Drive within Ahwahnee and Stoneman Meadows and removing the turnout lanes at Northside Drive through El Capitan Meadow and Southside Drive through Sentinel Meadow. The impact on these vegetation types would be moderate and beneficial because they are both highly valued resources.

Overall, the road and trail impacts would have a minor, adverse effect on vegetation. The adverse effects would generally be to previously disturbed, non-highly valued resource types. The beneficial effects would restore highly valued resources, thus compensating for some of the adverse effects, but habitat would be lost permanently with additional pavement.

Upland Communities

Uplands make up the largest vegetation type within Yosemite Valley. Alternative 4 actions would result in the restoration of approximately 19 acres and the development of roughly 84 acres of upland vegetation in the Valley. The overall impact of this alternative on the upland vegetation would be minor and adverse, with improved forest health in remaining stands due to re-introduction of fire and reduction in non-native plant species.

New development in upland areas would occur throughout the east and central Valley but would generally be concentrated in areas that have been previously disturbed. Beneficial impacts would occur within the floodplain area of the east Valley, at the former Group and Backpackers Campgrounds (1 acre), Yosemite Lodge (6 acres), and Ahwahnee utility area (3 acres), as well as in the talus slope zone of Curry Village (9 acres).

Beneficial Impacts

The beneficial effects of Alternative 4 on the size, continuity, natural structure, diversity, and productivity of upland vegetation would be as described below, except the Church Bowl Picnic Area and Yellow Pine Campground would not be restored under Alternative 4 and the former gas station would be restored to upland and California black oak woodland communities.

At Yosemite Lodge, adjacent areas of ponderosa pine and California black oak would be restored in the middle of the Lodge area. The former gas station near Yosemite Lodge and former bank building at Yosemite Village would also be restored, thereby creating a larger, more continuous area of potential California black oak woodland. The action would result in a minor impact to upland communities in the area.

Beneficial impacts under Alternative 4 to upland vegetation size and continuity would occur within the following areas:

- At the former Group and existing Backpackers Campgrounds area, restoration would include small areas of upland vegetation mixed in with high-value vegetation types. This impact would be minor, beneficial.
- In the area between Yosemite Lodge and the Merced River, areas of restoration would provide a continuous California black oak and upland vegetation corridor, linking the upland areas to restored riparian and meadow areas. This impact would be moderate.
- In the Ahwahnee utility area (3 acres), the current utility area would be removed and restored to upland vegetation, thus restoring habitat continuity. This impact would be minor.
- In the talus slope zone of Curry Village (9 acres), the continuity of upland stands of canyon live oak would be improved by the removal of housing and restoration of the talus slopes. This impact would be moderate.
- At Yosemite Lodge, adjacent areas of ponderosa pine and California black oak at the former gas station would be restored. These actions would result in a minor impact to the upland community.

The beneficial impacts of Alternative 4 to natural structure, diversity, and productivity of upland vegetation are listed below:

- The canyon live oak community at Yosemite Village would be made more continuous through the removal of outbuildings in the vicinity of the NPS Operations Building (Fort Yosemite), with restoration of these areas to natural vegetation cover resulting in improved habitat and decreased fragmentation. This impact would be moderate.
- The ability to manage many of the continuous, unnaturally dense stands of incense-cedar and ponderosa pine with fire would be increased. This would help slow or stop the unnaturally rapid spread of annosus root rot through many of the currently developed areas of the east Valley (such as the Upper and Lower River Campgrounds area) and would improve overall forest health. This impact would be major.
- The need to manage hazard trees within and around developed areas would be reduced due to the restoration of many current upland vegetation areas and consolidation of development in other areas. Older individual trees and snags would be retained that provide important wildlife habitat. This impact would be minor.
- The productivity of smaller, more disjunct stands of upland coniferous vegetation would increase as a direct result of prescribed fire, reduction of stand densities, reduction in spread of annosus root rot (due to the reduction of stand densities), and establishment of understory herbaceous and shrub vegetation. This impact would be major.
- The understory integrity, diversity, and overall productivity of upland vegetation would continue to improve with the re-establishment of native understory, which would result from the reduction of trampling in developed zones in the east Valley. This impact would be moderate.

- The encroachment of upland vegetation into meadows and oak communities would be reversed through the use of fire management. The upland community would be reduced in size under Alternative 4 due to the removal of various developments in the east Valley, which would facilitate the ability of National Park Service staff to manage these areas with prescribed fire and other management tools. This would have a moderate effect on upland communities.

Adverse Impacts

Most of the adverse impacts to upland communities in the east Valley would be due to the construction of the new walk-in campgrounds east of the Upper Pines Campground, the new South Camp and Backpackers Campground, the addition of 15 sites at the Upper Pines Campground, the campground checkpoint, the new walk-to campgrounds near Tenaya Creek (18 acres), the new Curry Village housing/lodging (5 acres), and new lodging at Yosemite Lodge (5 acres). The adverse west Valley impacts would primarily occur at the Taft Toe Visitor/Transit Center and parking area (53 acres) and the North American Wall Picnic Area (2 acres).

Adverse impacts to size and continuity of uplands communities under Alternative 4 would include the following:

- At Yosemite Lodge, the addition of lodging in the area north of the existing Northside Drive and parking within the area would cause adverse, minor impacts to upland coniferous forest and canyon live oak communities due to the establishment of new buildings, paved walkways, and the need to trench underground to provide utilities to these structures. This area has been previously disturbed.
- At the Upper and Lower River Campgrounds area, upland communities would also be converted from existing upland back to a mosaic of California black oak, riparian, and meadow communities through the removal of fill material and re-establishment of natural drainage patterns. This would have only a minor impact on upland communities because this area does not have an intact understory and was not originally upland vegetation.
- The new walk-in campgrounds in the Valley would have a moderate impact on upland communities due to trampling of the understory layer.
- The addition of South Camp and the relocated Backpackers Campground would result in moderate upland impacts due to trampling and loss of understory vegetation.
- New lodging at Curry Village would be constructed outside of the talus slope zone near the existing lodging. This impact would be minor because the area is currently impacted by trampling.
- The development of the Taft Toe Visitor/Transit Center and associated facilities, with needed utilities, trenching, and the lack of management fires, would directly impact upland trees (ponderosa pine, incense-cedar, white fir, Douglas-fir, and some California black oak) due to paving and buildings. This development would also increase stresses to the remaining surrounding trees through trenching, trampling, and lack of smoke that controls oak gall development and spread of mistletoe in California black oaks. Irrigation in landscaped areas, if established, would result in a serious decline in the health, vigor,

and productivity of this mixed ponderosa pine/California black oak forest. This impact would be moderate.

- Development of Taft Toe for a 550-space parking area with picnicking and a potential traffic check station would remove the unnatural density of forest stands at this site. This would also be a major, adverse impact to large specimens of incense-cedar, Douglas-fir, and white fir trees growing in and near the vicinity of Taft Toe.
- Radiating impacts from the Taft Toe Visitor/Transit Center would occur to adjacent upland, California black oak, riparian, and meadow (El Capitan meadow) communities, with increased trampling, soil compaction, loss of understory and herbaceous vegetation, and a greater potential for the establishment of non-native species from increased foot and vehicle traffic. This would result in a moderate, adverse, long-term impact to the upland area, as well as adjacent communities, in what is currently a relatively undisturbed and productive area of the Valley.
- The Taft Toe Visitor/Transit Center would cover portions of a large existing annosus root rot center, which could cause the rapid expansion of the root rot and dramatically increase tree mortality (due to trenching, potential irrigation, increased trampling impacts, and other increased stresses) in the mature trees in this area. This impact would be moderate.
- The need to manage hazard trees would increase in the west Valley from the continued vehicle use of Southside Drive, development of the Taft Toe Visitor/Transit Center, and improvement of facilities at Cathedral Beach Picnic Area (part of a large annosus root rot zone). This would result in the loss of older tree structure and contributions of old and dying trees and snags to habitat, which would result in a major impact.
- Construction of a multi-use paved trail adjacent to Southside Drive (from El Capitan crossover to Swinging Bridge) would create additional paved areas, with associated impacts to drainage, a direct loss of vegetation, and an increased level of habitat fragmentation. These trails would have a minor impact to upland communities due to their development adjacent to existing roadways, and existing levels of disturbance along these corridors.
- A number of the restoration actions proposed that would convert existing upland vegetation types to highly valued resource types (meadow, riparian, and California black oak). This would have a minor impact on upland vegetation community types because many areas to be converted were originally highly valued resource vegetation types that have since been modified due to human influences.

California Black Oak Communities

The California black oak vegetation type is considered a highly valued resource because of its transitional character between wet meadows and drier uplands as well as its links to wildlife and ethnographic resources. There are approximately 240 acres of California black oak habitat within Yosemite Valley. Under Alternative 4, the actions proposed would result in approximately 25 acres of beneficial impacts to this vegetation community and 7 acres of adverse impact. Compared to Alternative 1, the overall impact of this alternative on California black oak vegetation would be major and beneficial.

Beneficial Impacts

The restored California black oak areas are primarily in the campground areas (16 acres); Yosemite Lodge area (4 acres); the Curry, Lamon, and Hutchings Orchards (2 acres); Camp 6 (1 acre); the Ahwahnee tennis courts (1 acre); and the Superintendent's House (Residence 1) (1 acre).

Beneficial impacts on the size and continuity of California black oak vegetation are listed below:

- The removal of North Pines Campground and the concessioner stable would facilitate a continuous ecotonal transition from the riparian communities near Tenaya Creek and the Merced River to more California black oak stands to the south and east, thus increasing the size of both communities as well as eliminating most of the habitat fragmentation in this area (except for the small development of the amphitheater in a portion of the former concessioner stable area). These actions would result in a long-term, major, beneficial impact.
- At Yosemite Lodge, adjacent areas of California black oak and ponderosa pine would be restored, creating a larger, more continuous area of potential California black oak woodland. Due to the presence of large annosus root rot populations in the area, landscaping would focus on California black oaks (which are resistant to annosus root rot) rather than conifers, thus leading to a greater proportion of oaks in this area. This action would result in a long-term, moderate impact.
- Ahwahnee Row houses would be removed and the area restored to meadow, riparian and California black oak vegetation types. This beneficial impact would be minor due to the small size; however, it would act as a buffer between human activities and the Ahwahnee Meadow.
- The fruit trees within the three Valley orchards would be removed and the areas restored to California black oak and meadow vegetation, which would be a moderate impact.
- Removal of the Ahwahnee tennis courts and associated non-native vegetation would remove the gap in this otherwise intact oak woodland that surrounds the courts, thus improving the continuity of the oak woodland through this entire area between the Upper and Lower River Campgrounds area and Ahwahnee Meadow to The Ahwahnee. Removal of the tennis courts would result in a moderate, beneficial impact.
- Removal of fill material at restoration sites such as the Upper and Lower River Campgrounds area would remove habitat for upland communities and restore original lower (topographic) layers to California black oak woodland, which would result in a long-term, major benefit.

The natural structure, diversity, and productivity of California black oak vegetation would benefit from Alternative 4 in the following ways:

- Stands in the east Valley would be minimally fragmented by development, roads, and encroaching conifers due to the enhanced ability of the National Park Service to manage areas with fire, removal of facilities, and restoration of areas such as the Ahwahnee tennis courts and the former Upper and Lower River Campgrounds area, into a mosaic of oak

woodlands, meadows, and riparian areas. These actions would result in a moderate impact.

- The natural structure of California black oak stands in the west Valley would improve due to prescribed burning, with the subsequent reduction in conifer encroachment resulting in a moderate impact. Other components of California black oak communities, such as deer grass (an important ethnographic resource), would increase because of the reintroduction of natural and simulated natural processes (such as fire and corrections in drainages). This action would result in a moderate impact.
- Correction of drainage problems associated with roads (potentially on Northside Drive at El Capitan Meadow and Southside Drive in the Bridalveil Fall area) and the removal of roads through Ahwahnee and Stoneman Meadows would improve the condition of California black oak stands in these locations by re-establishing natural drainages, resulting in a major, beneficial impact. This would correct problems associated with the impoundment of water upslope of roads, which keeps soils wetter for longer periods during the summer, thus encouraging armillaria root rot to become fully established.
- Restoration of historic landscaping characteristics at the Yosemite Village Historic District housing area would improve the condition of existing mature California black oaks and facilitate the establishment of younger generations of these trees within the district, thus improving stand structure and increasing the continuity of stands in this portion of the Valley. A moderate, beneficial impact would result from the action.

Adverse Impacts

The adverse impacts would primarily result from the new lodging at Curry Village (5 acres) and the new South Camp walk-in sites (2 acres) and wilderness parking area (1 acre).

The size and continuity of California black oak vegetation would be adversely impacted by the following:

- The development of additional lodging units adjacent to Stoneman house would result in direct loss of some mature oak trees and loss of regenerating saplings, as well as understory structure and function. In addition, radiating human activities and lack of fire would continue encroachment by conifers, leading to a gradual shift from a California black oak-dominated community to a mixed conifer, California black oak type that is more common in the Valley. This action would result in a long-term, moderate impact to the vegetation community.
- The addition of the new South Camp walk-in sites would result in moderate impacts to California black oak vegetation due to trampling and loss of understory vegetation.
- Mature California black oak trees would potentially be removed during site grading and development, and additional trees could be lost with root impacts during construction, changes in drainage, and hazard tree removal, thus resulting in loss of stand structure and continuity throughout the Valley. These proposed actions would result in a moderate, adverse impact due to the long-term nature of California black oak regeneration if individual trees are lost.

- Removal of Superintendent's House (Residence 1) and redevelopment of a portion of the site for a picnic area would increase the use of this area from its current condition. Trampling and a loss of vegetation on the ground as well as oak regeneration would result in a minor, adverse impact.

Meadow Communities

The proposed actions under Alternative 4 would result in beneficial impacts to approximately 52 acres of meadow habitat through restoration and negligible, adverse impacts to less than 0.5 acre of meadow habitat. The overall impact of this alternative on meadow vegetation would be major and beneficial.

Beneficial Impacts

Under Alternative 4, three general areas would be restored, with 25 acres near Yosemite Lodge, 20 acres in the former campgrounds, and 7 acres at Camp 6. Additional benefits to the meadow areas would be accomplished through the removal of bisecting roads through Stoneman and Ahwahnee Meadows, with improved water flows and a decrease in radiating impacts such as trampling.

The size and continuity, natural structure, diversity and productivity of meadow vegetation would be beneficially affected by the following:

- Ecological restoration of the entire area south of the proposed new road alignment at Yosemite Lodge (aside from utilities and access near the confluence of the Merced River and Yosemite Creek) would have major, beneficial effects on the ecological function of this section of the Valley, with increased meadow and riparian acreage, enhanced wetlands, and minimal fragmentation of a large low-lying area.
- Meadow size (of Ahwahnee and Stoneman Meadows from removal of roads) would increase substantially, with improved natural drainage patterns and continuous meadow cover over large areas of the east Valley. This would result in a major impact.
- Areas of former meadow at the Upper and Lower River Campgrounds area; Ahwahnee Meadow where it is bisected by Northside Drive, sections of Lower Pines Campground, Southside Drive near Bridalveil Fall, and Cook's Meadow would be restored by unburying meadow soils where fill was added. Hydrology would be restored over time through the restoration of original topographic variations, and as a result, the dominance by non-native herbaceous species due to altered soil and hydrologic conditions in these areas would end. This impact would be major.
- Connectedness of meadows to riparian and wetland areas would be created by removing roads and reconstructing portions of returned roads to facilitate natural drainage patterns. This impact would be major.
- Implementing the River Protection Overlay, with access directed to appropriate sites along the river, would minimize impacts to this critical ecotone and result in a major impact.

- The modification of roads at Bridalveil, El Capitan, and Cook's Meadows to allow for natural drainage would re-establish functioning oxbow and cutoff channels through meadows. This would create a critical link between meadow, and riparian systems, with increases in native plant establishment (due to wetter conditions), greater native biodiversity, and greater overall productivity due to changes in species, food for wildlife, cover, etc. Modifications to roads in these areas would result in a major impact.
- Development of a multi-use paved trail between Curry Village and Yosemite Village would potentially allow for removal of the boardwalk through north Stoneman Meadow, thus increasing the continuity of the meadow and adjacent oak woodland. This would result in a minor impact.
- Gradual decline of existing fruit trees and the eventual restoration of Lamon Orchard would return the area to a mosaic of California black oak, meadow, and riparian vegetation. This restoration would have local moderate, beneficial effects because of the restored diversity and structure and reduced fragmentation, even though it is a relatively small area.
- Restoration at Camp 6 would return this highly disturbed area to a mosaic of meadows and riparian vegetation type, which would result in major, beneficial impacts due to reduced habitat fragmentation and increased vegetation diversity.

Adverse Impacts

The proposed actions under Alternative 4 would result in the following negligible adverse impacts to the size, continuity, natural structure, diversity, and productivity of meadow vegetation in the Valley.

These impacts would result from radiating use from new developed areas such as the potential vehicle check station at El Capitan crossover, at the new picnic area at the site of the Superintendent's House (Residence 1), and along new multi-use paved trails.

- Development of a multi-use paved trail between Curry Village and Yosemite Village through the Upper and Lower River Campgrounds area would not allow for complete elimination of fragmentation and impacts to existing and potential meadow and riparian zones. Alignment of the multi-use paved trail along the utility corridor through the Upper and Lower River Campgrounds area would minimize fragmentation somewhat by overlapping uses, resulting in a minor impact.
- Development of a vehicle management station, if required, at El Capitan crossover could result in undesired/unplanned parking along road shoulders at El Capitan Meadow, resulting in additional impacts from vehicles, trampling, the continued need to remove hazard trees, and introduction of non-native plant species into the meadow. However, these radiating impacts would be mitigated through restricting parking along the roadway and restricting human use of the meadow. The action would result in a minor impact to the meadow.

Riparian Communities

Actions under Alternative 4 would create beneficial impacts on more than 97 acres of riparian vegetation and result in an adverse impact to an estimated 7 acres of riparian habitat. The overall impact of this alternative on riparian vegetation would be major and beneficial.

Beneficial Impacts

Restoration would be concentrated in the floodplain areas near Yosemite Lodge (16 acres), Upper and Lower River, North Pines, Backpackers, Group, and portions of Lower Pine Campgrounds (59 acres), Camp 6 (5 acres) and Housekeeping Camp (12 acres), and Swinging Bridge Picnic Area (3 acres), as well as the talus slope zone of Curry Village (2 acres).

The beneficial effects of Alternative 4 on the size, continuity, natural structure, diversity, and productivity of riparian communities would be as described below. Also, under Alternative 4 restoration at Yellow Pine Campground would not occur.

- Restoration at Camp 6 would return this highly disturbed area back to a mosaic of meadows and riparian communities, which would have major, beneficial impacts resulting from reduced habitat fragmentation and increased diversity.
- The removal of Sugar Pine and Stoneman Bridges, as well as Housekeeping and Superintendent's Bridges, would eliminate the hydrologic alterations that are causing a loss of riparian vegetation both upstream and downstream of these bridges. This would be a major, beneficial impact because it would allow creation of continuous riparian areas, with significantly reduced intrusions of infrastructure on the river corridor.
- Removal of North Pines Campground and the concessioner stable would facilitate a continuous ecotonal transition from the riparian communities near Tenaya Creek and the Merced River to drier California black oak stands to the south and east. This would increase the size of both vegetation communities as well as eliminate most of the habitat fragmentation in this area, except for the small development of the amphitheater in a part of the former concessioner stable area. The action would result in a major impact to the riparian and California black oak communities.
- Restoration of the Upper and Lower River Campgrounds area, the Upper Pines Campground dump station, a portion of Lower Pines Campground, a portion of Housekeeping Camp within the 150-foot River Protection Overlay, and Group and Backpackers Campgrounds would facilitate the re-establishment of riparian corridors (oxbows and cutoff channels) through these sites as well as along the Merced and Tenaya Creek, resulting in a major impact.
- Restoration of the riparian corridor at Camp 6 would improve the continuity of riparian habitat along the Merced River corridor through the east Valley, and would provide connection between the wetland and meadow communities to the northeast and northwest of the proposed parking area. This impact would be moderate.
- Ecological restoration of the entire area south of the proposed new road alignment at Yosemite Lodge (aside from utilities and access near the confluence of the Merced River

and Yosemite Creek) would have major, beneficial effects on the ecological function of this section of the Valley. This restoration would increase the potential for more meadow and riparian acreage, enhanced wetlands, and minimal fragmentation of a large low-lying area.

- Yosemite Lodge landscaping would be designed to accommodate seasonal and ephemeral drainages, and channels would be revegetated with riparian species appropriate to the site to provide continuous riparian threads through the developed area. This would result in a moderate impact.
- Redesign of portions of Southside Drive in the Bridalveil Fall area would facilitate water flow under the road and enhance the continuity of the riparian community upslope and downslope of the existing road. This impact would be moderate.
- The removal of Swinging Bridge Picnic Area would improve the habitat condition of the riparian communities in this area, thus promoting the establishment of understory and herbaceous layers that are currently nonexistent. This action would result in a minor impact.
- Removal of the rubble pile from the western channel of Yosemite Creek would allow this channel to flow for a longer period, thus enabling riparian vegetation to become established in this currently barren channel. A moderate impact would result.
- Rehabilitation of bridges over Yosemite Creek in the braided stream channel area would remove impacts associated with undersized bridges that have resulted in scouring of the channel banks and loss of riparian vegetation. This would provide a moderate improvement to riparian conditions in this area, in conjunction with removal of the western channel human-built rock-rubble pile.
- Repair and construction of the road between the Cascades Diversion Dam and Pohono Bridge would eliminate roadside parking and associated human impacts on riparian vegetation along this section of the Merced River corridor, resulting in a minor beneficial impact.

Adverse Impacts

Adverse impacts to riparian vegetation under Alternative 4 would primarily take place at the new walk-in campsites at Upper Pines Campground (3 acres) and at the new lodging at Curry Village (4 acres). Additional impacts would occur as a result of radiating use from these new and redeveloped sites.

Impacts to size and continuity, natural structure, diversity, and productivity of riparian vegetation would be adversely affected by the following:

- New walk-in campsites at Upper Pines Campground would cause minor impacts to riparian vegetation due to trampling and the use of fill to create flat spaces for tent pads.
- At Curry Village, a small area of riparian vegetation would be impacted in order for existing lodging to be relocated outside of the talus slope zone. This new lodging development would be designed to minimize impacts. This would result in local impacts that are moderate but minor in relationship to the overall impacts to riparian vegetation.

- Converting the trail south of the Happy Isles Loop Road between Curry Village and Happy Isles to a multi-use paved trail would result in continued and increased negative impacts to the fen (an alkaline wetland fed from groundwater sources located near Happy Isles) and adjacent riparian vegetation. These impacts would be due to the widening of the current trail to accommodate heavier bicycle traffic, with a long-term loss of more fen habitat. This fen is the only one of its kind in Yosemite National Park and any impacts would be considered major due to the rarity of this type of vegetation community.
- Paving or hardening the eastern channel trail at Yosemite Creek for accessibility would directly impact some riparian vegetation because this action would involve widening or relocating the current trail. However, the area of impact would be small, and this site has already had an almost complete loss of herbaceous cover due to undirected foot traffic adjacent to the current access trail to Lower Yosemite Fall Bridge. The action would result in a minor impact.
- Development of a multi-use paved trail between Curry Village and Yosemite Village would continue to cause habitat fragmentation through the Lower Pines Campground area (for upland and California black oak). The paved trail would be designed to minimize impacts to the riparian zone between the Ahwahnee Bridge and Curry Village, accommodating frequent cutoff channel flows across the terrace. This would be a minor impact.
- Increased development of the existing Cathedral Beach Picnic Area could result in negative impacts to riparian vegetation due to impacts of picnic area development (with installation of restrooms, picnic tables, and barbecue grills, and trenching for utilities to support restrooms, running water, etc.), as well as impacts from radiating uses along the river. A trail currently exists along this bank, but the substantial increased use of the entire area would result in a much higher level of use, thus creating a wider path, a diversion of overland water runoff onto social trails, the trampling of vegetation, and an increased need to remove hazard trees. These impacts would be moderate with the implementation of fencing and signage to keep visitors out of sensitive vegetation.
- Development of a picnic area on a portion of the site formerly occupied by the Superintendent's House (Residence 1) would result in increased radiating impacts to the Merced River from Alternative 1, with moderate, adverse impacts resulting from the loss of riparian vegetation through trampling and erosion.

Other Communities

The Alternative 4 actions would result in adverse impacts to about 4 acres of other types of vegetation ground cover. Thirty-two acres of bare ground, orchards, watered lawns, bare areas, and developed open areas would be restored to either upland or highly valued resource vegetation types. The beneficial impacts have been discussed in the upland, California black oak, meadow, and riparian discussions above, and include restoration of the Camp 6 area to a mix of meadow, riparian, and California black oak stands; restoration of the site of the removed concessioner stable at North Pines Campground to riparian and California black oak woodland; and restoration of the site of the former gas station near Yosemite Lodge to California black oak

woodland. Adverse impacts would occur in areas where sparsely vegetated lands would be developed, such as the addition of a picnic area, housing, and lodging at Curry Village. Overall, there would be negligible beneficial impacts on these other vegetation types under Alternative 4.

OUT-OF-VALLEY AREAS

Out-of-Valley parking is proposed under Alternative 4 in the Badger Pass, South Landing, and El Portal areas as well as at the South Entrance, Tioga Pass, and Big Oak Flat entrances to the park. The overall impact of this alternative on out-of-Valley areas would be moderate and adverse. El Portal would be the only out-of-Valley area that would receive beneficial impacts as a result of Alternative 4.

El Portal

Vegetation types found in the El Portal area of impact include oak (a type of upland vegetation) and riparian types; however, the plant composition of these vegetation types varies from those in the Valley. Meadow and California black oak types are not represented in the El Portal area. The overall impact of Alternative 4 on El Portal vegetation would be moderate and adverse.

Upland Communities

ADVERSE IMPACTS

- Existing oak stands would experience long-term, moderate impacts from the development of housing throughout El Portal. A direct loss of trees would occur with the development of housing within areas that are already somewhat impacted by low-density housing, as well as development of new housing sites at Hillside East and Hillside West. These developments would prevent retained trees from reproducing (due to pavement, yard activities, landscaping, trampling, and the presence of structures), resulting in a decrease in the size and continuity of these oak woodlands.
- The natural structure, diversity, and productivity of oak and upland communities would be moderately impacted because of the increased likelihood of non-native plant species and lack of natural fire and fire frequencies.
- Prescribed burning and mechanical treatment of vegetation surrounding El Portal would continue to maintain semi-natural stands of oaks around developed areas. These actions would promote oak regeneration by reducing competing vegetation. Many areas currently managed this way would be developed into housing, parking, and infrastructure, leaving fewer acres of oaks to regenerate, provide habitat, and add to the diversity of this area, which would result in a minor impact.
- The development of a parking area could require the removal of large individual oaks adjacent to the Merced River at Middle Road. The development of housing upslope of this site would eliminate connectedness of the oak stands on the slopes above El Portal with riparian and flat terrain oak communities. Impacts to vegetation would be moderate.

Riparian Communities

BENEFICIAL IMPACTS

- The removal and restoration of the old treatment plant at Rancheria Flat adjacent to the river would enhance the continuity of riparian vegetation along this curve of the Merced River, with the potential for increased habitat for rare plant species growing adjacent to the site. This impact would be major.
- Implementation of the River Protection Overlay and management zoning, as prescribed in the *Merced Wild and Scenic River Comprehensive Management Plan* would help protect the riparian corridor throughout the El Portal Administrative Site, resulting in a minor impact.
- Restoration of the sand pit area in El Portal, with removal of remaining concrete wing wall and re-establishment of riparian vegetation, would enhance the river corridor and increase the potential habitat for Congdon's woolly-sunflower, a state-listed rare plant species. This action would result in a minor benefit to the riparian vegetation community and Congdon's woolly-sunflower.

ADVERSE IMPACTS

- Riparian areas would receive minor impacts from the development of high-density housing at Hennessey's Ranch (due to their currently impacted condition). Associated increase in human use would cause a decline in the continuity of this vegetation community as social trails develop.
- The size of riparian areas would continue to be impacted by existing developments and new developments (Hennessey's Ranch and Village Center). A continued decline in riparian community size would also occur both in length along the river and width from the water's edge up to the bank edge, which would result in a minor impact.
- An increased human population, and an associated increase in landscaping, numbers of vehicles, and foot traffic (and means for seed dispersion), would result in more non-native plant species problems throughout the riparian and oak woodland areas. This impact would be moderate.
- The isolated nature of riparian areas in the El Portal core area (Crane Creek to Foresta Bridge), caused by structures and Highway 140 riprap, would continue to inhibit natural exchange of other biological components (mammals, amphibians, and reptiles) as well as wind-dispersed seeds. This would result in lower overall productivity of these areas, representing a minor impact.

Foresta

The development being considered for Foresta under Alternative 4 includes stables and 14 additional employee houses. The area of potential impact would be approximately 2 acres for the relocated stable facilities. Housing impacts would occur within existing developed areas. The overall impact of Alternative 4 on Foresta vegetation would be minor and adverse.

Adverse Impacts

- Development of the National Park Service and concessioner stables at McCauley Ranch, including access road widening and rebuilding of a bridge along the access road, would further break up the continuity of the upland and riparian communities that exist along this road corridor. Impacts would be minor because the road and bridge are already present.
- Development of the National Park Service and concessioner stables at McCauley Ranch would also increase the possibility that non-native species could establish and spread. Foresta remains fairly susceptible to non-native plant establishment as a result of the severe impacts that occurred during the 1990 fires, because of constant ground disturbance, the need to maintain the road corridor, and importation of potentially contaminated feed. Stable operations could increase the chance of additional non-native plant species becoming established in the vicinity of the road and corral. This would result in a moderate impact.
- Isolated but extreme impacts from the establishment and spread of non-native plant species (including spotted knapweed, yellow star-thistle, and oxe-eye daisy) would occur at a somewhat more rapid rate due to increased vehicle use of this area from development of the stables and new housing. Management efforts would continue to attempt to contain and control (and eventually eradicate) existing and new non-native plant species. The spread of non-native species would be a moderate impact.

South Landing

The vegetation at South Landing includes a montane mixed conifer forest of ponderosa pine and incense-cedar, with sugar pine and greenleaf manzanita groundcover. A proposed day-visitor parking area and transit center would impact approximately 27 acres. The overall impact of Alternative 4 on South Landing would be moderate and adverse.

Adverse Impacts

- Montane chaparral and montane, mixed coniferous forest communities would be further impacted by the development of the parking area and transit center with the installation of associated utilities and infrastructure improvements, which would result in a moderate impact.
- Coniferous trees and montane chaparral species would be completely removed from large areas of South Landing due to grading and paving. Additional trees would be damaged during construction and would need to be removed in the future. Sugar pines could be stressed by changes in soil moisture and temperature from adjacent pavement, thus causing an increased susceptibility to white pine blister rust and leading to gradually higher rates of mortality. This would lead to a larger footprint of development over time as overstory trees die, resulting in a moderate impact.
- Radiating uses to the Crane Flat Meadow and the giant sequoias at the Merced and Tuolumne Groves from a substantially increased visitor population could result in

increased herbaceous vegetation loss due to trampling, as well as a loss of diversity and function of vegetation due to the increased possibility of non-native plant introduction and establishment. These impacts could be minimized by installation of signing and fences to focus people away from sensitive areas and with increased management efforts to control non-native plant species, resulting in minor, adverse impacts.

- The development at South Landing would require management for hazard trees, resulting in the removal of older, decadent trees and snags that provide critical habitat for many wildlife species. Stands of sugar pine in this area are somewhat affected by white pine blister rust (a non-native rust that affects all white pines including sugar pine), and this would continue to affect the productivity and diversity of this site as well as adjacent stands. This impact would be minor.

Badger Pass

The vegetation within the area of potential development in the Badger Pass area includes white and red fir (upper montane forest). Under Alternative 4, a 415-space parking area would be developed within the existing ski area parking lot. Up to an additional 1 to 2 acres of new development would be required for associated utilities. The overall impact of Alternative 4 on the Badger Pass area would be major and adverse.

Adverse Impacts

- Parking for 415 vehicles would require the development of additional utilities to handle the increased demand for water and restroom facilities, thus leading to an expanded disturbance of shrubs and herbaceous plants within the conifer forest. This impact would be minor because the new parking area would be delineated within the existing parking lot. Therefore, the impact would be limited to the associated utilities required for summer use, as well as potentially increased radiating impacts from greater human use of the area during the summer.

Henness Ridge, Wawona, and Hazel Green

Under Alternative 4, no actions are proposed at Henness Ridge, Wawona, or Hazel Green.

Big Oak Flat Entrance

Additional parking and construction of a new visitor contact station (visitor center) would increase the footprint of the existing site by up to 5 acres. Impacts at the Big Oak Flat Entrance would be long term, minor, and adverse due to the small size of additional impact, the existing level of habitat fragmentation, and the existing high potential for the introduction of non-native plant species.

Impacts to upland vegetation (ponderosa pine forest and mixed conifer forest) may occur depending on the actual site design, which is not known at this time. Impacts would include paving, the removal of trees and groundcover, an increased difficulty of managing fuels and vegetation structure with fire (due to the presence of additional structures requiring fire

protection), and trenching impacts to root systems (with a potential weakening of the health of directly affected trees).

Tioga Pass Entrance

Tioga Pass vegetation is characterized by a mosaic of both wet and dry subalpine meadows (dominated by native perennial grasses, sedges, rushes and forbs) and lodgepole pine forests. Continued degradation of these vegetation types would occur under Alternative 4. The impact resulting from this alternative would be long-term, moderate, and adverse, as there would be loss of vegetation and further degradation of vegetation community structure and diversity within a currently disturbed area.

Adverse Impacts

- Construction of a new visitor center and associated parking (with potential impacts of up to 5 acres) in the vicinity of Tioga Pass would impact lodgepole pine forests and wet and dry subalpine meadows. Dry meadows and lodgepole forests would be affected by paving and addition of structures, utility lines, and trails, thus reducing both the size and continuity of these vegetation types and resulting in long-term, moderate, and adverse impacts. Wet meadows would also receive increased adverse impacts from radiating uses due to more human activity in the area. Impacts to wet meadows could be mitigated by more clearly defining trails leading to the Mt. Dana cross-country route and would most likely remain moderate (despite any mitigation) simply as a result of higher levels of human use in the area.
- Paved areas and structures would result in changes in drainage patterns, resulting in moderate adverse impacts. An increased number of visitors because of the new visitor center would increase the likelihood of additional firewood collection (causing loss of nutrient recycling), and more vehicles in the area would increase the chance of non-native plant establishment as a result of more trampling and denuded soils.

South Entrance

Vegetation at the South Entrance to Yosemite National Park is characterized by dense montane, mixed conifer forest dominated by a white fir overstory with subordinate sugar pine, Douglas-fir, ponderosa pine, and Jeffrey pine. Riparian vegetation occurs along ephemeral and perennial stream channels.

Continued degradation of these vegetation types would occur under Alternative 4. The impact of this alternative would be long-term, minor, and adverse because there would be some increase in vegetation loss and degradation as compared to the existing condition.

Adverse Impacts

- Increased parking and structures would further add to the habitat fragmentation of the area, with an increased loss of riparian vegetation caused by potentially filling drainages, and an increased loss of forest cover. The loss of riparian vegetation could be minimized by using existing old road and railroad corridors rather than creating new developed

areas, resulting in minor, adverse impacts due to the small area that would be affected. Forests would be impacted by the loss of up to 5 acres of trees in a currently forested area. Additional impacts would occur from the expansion of the hazard tree management zone along the corridor and around new parking areas.

- An increase in paved areas, how long vehicles are parked, and levels of human use in the South Entrance area would increase the potential for introduction and establishment of non-native species through a higher level of road-edge maintenance, increased introduction of sand with potential weed seeds, and more people with seeds clinging to clothing and cars. Impacts would be moderate and adverse to riparian vegetation, and minor for forested areas.
- The increased human population would make reintroduction of fire into the South Landing area more problematic due to smoke and the presence of structures. These limitations could be minimized by designing the site to concentrate structures in as small an area as possible. Vegetated "islands" would also be minimized to allow management of adjacent vegetation with fire (minor).

CONCLUSION

In Yosemite Valley, California black oak woodlands would receive major, beneficial impacts by the removal of some structures within existing stands and the potential for restoration of large areas of former California black oak. Both meadow and riparian areas in the east Valley would also receive major, beneficial effects under Alternative 4 due to the removal of some facilities, the consolidation of others out of the Merced River floodplain, and an increased ability to restore large portions of the Valley to natural conditions. These benefits would be offset by moderate, adverse impacts from radiating effects to adjacent areas near Superintendent's Bridge (proposed for removal) and in currently undeveloped areas in the west Valley. Upland forests in the west Valley would experience moderate, long-term, and adverse effects as a result of development of parking and circulation facilities at Taft Toe.

In the El Portal Administrative Site, long-term, moderate, and adverse effects would occur to the oak and upland communities due to new housing development and parking. Riparian areas would experience moderate, adverse effects from radiating impacts resulting from existing and increased human population.

Long-term, moderate, and adverse impacts on montane forests would occur at South Landing due to a loss of forest stand structure, continuity, and understory integrity. Lodgepole pine forests and subalpine meadows at Tioga Pass would also experience moderate, long-term, and adverse impacts as a result of trampling and a small area of habitat loss.

Long-term, minor, and adverse effects would occur in Foresta, at Big Oak Flat Entrance, at South Entrance, and at Badger Pass due to slightly increased radiating impacts from an increased human population, a higher chance of non-native species establishment, and a slightly greater fragmentation of vegetation.

The overall effect of Alternative 4 on vegetation would be minor, long-term, and beneficial based on the relatively large areas of high-value vegetation resources to be restored, the similarly large

amount of adverse impacts occurring in non-highly valued resource vegetation types (uplands and other), and the moderate amount of new habitat fragmentation generated.

CUMULATIVE IMPACTS

The overall impacts of past, present, and reasonably foreseeable future projects on vegetation would be the same under Alternative 4 as is described for Alternative 1.

Increased human activity and related air quality degradation in the El Portal area and elsewhere could adversely affect ponderosa pine, Jeffrey pine, and other ozone-intolerant species. The National Park Service has operated an ozone monitoring station at Turtleback Dome for more than a decade to identify ozone trends in the Valley. Although cleaner burning vehicles and fuels should reduce the amount of ozone in the atmosphere in the future, cumulative effects to such plant species are expected to continue.

Other cumulative impacts to vegetation under Alternative 4 would include plant community fragmentation resulting from increased land development and potential continued introduction of non-native plant species. Cumulative impacts to riparian vegetation would also be expected due to development and other pressures along the narrow Valley floor adjacent to the Merced River.

Adverse impacts to upland vegetation under Alternative 4 would occur at South Landing, El Portal, Foresta, and at all entrance stations. These impacts, in conjunction with impacts to upland areas in Yosemite Valley (due to new development at Taft Toe) and a loss of forests over time to highly valued meadow, California black oak woodland, and riparian vegetation types, would constitute moderate overall impacts to upland communities as proposed in the *Final Yosemite Valley Plan/SEIS*. In conjunction with the areawide projects discussed for Alternative 1, actions proposed under Alternative 4 would result in a cumulative minor, adverse impact to upland vegetation because of the current extensive coverage of upland vegetation throughout the Sierra Nevada region.

Restoration actions proposed in Yosemite Valley and the removal of structures (decreasing habitat fragmentation) in some areas would result in more acres of restored California black oak woodland. The re-introduction of fire into tree stands adjacent to upland communities would also create additional acres of potential California black oak woodland. The loss of black, canyon live, blue, and valley oaks from construction in El Portal, however, would increase habitat fragmentation, but site planning to avoid large trees and designing landscapes to minimize irrigation impacts would help mitigate these actions. Small areas of talus live oak communities would be restored at Curry Village. In combination with reasonably foreseeable future actions, cumulative moderate, beneficial impacts to oaks would occur as a result of this project.

Alternative 4 calls for the implementation of a River Protection Overlay zone in Yosemite Valley, which would create long, linear sections of intact riparian vegetation following restoration efforts. The natural links with meadows would be restored, and large continuous meadow areas would be re-created throughout the east Valley. However, this alternative also, proposed additional multi-use paved trails, which often follow or cross riparian areas. Impacts could also occur to subalpine meadows at Tioga Pass. Thorough site planning could prevent impacts to riparian and meadow vegetation in these newly developed areas by avoidance, thus resulting in a cumulative moderate, beneficial impact to riparian and meadow vegetation. Therefore, the overall cumulative impact of

Alternative 4 on vegetation, in conjunction with reasonably foreseeable future impacts, would be minor and beneficial.

Wildlife

This analysis describes impacts to wildlife in terms of changes to habitat, such as habitat loss or gain, degradation or enhancement, fragmentation or connectivity, amount of human disturbance, and potential for increased or decreased conditioning of wildlife. The Vegetation section provides detail (including acreage breakdowns) on the vegetation types that are related to the habitat types covered in this section: upland, California black oak woodland, meadow, riparian, and other. All but the upland and other habitat types are considered highly valued resources by the park because of their value to wildlife combined with other factors, such as scarcity on a regional basis and value as critical components in park ecosystems. General wildlife species associated with these habitat types are discussed in Chapter 3, Affected Environment, Wildlife; table 3-6 illustrates the connections between vegetation types and wildlife habitats. Rare, threatened, and endangered wildlife species are discussed in a separate section of this chapter.

Short-term impacts on wildlife would occur during construction or implementation of actions described in this section. Based on the mitigation measure that would be implemented during construction, all expected short-term impacts would be negligible.

Other impacts on wildlife and wildlife habitat generally would be characterized as long term for the actions reviewed under this alternative.

YOSEMITE VALLEY HABITAT

Habitat restoration would result in approximately 193 acres of restored or enhanced wildlife habitat within the Valley, of which 174 acres would be restored to highly valued resource habitat types. New or relocated development within existing wildlife habitat would result in approximately 102 acres of lost or degraded wildlife habitat, of which 88 acres would occur within upland or “other” habitat types within the Valley.

In restored habitat of all types, the resulting benefit to wildlife is highly dependent upon the size of the area restored and its connection or proximity to other natural or restored areas. Such benefit is also related to the proximity of the restored area to continued human activities and development. Larger restored areas of habitat tend to support a higher abundance and diversity of wildlife species and are less affected by human disturbance from adjacent development and uses. Connections within and among habitat types allow more natural wildlife movement, and access to food, cover, and reproduction sites necessary for all stages the life cycles of various species. Management of human use in areas adjacent to natural or restored areas can minimize disturbance that would degrade habitat quality, especially of sensitive habitats such as meadows and riparian. For example, signs and fencing could keep visitors away from sensitive habitats or wildlife species, and control of human food sources in developed areas could reduce conditioning of wildlife and minimize human/wildlife conflicts.

Upland Habitat

Approximately 94 acres of existing upland habitat would be developed under this alternative, approximately 19 acres would be restored, and an additional 75 acres would be converted to highly valued resource habitat types. The beneficial impacts to upland habitats would primarily be the result of increased connectivity of uplands with other habitats as well as enhancement of habitat structure in east Yosemite Valley. The adverse impacts to upland habitat would occur primarily as a result of habitat loss in west Yosemite Valley.

A summary of actions and impact intensities for Alternative 4 is provided in table 4-92. The adverse and beneficial impacts to upland habitat and associated wildlife species under Alternative 4 would generally be the same as those described for Alternative 2, with the following exceptions:

Development of a new Taft Toe facility for day-visitor parking and a transit/visitor center would remove approximately 53 acres of upland habitat (although only about one-third the number of parking spaces would be constructed at Taft Toe under Alternative 4, the affected area would be the same as in Alternative 3 to accommodate out-of-Valley shuttle buses). Development in this location would affect species such as ringtail, California spotted owl, and Gilbert's skink; result in a high degree of habitat loss and human disturbance in the mid-Valley; and create a large element of habitat fragmentation. Noise, light, and increased human use radiating from the facility into adjacent habitats, including highly valued resource types, would affect their existing quality. Hazard tree mitigation would reduce local snag numbers, which could affect wildlife such as bats and woodpeckers.

The location of this facility at the foot of Cathedral Spires gully would place it in a corridor that may be used by wildlife moving into and out of the Valley, which could inhibit the movement of some species or lead to conflicts between humans and animals. Such conflicts could result in property damage, injuries, and conditioning of animals to human food sources in an area of the Valley where such incidents are now rare. Parking at Taft Toe, especially in the early morning or late evening, could lead to high levels of vehicle break-ins by conditioned black bears. General mitigation measures would be incorporated into the proposed parking areas to minimize impacts to wildlife, including restricting visitor access into adjacent sensitive habitats, providing information and enforcement to discourage wildlife feeding and encourage proper food storage, and providing adequate garbage services. Surface water runoff from parking areas would be collected and treated prior to its entering meadows or riparian areas to minimize pollution impacts on frogs and other species dependent upon aquatic habitat. Lighting would be designed to minimize illumination of surrounding areas. Despite these mitigation measures, impact of the Taft Toe facility on wildlife would be major and adverse.

- A new picnic area with grills would be established at Curry Orchard, creating a new area for human/wildlife conflicts. The removal of parking from the orchard under this alternative would reduce the conditioning of bears to food in vehicles, and reduce damage to vehicles. Picnicking in the orchard, however, would likely result in dangerous interactions between wildlife and humans, especially when the apple trees are fruiting, attracting large numbers of black bears, deer, and squirrels and resulting in moderate, adverse impacts.

California Black Oak Woodland Habitat

Approximately 7 acres of existing California black oak woodland habitat would be developed under this alternative and approximately 25 acres restored to this highly valued resource wildlife habitat. The beneficial impacts to California black oak woodland habitats and associated wildlife would primarily be the result of increased habitat size and connectivity with other habitats, and more natural habitat structure. The adverse impacts to California black oak woodland habitat would occur primarily as a result of habitat loss.

The adverse and beneficial impacts are generally the same as described under Alternative 2. The primary differences in actions from those described in Alternative 2 are discussed below. A summary of actions and impact intensities for Alternative 4 are provided in table 4-92. Beneficial impacts on California black oak woodland habitat would have corresponding beneficial effects on many species, including mule deer, acorn woodpeckers, squirrels, mice, great-horned owls, and a variety of small birds.

- The former gas station site and former bank building would be restored to California black oak woodland. Small patches of this highly valued resource would be restored. These areas, however, represent a relatively small portion of California black oak habitat in the Valley, and would have continued human disturbance from Yosemite Village at the bank building site, and Yosemite Lodge and Camp 4 (Sunnyside Campground) at the gas station site, which would limit their quality to wildlife. Therefore, the net gain in habitat value would be minor.
- Ahwahnee Row houses would be removed and the area restored to California black oak woodland and some meadow habitat. The forest/meadow edge would be restored, providing a high-value ecotone for wildlife. Flows from Indian Creek could be allowed to follow a more natural course, leading to improved meadow habitat and the formation of riparian habitats (both highly valued resources). Impact from domestic pets and non-native plants associated with current housing would be reduced. This restored habitat would be a relatively thin strip, and continued high levels of human use in adjacent areas would limit the value of this restoration to wildlife (to moderate, beneficial) by causing disturbance in the area.
- Superintendent's House (Residence 1) would, as in Alternative 2, be removed, but a picnic area would be established in that location. While such development would leave the oak trees intact, much of the understory and ground vegetation would be removed to establish the picnic area, and subsequently, this area would be subject to human trampling. The picnic area would affect the quality of the habitat to wildlife by preventing the return of natural woodland structure, and regeneration of oaks would be adversely affected. The picnic area would become a new site for conditioning of wildlife to human food. Overall, this action would cause a minor, adverse impact.

Table 4-92 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Beneficial Impacts				
Implementation of 150-foot River Protection Overlay	Reduction in human disturbance and habitat degradation	All	2, 3, 4, 5	Major
Removal of campgrounds within the River Protection Overlay and ecological restoration of areas	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction of human disturbance	All	2, 3, 4, 5	Major
Removal of campsites at North Pines from highly valued resource habitat types	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction of human disturbance	Riparian	2, 3, 4	Moderate
Removal of campsites at Lower Pines from highly valued resource habitat types	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human disturbance	Riparian	2, 3, 4, 5	Major
Restoration of Yosemite Lodge cabin area to natural conditions	Reduction in habitat fragmentation Reduction in human disturbance Improvement of habitat integrity Increase in habitat quantity	Riparian Meadow	2, 3, 4, 5	Moderate
Removal of 164 Housekeeping units and restoration of area to natural conditions	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human disturbance	Riparian	2, 5	Moderate
Removal of 212 Housekeeping units and restoration of area to natural conditions	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction of human disturbance	Riparian	3, 4	Major
Removal of roads through Stoneman and Ahwahnee Meadows and restoration of areas to natural condtions	Restoration of natural hydrology and vegetation Reduction in habitat fragmentation Reduction in human disturbance	Meadow	2, 3, 4	Major
Removal of Bridges: Sugar Pine and Stoneman (if necessary)	Restoration of natural hydrology to allow natural cycles of riparian habitat formation, and improve aquatic habitat	Riparian	2	Major
Removal of Bridges: Sugar Pine, Stoneman, Housekeeping, Superintendent's	Restoration of natural hydrology to allow natural cycles of riparian habitat formation, and improve aquatic habitat	Riparian	3, 4	Major
Removal of Bridges: Sugar Pine and Ahwahnee	Restoration of natural hydrology to allow natural cycles of riparian habitat formation, and improve aquatic habitat	Riparian	5	Major
Removal of Yellow Pine Campground and restoration to natural conditions	Restoration of habitat quality, integrity, and continuity Reduction in human disturbance	Riparian Upland	2, 3	Moderate

Table 4-92 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Removal and restoration of tennis courts and utility area near The Ahwahnee	Restoration of habitat and reduction in human disturbance	California black oak	2, 3, 4, 5	Moderate
Removal of Swinging Bridge Picnic Area	Restoration of forest understory and riparian habitat Reduction in wildlife feeding	Riparian Upland	2, 3, 4, 5	Moderate
Removal of Church Bowl Picnic Area	Restoration in habitat quantity and continuity Reduction in human disturbance	Upland	2, 5	Minor
Removal of Camp 6 parking from River Protection Overlay	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human disturbance	Riparian Meadow	2, 3, 4, 5	Moderate
Removal of Camp 6 parking from River Protection Overlay and highly valued resource areas	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human disturbance	Riparian Meadow	3, 4	Major
El Portal Road reconstruction from intersection with Big Oak Flat Road to Pohono Bridge	Reduction in impact to thin strip of riparian habitat from minor road realignment and removal of most turnouts, which would reduce human disturbance of habitats	Riparian	2, 3, 4, 5	Minor
Removal of Cascades Diversion Dam	Restoration of natural hydrology and cycle of riparian habitat formation	Riparian	2, 3, 4, 5	Minor
Removal of Curry Village tent cabins from talus slope zone	Restoration of habitat Reduction in habitat fragmentation Reduction in human disturbance	Upland Riparian	2, 3, 4, 5	Moderate
Removal of Curry Orchard and restoration to natural conditions	Reduction in human/wildlife conflicts Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation	Meadow	2, 3	Moderate
Removal of parking from Curry Orchard, but trees allowed to remain	Reduction in human/wildlife conflicts	Other	4, 5	Minor
Removal of all orchards and resoration to natural habitat	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human/wildlife conflicts	Upland Meadow	3	Major
Removal of Yosemite Falls parking area and redesign of trails	Restoration of small area of habitats, but with continued high levels of human disturbance in the area	Riparian Upland	2, 3, 4, 5	Minor
Removal of concessioner and NPS stables from Yosemite Valley and restoration of habitat (if operations can be moved to McCauley Ranch)	Increased habitat integrity and continuity Reduced parasitism by brown-headed cowbirds on native bird species	All	2, 3, 4	Moderate
Discontinue private stock use in Yosemite Valley	Reduction in brown-headed cowbird parasitism on native bird species	All	3	Minor

Table 4-92 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Modification of Northside Drive between Yosemite Lodge and El Capitan crossover to a multi-use (pedestrian/bicycle) trail	Reduction in traffic disturbance to habitats and wildlife in a substantial portion of Yosemite Valley Reduction in wildlife killed by vehicles and in habitat fragmentation	Other	2, 3, 4	Major
Removal of Superintendent's House (Residence 1) and restoration of area to natural habitat	Restoration of a small area of a high-value resource type Increased continuity with adjacent habitats	California black oak	2, 3, 5	Moderate
Restoration of the gas station site to natural habitat	Restoration of a small area of highly valued resource habitat Continued human impact from adjacent development	California black oak	2, 3	Minor
Removal of Ahwahnee Row houses and restoration to natural habitat	Restored meadow-forest edge More natural hydrology and habitat assiciated with Indian Creek	Meadow Riparian California black oak	3, 4, 5	Moderate
Happy Isles: ice cream/snack stand not replaced (temporary stand removed)	Reduction in human food sources to wildlife	Other	3, 4	Minor
Removal of parking along Northside Drive through El Capitan Meadow	Reduced impact to meadow from human trampling Reduced exposure of wildlife to human food, and reduced conditioning of bears to food left in cars overnight	Other	2, 3, 4, 5	Moderate
Reconstruction of roads at El Capitan Meadow and Bridalveil Creek to accommodate natural water flows	Restoration of natural water flows to sustain riparian, wetland, and meadow habitats Reduction in habitat fragmentation	Riparian Meadow	2, 3, 4, 5	Major
Adverse Impacts				
Establishment of new walk-in campsites in Yosemite Valley	Removal of habitat New areas for wildlife to be exposed to human food, leading to human/wildlife conflicts	Upland	2, 3, 4, 5	Moderate
Development of replacement housing and lodging at Curry Village outside of talus slope zone	Removal of habitat Increased human disturbance of adjacent habitats	Upland California black oak Riparian	2, 3, 4, 5	Minor
Redevelopment of area in Yosemite Village for 550 parking spaces	Increased human disturbance in adjacent habitats Increased tramlping of vegetation Increased chance for human/wildlife conflicts	Upland	2, 5	Moderate
Development of new lodging at Yosemite Lodge	Loss of habitat (previously disturbed) Increased human presence	Upland	2, 3, 4, 5	Minor
Increased water levels in meadows from restoration	Potential increased bullfrog populations that would prey on native species; eradication is necessary for mitigation	Meadow Riparian	2, 3, 4, 5	Moderate
Establishment of a new picnic area at North American Wall	Loss of upland habitat Increased human disturbance Increased chance of wildlife conditioning to human food	Upland	2, 3, 4, 5	Minor
Development of the El Capitan crossover traffic check station, if required	Loss of habitat Disturbance from traffic and people	Upland	2, 5	Minor

Table 4-92 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Development of new housing at Wawona	Loss of montane hardwood conifer habitat and increased human disturbance	Upland	2, 5	Moderate
Development of new housing and administrative facilities in El Portal	Loss of habitat Increased human disturbance	Upland Riparian	2, 3, 4, 5	Moderate
Development of parking in El Portal	Loss of habitat Increased human disturbance	Upland California black oak	2, 4, 5	Moderate
Development of parking at Badger Pass on previously paved area	Increased human disturbance Trampling in adjacent habitats Increased human/wildlife conflicts	Upland Meadow	2, 4	Minor
Development of parking at Hazel Green, or at Foresta if Hazel Green is not viable	Loss of habitat Increased human disturbance in the area Increased trampling of vegetation Increased chance of human/wildlife conflicts	Upland	2	Moderate
Construct new visitor centers at or near park entrances	Minor loss of habitat Increased human disturbance	Upland	2, 3, 4, 5	Minor
Construction of a new trail adjacent to Southside Drive from El Capitan Bridge to Swinging Bridge	Loss of habitat Increased need for hazard tree management, reducing snag habitat	All	2, 3, 4	Moderate
Development of new roads and trails from realignments and new connections	Loss of habitat Removal of hazard trees, reducing snag habitat	All	2, 3, 4, 5	Moderate
Relocation of NPS and concessioner stables to McCauley Ranch in Foresta	Impact to meadow and forest habitat Creation of a new area for brown-headed cowbird infestation, affecting native bird species	Upland Meadow	2, 3, 4	Moderate
Widening of Southside Drive, where necessary, to accommodate two-way traffic	Removal of habitat already affected by proximity to existing road	Upland	2, 3, 4	Moderate
Construction of a new vehicle bridge across Yosemite Creek near Yosemite Lodge	Removal of small area of habitat	Riparian	2, 3, 4, 5	Minor
Construction of parking and transit facility at Taft Toe in mid-Yosemite Valley	Removal of approximately 53 acres of forest habitat Increased habitat fragmentation in a relatively intact area Increased human disturbance to surrounding habitats Noise and light disturbance from facility Increased chance of human/wildlife conflicts	Upland	3, 4	Major
Development of a new picnic area at the Curry Orchard	Increased chance for human/wildlife conflicts, especially in fall when apples are ripening and attracting wildlife	Other	3, 4	Moderate
Development of a new picnic area at former site of Superintendent's House (Residence 1)	Destruction of understory habitat Increased human disturbance Inhibited regeneration of oaks Increased exposure of wildlife to human food	California black oak	4	Minor

Table 4-92 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Development of parking at South Landing	Loss of forest habitat Increased human disturbance in the area Increased chance for human/wildlife conflicts	Upland	4	Moderate
Relocation of concessioner stable to east of Curry Village and continuation of guided rides	Loss of habitat from development of facility Increased local effects of brown-headed cowbird parasitism	Upland	5	Minor
Development of parking at Henness Ridge	Loss of habitat Increased human disturbance in adjacent habitats Increased chance of human/wildlife conflicts	Upland	5	Moderate
Expansion of the Yellow Pine Campground to accommodate volunteers and group campers	Loss of habitat Increased human disturbance in adjacent habitats Increased chance of human/wildlife conflicts	Upland Riparian	5	Moderate

1. Reasons for impact intensities are described in the text, along with explanations of mitigation measures incorporated into this evaluation. A complete list of mitigation measures is found in Chapter 2, Alternatives, Mitigation Measures Common to All Action Alternatives, Wildlife.

Riparian and Meadow Habitats

Approximately 7 acres of existing meadow and riparian habitat would be developed under this alternative, and approximately 149 acres would be restored to these highly valued resource habitats. The beneficial impacts to meadow and riparian habitats would primarily be the result of increased habitat size and connectivity with other habitats as well as enhanced habitat structure. The adverse impacts to meadow and riparian habitat would occur primarily as a result of habitat loss.

Adverse and beneficial impacts on riparian and meadow habitats are generally the same as under Alternative 2, with the following exceptions:

- The removal of 212 units at Housekeeping Camp units would allow extensive restoration of riparian habitats and augment the benefit provided by the River Protection Overlay. This restoration would provide increased habitat contiguity with other restoration actions (e.g., Upper River and Lower River Campgrounds area), thus benefiting species such as hairy woodpecker and various bat species. This would provide a major, beneficial impact to wildlife.
- Removal of parking from Camp 6 would allow restoration of this area to riparian, meadow, and upland habitat. This would augment the benefit of adjacent restoration provided by implementation of the River Protection Overlay and increase habitat contiguity with other restoration actions (e.g., Housekeeping Camp and the area of the former Upper River and Lower River Campgrounds). This would benefit species such as Pacific tree frog, western toad, and yellow warbler and would provide a major, beneficial impact to wildlife.
- Removal of parking from the Curry Orchard would reduce human/wildlife conflicts in this area, resulting in minor, beneficial effects on wildlife.
- Establishment of a picnic area in the vicinity of the Curry Orchard would result in increased human/wildlife conflicts in this area, resulting in minor, adverse effects. Adequate garbage repositories and collection, enforcement of regulations, and restriction of use of the picnic area to daylight hours could minimize this impact.
- Ongoing use of Yellow Pine Campground for volunteer groups in forest and riparian habitats could cause radiating impacts into adjacent riparian and wetland areas. Because this is the existing condition, there would be no additional impact.

OUT-OF-VALLEY HABITATS

Parking, housing, and administrative facilities would be developed outside of Yosemite Valley to replace those removed from the Valley under this alternative. This would result in largely adverse impacts to wildlife and habitat in those locations where new facilities are established. Most of this impact would be to upland habitats. Some restoration, however, would occur in El Portal as part of local projects.

The out-of-Valley impacts generally related to the development of parking facilities would occur in Badger Pass, El Portal, and South Landing. More visitor use in these areas would increase

exposure of wildlife to human food. If overnight parking is allowed at these facilities, bears are likely to damage cars that contain food, and become conditioned to this source. Standard mitigation measures would be incorporated into project design to minimize wildlife impacts (see Chapter 2, Alternatives, Mitigation Measures Common to All Action Alternatives).

Impacts associated with development outside of Yosemite Valley would remain essentially the same as under Alternative 2, with the exceptions listed below for each area of potential development.

El Portal

There would be no change in impacts to wildlife and habitat from those that would also occur under Alternative 2. Parking, housing, and administrative facilities would be built; the fuel distribution facility would be removed, and the old sewer plant would be removed and restored to riparian habitat. The overall impact to wildlife in El Portal would be moderate and adverse.

Badger Pass

There would be no change in impacts to wildlife and habitat from those that would also occur under Alternative 2. Parking for up to 400 cars would be provided, with minor, adverse impacts to wildlife anticipated from associated utility development, urban runoff and lighting, radiating visitor impacts, and conditioning wildlife to human food.

Wawona

No additional housing or other facilities would be built in Wawona under Alternative 4; therefore, would be no additional impacts to wildlife.

Foresta

Impacts in this area would be the same as under Alternative 2, except there would be no possibility of development of a parking facility. The overall impact in this area would be minor and adverse due to the construction of 14 employee houses and establishment of National Park Service and concessioner administrative stable operations.

South Landing

Development of day-use visitor parking for about 805 vehicles at South Landing would affect primarily mixed conifer habitat and species such as California spotted owl, fisher, and white-headed woodpecker. An existing road and an area that has seen heavy use for staging of construction and road maintenance materials and vehicles have already degraded a portion of the area that would be affected by this development. Radiating impacts from increased visitor use would affect surrounding areas and could extend to meadows at Crane Flat. It is also possible, however, that stopping some day-visitor traffic at South Landing would actually reduce disturbance at Crane Flat, because fewer visitors would stop there en route to Yosemite Valley. Visitor impact to surrounding habitats could also be mitigated by limiting access to sensitive habitats. The relatively small area affected, reduced habitat quality, and the abundance of similar

habitat in the area that would remain unaffected would limit the impacts on wildlife to moderate and adverse.

Entrance Stations

As described in more detail in Alternative 2, limited expansion of facilities at South Entrance, Big Oak Flat Entrance, and Tioga Pass Entrance, and the corresponding increase in human presence in these areas would have a minor, adverse effect, both individually and in total, on wildlife and habitat. The additional area of habitat would be relatively small and is already affected by humans due to its proximity to existing developments. Site design of these facilities would likely avoid any highly valued resource habitat types in the area, and signs, fencing, and visitor education would be used to minimize impact to adjacent sensitive habitats.

CONCLUSION

The main difference in impacts to wildlife and habitat under Alternative 4, as compared to Alternative 2, would be the development of a large area of relatively intact habitat in the western portion of Yosemite Valley for day-visitor parking. This would cause a high degree of habitat disturbance and fragmentation in a part of Yosemite Valley that is relatively unaffected by development. Day-visitor parking would also be developed outside of Yosemite Valley at South Landing, El Portal, and Badger Pass, causing local impacts to wildlife.

No day-visitor parking would be developed in Foresta; therefore, no new impacts would occur in that area.

Relative to Alternative 2, additional small areas of riparian and meadow habitats would be restored at Camp 6 and Housekeeping Camp, and two additional bridges would be removed in Yosemite Valley to help restore hydrology and riparian habitat dynamics.

Although Alternative 4 would result in development of facilities in mid-Yosemite Valley and areas outside the Valley, overall Alternative 4 would have minor to moderate, beneficial impacts to wildlife and habitat relative to the No Action Alternative. This is primarily due to the restoration of large areas of highly valued resource habitats in Yosemite Valley.

CUMULATIVE IMPACTS

The beneficial and adverse impacts of past, present, and reasonably foreseeable future projects on wildlife are described under cumulative impacts for Alternative 2. When the expected impacts to wildlife from Alternative 4 are considered in combination with these other projects, minor, beneficial cumulative effects on wildlife habitat and populations in the region would likely result over the long term. Adverse cumulative effects would occur primarily from habitat loss and fragmentation, as well as reduced habitat quality from human disturbance. Beneficial cumulative effects would result from habitat restoration, particularly riparian, meadow, and wetland areas. Future land management planning efforts could also lead to beneficial cumulative impacts to wildlife habitat and populations through habitat protection and restoration over wide areas of the Sierra Nevada.

Alternative 4 would provide substantial restoration of riparian, meadow, and wetland habitats through implementation of the River Protection Overlay. Restoration to natural conditions of the

Yosemite Lodge cabin area, all of Camp 6, Upper and Lower River Campgrounds, North Pines Campground, most of Lower Pines Campground, and Housekeeping Camp would help re-establish riparian and meadow habitat connectivity in the east Valley, benefiting wildlife by allowing greater natural movement and increasing habitat availability. These actions would be consistent with the basic goals of land management plans such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic Comprehensive Management Plan. Removal or reconstruction of roads through sensitive habitats would improve habitat connectivity and help restore natural flows of nutrients and water, and removal of four bridges would help restore riparian and aquatic habitats along those river reaches. Exposure of wildlife to human food would be greatly reduced in the east Valley as a result of the removal of numerous tent cabins as well as removal of parking from the orchards.

Other actions associated with Alternative 4 would adversely affect areas of upland habitat and its accompanying wildlife, including redevelopment of the former service station site to camping, establishment of new campgrounds near Tenaya Creek and Curry Village, and the development of multi-use paved trails. In addition, the development of a limited day-visitor parking area and visitor/transit center at Taft Toe would cause long-term, adverse impacts to upland habitat in the west Valley. Forage and cover for species such as California spotted owl, ringtail, and Gilbert's skink could be affected. Each of the above actions would result in loss of upland habitat, habitat degradation from increased human activity, and additional areas where wildlife could become conditioned to human food. These effects would be in addition to impacts to uplands outside the park from past and present land management practices, such as logging and grazing, which have reduced the availability and quality of food and cover for wildlife. Foreseeable future projects such as the Evergreen Lodge Expansion (Tuolumne Co.), Hardin Flat Lodging and Conference Facilities (Tuolumne Co.), and the Evergreen Road Improvements (multi-agency, see Appendix H) would cause similar impacts to upland habitats.

Under Alternative 4, development outside of Yosemite Valley would include establishment of additional parking and transit facilities at Badger Pass, South Landing, and El Portal, employee-related housing at El Portal, relocation of the stables to Foresta, and establishment of visitor centers at park entrances. These actions would result in habitat loss and habitat degradation from human activity and would add to impacts of other actions that affect similar habitats. For example, development at South Landing, Foresta, and the four park entrance stations would adversely affect mixed conifer and other upland habitats. These effects (habitat loss and degradation) would be in addition to logging and grazing that have occurred over wide areas outside the park, as well as proposed projects such as Yosemite West Rezone for 55 Acres (NPS), Silvertip Resort Village Project (Mariposa Co.), and reforestation projects. The proposed Silvertip Resort Village Project in Fish Camp would have the greatest interaction with the South Entrance visitor facilities proposed under this alternative, due to its proximity to the South Entrance and similarity in habitat. Consequently, these projects have an adverse cumulative impact on many of the same wildlife species.

Adverse impacts associated with the development of employee housing, parking, and administrative facilities at El Portal would combine with impacts from other development projects proposed in the area, including Yosemite View Parcel Land Exchange (NPS), Yosemite

Motels Expansion, El Portal (Mariposa Co.), and the El Portal Road Improvement Project (NPS), to adversely affect riparian and upland habitats and associated species. Because much of the area of potential development has been previously disturbed, however, the adverse impacts are expected to be minimal. Nevertheless, quality of forage and cover for species such as scrub jay, gray fox, and northern alligator lizard could be adversely affected.

Use of Badger Pass for parking would not contribute appreciably to impacts to wildlife from other projects inside and outside the park, because most impacts would be confined to areas already developed for skier parking in winter. Local impacts to wildlife would occur as a result of increased visitor use and disturbance of habitat adjacent to the parking facility. These impacts would include trampling of vegetation and disturbance of ground-nesting birds such as dark-eyed juncos. In addition, runoff from the parking area could adversely affect nearby aquatic habitats and wildlife by degrading water quality through the addition of vehicle-related pollutants.

The conclusion that cumulative impacts would be minor and beneficial is conservative because it is based on the goals and objectives of ongoing planning efforts (such as Sierra Nevada Framework for Conservation and Collaboration) that are being undertaken to improve ecosystem management. However, should substantial or full implementation of the actions included in these plans occur over time, long-term cumulative impacts on wildlife may, on balance, be beneficial to a greater degree.

Special-Status Species

WILDLIFE

A Biological Assessment was prepared, in accordance with Section 7 of the Endangered Species Act, to assess potential impacts to federal endangered and threatened species (see Appendix K). Specific, action-by-action analysis of impacts on vegetation types and general wildlife habitat is provided in the Vegetation and Wildlife sections of this chapter, respectively. The actions of Alternative 4 that would result in potential wildlife habitat impacts are listed in the Wildlife section. The effect of these habitat impacts on individual special-status species is described below. Impacts identified would be long term, except where noted.

This analysis covers federal and/or California special-status species. Recent correspondence from the U.S. Fish and Wildlife Service indicates that a number of these species are being considered for elevated federal status; these species are evaluated in this section in a separate category. Special-status species are listed in table 3-6 (see Vol. IA, Chapter 3). The “area” column of table 3-6 indicates the recorded locations of species occurrence, or areas that may possess suitable habitat for each species in the vicinity. Identification of a location in the area column for a species does not necessarily indicate that the species has been documented in that location.

A total of 46 special-status wildlife species are known to occur, have historically occurred, or are likely to occur in Yosemite Valley or in the general vicinity of out-of-Valley project areas. One is classified as both federal and state endangered, one is federal threatened and state endangered, two are federal threatened, three are state endangered, and three are state threatened. The remaining 36 wildlife species are federal species of concern and/or California species of special

concern. Of these lesser-status species, six are being considered by the U.S. Fish and Wildlife Service for elevation to threatened or endangered status. These species are discussed along with threatened or endangered species. The potential impacts to these species or their primary habitats as a result of this alternative are described below.

Potential Effects on Federal and California Threatened or Endangered Species

Valley elderberry longhorn beetle *(Desmocerus californicus dimorphus)*

Status: Federal threatened; California species of special concern. The overall impact would be the same as described for Alternative 2. Given the location and concentration of elderberry plants and mitigation measures that would be implemented prior to and during construction, the impact on this species would be minor to moderate and adverse.

Limestone salamander *(Hydromantes brunus)*

Status: Federal species of concern; California threatened. The impact would be the same as described for Alternative 2 (negligible and adverse).

California red-legged frog *(Rana aurora draytonii)*

Status: Federal threatened; California species of special concern. The overall impact would be the same as described for Alternative 2 with the following exception. With no parking developed in Foresta under this alternative, impact to potential red-legged frog habitat would be avoided in this location, resulting in minor to moderate beneficial impact under Alternative 4.

Bald eagle *(Haliaeetus leucocephalus)*

Status: Federal threatened; California endangered. The overall impact would be the same as described for Alternative 2 (minor, beneficial). Additional restoration of riparian habitat in Yosemite Valley could further improve conditions for this species relative to Alternative 2, but the area of additional restoration is relatively small and bald eagles are rare in the Valley. Consequently, Alternative 4 would have a minor, beneficial effect on the bald eagle.

Peregrine falcon *(Falco peregrinus)*

Status: California endangered. The overall impact would be the same as described for Alternative 2 (moderate and beneficial). Development at Taft Toe would occur near a nest site located high on Cathedral Rocks, but would not have an appreciable effect on this site, given that two other peregrine nest sites occur in east Yosemite Valley above more concentrated developments and are successful.

Great gray owl *(Strix nebulosa)*

Status: California endangered. Impacts to great gray owls under this alternative would be minor and adverse, because no parking would be developed in Foresta. Restoration of meadow habitats in Yosemite Valley and reduction in human disturbance in some parts of the Valley could enable this species to return, but this is uncertain.

Willow flycatcher *(Empidonax traillii)*

Status: California endangered. The impact would be the same as described for Alternative 2 (minor to moderate and beneficial).

Sierra Nevada red fox *(Vulpes vulpes necator)*

Status: Federal species of concern; California threatened. The impact would be the same as described for Alternative 2 (minor and adverse).

California wolverine *(Gulo gulo luteus)*

Status: Federal species of concern; California threatened. Because this species is likely to occur only around Tioga Pass, overall impacts would be the same as Alternative 2 (minor and adverse). Minor expansion of facilities could affect small areas of upland habitat, and increased visitor presence in the area could lead to greater human disturbance in surrounding habitats, which could adversely affect its use by wolverines.

Sierra Nevada bighorn sheep *(Ovis canadensis sierrae)*

Status: Federal endangered; California endangered. Effects on this species would be the same as under Alternative 2 (negligible, adverse), since there would be no change from Alternative 2 in potential development at Tioga Pass under Alternative 4.

Potential Effects on Species that are Being Considered for Elevated Federal Listing

Yosemite toad *(Bufo canorus)*

Current Status: Federal species of concern; California species of special concern. The impact would be the same as described for Alternative 2 (negligible and adverse).

Foothill yellow-legged frog *(Rana boylei)*

Current Status: Federal species of concern; California species of special concern. The overall impact would be the same as described for Alternative 2. The day-visitor parking in Foresta would not occur under Alternative 4, but this would represent a negligible change in impact, since potential habitat in this location would have been avoided. Consequently, minor to moderate and beneficial impacts are anticipated under Alternative 4.

Mountain yellow-legged frog *(Rana muscosa)*

Current Status: Federal species of concern; California species of special concern. The impact would be the same as described for Alternative 2 (negligible, adverse).

California spotted owl *(Strix occidentalis occidentalis)*

Current Status: Federal species of concern; California species of special concern. Development of the large day-visitor parking and transit center at Taft Toe would have an adverse effect on a known pair of spotted owls. Recent surveys located a pair of spotted owls near the base of Cathedral Spires, which is near the Taft Toe site. The development would not affect nesting or roosting of this pair, since the tree canopy closure on the site is not adequate, but would probably remove an area of foraging habitat from their territory. Human disturbance radiating from the

facility could also disturb the pair. Although no development of parking would occur at Hazel Green under this alternative, development of day-visitor parking would occur at South Landing, which is in the foraging area of another pair of spotted owls, according to a recent survey. On balance, habitat restoration in Yosemite Valley together with potential effects of the Taft Toe and South Landing development on a known pairs of spotted owls would result in a negligible, beneficial impact on the species under this alternative.

Marten *(Martes americana)*

Current Status: Federal species of concern. The overall impact would be the same as described for Alternative 2. Although no development would occur at Hazel Green or Wawona, as in Alternative 2, development of day-visitor parking at South Landing would have a similar impact on this species by removing suitable habitat and increasing human disturbance in the area. Development at Taft Toe could affect marten habitat, but the low elevation of Yosemite Valley, the relatively open tree canopy, and the lack of habitat complexity of the site indicate it is marginal habitat for martens. Impacts in other areas of marten habitat would be the same as in Alternative 2. The overall impact on martens under Alternative 4 would be minor and adverse.

Pacific fisher *(Martes pennanti pacifica)*

Current Status: Federal species of concern; California species of special concern. Development of day-visitor parking at South Landing would occur in an area of prime fisher habitat, as indicated by the forest structure, its ridgetop location, and recent records of fisher sightings. Development at Taft Toe could affect fisher habitat, but the low elevation of Yosemite Valley, the relatively open tree canopy, and the lack of habitat complexity of the site indicate it is marginal habitat for fishers. Impacts in other areas of fisher habitat would be the same as in Alternative 2. The overall impact on fishers under Alternative 4 would be moderate and adverse, compared to the No Action Alternative.

Potential Effects on Federal Species of Concern and California Species of Special Concern

Merced Canyon shoulderband snail *(Helminthoglypta allynsmithi)*

Status: Federal species of concern. Development and restoration in El Portal under this alternative would be the same as under Alternative 2. Impacts would be negligible and adverse, since no discernible effect on the habitat of this species (talus) is expected.

Mariposa sideband snail *(Monadenia hillebrandi)*

Status: Federal species of concern. Impacts on this species would be the same as under Alternative 2 (moderate and beneficial), primarily from restoration of potential habitat in the talus above Curry Village.

Sierra pygmy grasshopper *(Tetrix sierrana)*

Status: Federal species of concern. Development in El Portal would be the same as under Alternative 2. Additional riparian restoration in Yosemite Valley (at Camp 6 and Housekeeping Camp) and the removal of two additional bridges would provide additional habitat. However,

impacts under Alternative 4 would be negligible to minor and adverse due to development in El Portal, the most likely area of occurrence of the Sierra pygmy grasshopper.

Wawona riffle beetle *(Atractelmis wawona)*

Status: Federal species of concern. The overall impact to this species would be the same as under Alternative 2 (moderate and beneficial), primarily from large-scale restoration of riparian and wetland habitats that directly benefit the aquatic habitat of the riffle beetle. Additional restoration of riparian areas in Yosemite Valley (at Camp 6 and Housekeeping Camp) and the removal of two additional bridges would benefit aquatic habitats. However, Alternative 4 is expected to have a moderate, beneficial effect on the Wawona riffle beetle.

Bohart's blue butterfly *(Philotiella speciosa bohartorum)*

Status: Federal species of concern. Under this alternative, development and restoration in El Portal would be the same as Alternative 2. Therefore, impacts would be the same, minor and adverse.

Mount Lyell salamander *(Hydromantes platycephalus)*

Status: Federal species of concern; California species of special concern. The overall impact on this species would be the same as under Alternative 2 (minor and beneficial), since actions in the most likely habitat, Tioga Pass and Curry Village in Yosemite Valley, would be the same.

Northwestern and Southwestern pond turtle *(Clemmys marmorata marmorata* and *Clemmys marmorata pallida)*

Status: Federal species of concern; California species of special concern. Under this alternative, the overall impact to this species is expected to be the same as under Alternative 2 (minor and beneficial). Additional restoration of riparian areas in Yosemite Valley (at Camp 6 and Housekeeping Camp) and the removal of two additional bridges would benefit aquatic habitats. Less development in Foresta, compared to Alternative 2, would cause somewhat less risk of human disturbance to potential breeding and hibernation areas in upland habitats. However, the impact to this species would be minor and beneficial under Alternative 4.

Harlequin duck *(Histrionicus histrionicus)*

Status: Federal species of concern; California species of special concern. Under this alternative, the overall impact on the harlequin duck would be the same as under Alternative 2. However, under Alternative 4, there would be additional restoration of riparian habitat (at Camp 6 and Housekeeping Camp) and removal of two additional bridges. This would improve habitat for harlequin duck. However, as with Alternative 2, Alternative 4 would have minor, beneficial effects on this species.

Cooper's hawk *(Accipiter cooperi)*

Status: California species of special concern. The development of parking at Taft Toe would remove a large area of forest habitat and cause radiating impacts to adjacent areas from human use. Additional forest habitat would be removed at South Landing for parking outside of Yosemite Valley. Both of these developments would cause adverse impacts on Cooper's hawks.

Restoration of habitats in east Yosemite Valley would still be beneficial by providing the mix of forest types and open areas that are good habitat for this species. The combination of these adverse and beneficial impacts would result in an overall impact of minor and adverse for Alternative 4.

Northern goshawk *(Accipiter gentilis)*

Status: Federal species of concern; California species of special concern. Development at South Landing, South Entrance, Tioga Pass, and Big Oak Flat Entrance would displace small areas of forest habitat, possibly affecting local populations of northern goshawks. However, the impact areas are small, and their quality has already been affected by proximity to a heavily traveled highway and adjacent development outside the park. Therefore, the overall impact on northern goshawks would be minor and adverse; the same as under Alternative 2.

Sharp-shinned hawk *(Accipiter striatus)*

Status: California species of special concern. Construction of the large parking and transit facility at Taft Toe would directly affect sharp-shinned hawk habitat through removal and fragmentation. Development of parking at South Landing also would adversely affect forest habitat of this species. Restoration of habitats in east Yosemite Valley would be beneficial for the species by providing the mix of forest types and open areas that are good habitat for this species. On balance, this would result in an overall negligible, adverse impact on the species, primarily from habitat loss at Taft Toe and South Landing.

Golden eagle *(Aquila chrysaetos)*

Status: California species of special concern. Under this alternative, impact to golden eagles would be the same as under Alternative 2, since the primary benefit to this species would derive from habitat restoration in Yosemite Valley, and impacts outside the Valley would be negligible. The overall effect of Alternative 4 on golden eagles would be minor and beneficial.

Merlin *(Falco columbarius)*

Status: California species of special concern. Under this alternative, the overall impact to merlins would be the same as under Alternative 2. More Highly Valued Resource habitat would be restored in Yosemite Valley, and less development would occur in Foresta, but such changes would not be substantial enough to change the minor, beneficial level of impact, relative to the No Action Alternative.

Prairie falcon *(Falco mexicanus)*

Status: California species of special concern. Under this alternative, the overall impact to prairie falcons would be the same as under Alternative 2 (minor and beneficial), based primarily upon restoration of habitats in Yosemite Valley. Less development would occur in Foresta compared to Alternative 2, but the area that would be affected (post-fire regrowth) is not very suitable habitat for the species.

Long-eared owl *(Asio otus)*

Status: California species of special concern. The overall impact of Alternative 4 on long-eared owls would be the same as that of Alternative 2. A small amount of additional riparian habitat would be restored at Camp 6 and Housekeeping Camp, and parking would be developed at South Landing. Minor, beneficial effects would result primarily from restoration of large areas of riparian habitat in Yosemite Valley.

Yellow warbler *(Dendroica petechia)*

Status: California species of special concern. The overall impact would be the same as described for Alternative 2 due to restoration of high-value habitat in Yosemite Valley. Restoration of additional riparian habitat (at Camp 6 and Housekeeping Camp) and removal of two additional bridges would increase the amount of habitat in these locations. Lack of development at Foresta would protect additional habitat. Development of parking at South Landing would adversely affect an area of forest habitat. However, habitat at both Foresta and South Landing is not high-quality yellow warbler habitat. These effects and restoration of large areas of high-quality habitat (riparian) in Yosemite Valley would result in moderate, beneficial impacts compared to the No Action Alternative.

Mount Lyell Shrew *(Sorex lyelli)*

Status: Federal species of concern. Under this alternative impacts to this species would be the same as under Alternative 2 (negligible, adverse), because development at Tioga Pass would be the same as under Alternative 2, with minor expansion of entrance station facilities.

Bat Species

For all special-status bat species listed below, overall impact intensities under Alternative 4 would be the same as under Alternative 2. No development would occur at Hazel Green and Wawona, and less development would occur in Foresta, but development of parking at South Landing would affect an area of forested habitat. Development of parking at Taft Toe would remove a large area of forest habitat near the west end of Yosemite Valley, but riparian and wetland habitat would be restored near Camp 6 and Housekeeping Camp, and adjacent to two additional bridges that would be removed. On balance, however, there would be no appreciable change in impacts to these bat species, which would derive primary benefit from the large area of Highly Valued Resources that would be restored under Alternative 4.

- Townsend's big-eared bat *(Corynorhinus townsendii townsendii)*
  Status: California species of special concern (minor, beneficial)
- Spotted bat *(Euderma maculatum)*
  Status: Federal species of concern; California species of special concern (moderate, beneficial)
- Small-footed myotis bat *(Myotis ciliolabrum)*
  Status: Federal species of concern (minor, beneficial)
- Fringed myotis bat *(Myotis thysanodes)*
  Status: Federal species of concern (minor, benefical)

- Yuma myotis bat *(Myotis yumanensis)*
  Status: Federal species of concern; California species of special concern (moderate, beneficial)
- Greater western mastiff bat *(Eumops perotis californicus)*
  Status: Federal species of concern; California species of special concern (moderate, beneficial)

The species listed below are more dependent upon forested habitat than the other bat species for foraging and roosting. The combination of development at Taft Toe and South Landing would affect a greater area of forest habitat for these species. Restoration of Highly Valued Resource habitat types in Yosemite Valley would still be beneficial to these species, which forage in a variety of habitat types.

- Pallid bat *(Antrozous pallidus)*
  Status: California species of special concern (minor, beneficial)
- Long-eared myotis bat *(Myotis evotis)*
  Status: Federal species of concern (negligible, beneficial)
- Long-legged myotis bat *(Myotis volans)*
  Status: Federal species of concern (negligible, beneficial)

Sierra Nevada snowshoe hare *(Lepus americanus tahoensis)*

Status: Federal species of concern. The overall impact to snowshoe hares under Alternative 4 would be the same as under Alternative 2 (minor and adverse). Development of parking facilities at South Landing would remove an area of potential habitat and would result in radiating human impacts into adjacent areas. Use of Badger Pass for parking could result in increased human disturbance in surrounding areas, which could affect habitat use by snowshoe hares.

White-tailed hare *(Lepus townsendii)*

Status: California species of special concern. Overall impacts to this species under Alternative 4 would be the same as under Alternative 2 (minor and adverse) because of minor expansion of facilities at Tioga Pass, the only project area with potential occurrence of this species.

Sierra Nevada mountain beaver *(Aplodontia rufa californica)*

Status: Federal species of concern; California species of special concern. The impact would be the same as described for Alternative 2 (minor and adverse) from the use of Badger Pass for day-visitor parking.

Conclusion

Impacts under Alternative 4 on special-status species would be essentially the same as under Alternative 2. Large blocks of riparian, meadow, and wetland habitat would be restored, increasing the size, contiguity, and connections within and among habitat types, which would in turn increase the availability of food, cover, and reproductive sites for a variety of wildlife species, including special-status species. These restored blocks of habitat would also help insulate wildlife from human impacts radiating from the adjacent development that would remain. Under Alternative 4, slightly more riparian and meadow habitats would be restored at Camp 6 and

Housekeeping Camp, which would benefit species that rely on these habitats (e.g., yellow warbler and long-eared owl), but such restoration would not be substantial enough to result in differences in impact intensities relative to the No Action Alternative.

Changes in development patterns in upland, forested habitat would have an adverse effect on some special-status species. California spotted owl, Cooper's hawk, and sharp-shinned hawk would all experience increased levels of adverse impact under Alternative 4 due to the development of Taft Toe and South Landing; this is especially true for the spotted owl, a pair of which was recently discovered near the Taft Toe site. Three species of bats (pallid, long-legged myotis, long-eared myotis) would be subject to slightly greater impacts from development at these two locations. Impacts to these species would occur due to removal of habitat, increased fragmentation of habitats in west Valley, and human disturbance in surrounding areas associated with visitor use. In other areas outside of Yosemite Valley, great gray owls would not be affected by development of a parking area at Foresta. Fishers, however, would be more greatly impacted by the development of parking at South Landing, an area of prime habitat.

For some special-status wildlife species, the magnitude of benefit provided under this alternative is limited by existing impacts on these species outside of Yosemite National Park that have led to population declines over wide regions of the Sierra Nevada. These ongoing impacts affect the abundance of some species inside the park, despite the presence of relatively intact habitats (e.g., willow flycatcher).

Comparing the adverse and beneficial impacts under Alternative 4 with existing conditions, the overall impact on special-status species of this alternative would be moderate and beneficial.

Cumulative Impacts

The following sections discuss the potential impacts of other past, present, and foreseeable future projects on special-concern species in conjunction with the impacts of Alternative 4. Appendix H presents other ongoing or future projects in the region that were considered in the cumulative impacts analysis. The analysis assumed that California Environmental Quality Act and Endangered Species Act mitigation requirements would be implemented as part of each foreseeable future project, as applicable.

Potential Cumulative Impacts on Federal and California Threatened or Endangered Species

VALLEY ELDERBERRY LONGHORN BEETLE *(DESMOCERUS CALIFORNICUS DIMORPHUS)*

Status: Federal threatened; California endangered. Projects below elevations of 3,000 feet that could affect the abundance of elderberry plants, the Valley elderberry longhorn beetle's host plant, would affect this species and could ultimately affect populations in Yosemite National Park. The distribution of Valley elderberry longhorn beetles and their host plant in the park is rather small, with the only suitable habitat occurring in the Merced River Canyon in El Portal. Current and reasonably foreseeable future projects in this location would, therefore, have the greatest potential to affect the park population of Valley elderberry longhorn beetle. Current and reasonably foreseeable future projects in the Merced River Canyon in El Portal with the potential to adversely affect the Valley elderberrry longhorn beetle include the Yosemite View Parcel Land Exchange (NPS) and the Yosemite Motels Expansion, El Portal (Mariposa Co.).

However, the impact would be limited by the high abundance of elderberry plants in the surrounding area and mitigations that would be required by the U.S. Fish and Wildlife Service. Other projects with the potential to adversely affect the Valley elderberry longhorn beetle include the Mariposa Creek Pedestrian/Bike Path (Mariposa Co.); the Buildout of City of Merced, General Plan; and the Merced River Canyon Trail Acquisition (BLM). Actions under this alternative would also be primarily adverse due to development of housing, parking, and administrative facilities in El Portal.

All of these projects would could damage or destroy elderberry plants, which would directly affect local Valley elderberry longhorn beetle populations. However, mitigation requirements established through consultation with the U.S. Fish and Wildlife Service and other agencies would limit these impacts to minor and adverse. Minor, beneficial impacts would be expected from the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), and the Merced Wild and Scenic Comprehensive Management Plan (NPS) because these plans would potentially lead to greater protection of elderberry plants. The combination of beneficial effects, resulting from implementation of regional plans that cover wide areas of the Valley elderberry longhorn beetle range, and adverse impacts, including actions under this alternative that would generally affect relatively small numbers of elderberry plants, would result in an overall minor, beneficial impact on Valley elderberry longhorn beetles. Adverse impacts would be minimized through the implementation of mitigation measures prescribed by the U.S. Fish and Wildlife Service to protect the species.

LIMESTONE SALAMANDER *(HYDROMANTES BRUNUS)*

Status: Federal species of concern; California threatened. The limestone salamander has a very restricted distribution. Its habitat is protected by the 120-acre Limestone Salamander Ecological Reserve and the Bureau of Land Management 1,600-acre Limestone Salamander Area of Critical Environmental Concern. It is only known to occur in the mixed chaparral habitats of the Merced River and its tributaries, in association with limestone outcrops between 800 and 2,500 feet in elevation. Existing features that affect this species include road cuts and water impoundments that affect its habitat. Current and reasonably foreseeable future projects in El Portal (Yosemite View Land Parcel Exchange [NPS] and Yosemite Motels Expansion, El Portal [Mariposa Co.]) are the only projects with the potential to impact the limestone salamander, but this species has never been found in El Portal. Impacts to this species would, therefore, be negligible. Likewise, projects in El Portal associated with this alternative are unlikely to cause any effect on limestone salamanders. Overall cumulative impact on this species would, therefore, be negligible.

CALIFORNIA RED-LEGGED FROG *(RANA AURORA DRAYTONII)*

Status: Federal threatened; California species of special concern. Projects in the vicinity of Yosemite National Park are unlikely to affect any known existing populations of red-legged frogs. Environmental compliance carried out in association with these projects would require further surveys to evaluate whether unknown populations of red-legged frogs could be affected. Projects that degrade aquatic habitats, however, are likely to adversely affect suitability of such

habitats for red-legged frogs if reintroduction or recolonization of this species becomes possible.

Current and reasonably foreseeable future projects that could have adverse impacts on aquatic habitats include Rio Mesa Area Plan (Madera Co.); University of California, Merced Campus (Merced Co.); and the Buildout of City of Merced, General Plan. Beneficial impacts to aquatic habitats may result from the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), and the Merced Wild and Scenic Comprehensive Management Plan (NPS). These beneficial effects would be augmented by restoration of potential habitat in Yosemite Valley under this alternative. Overall, cumulative impacts would be beneficial, based on potential protection of red-legged frog habitat through the implementation of plans that cover wide areas coupled with restoration of suitable habitat through the implementation of this alternative. The intensity of this impact would be minor because this species is almost extinct from the Sierra Nevada region, but habitat should be protected for potential reintroduction or recolonization of the species. Projects with a possible negative impact on red-legged frogs would affect a relatively small area of habitat compared to projects with potential beneficial impacts, but these projects could have a major negative impact if they affected an unknown population of red-legged frogs, which could be among the last in the Sierra Nevada. However, site surveys would be completed in compliance with site and federal regulations as applicable, thus minimizing the potential adverse effects.

BALD EAGLE *(HALIAEETUS LEUCOCEPHALUS)*

Status: Federal threatened; California endangered. Projects associated with the Merced River could adversely affect habitat that is transiently used by bald eagles, such as at the Yosemite View Parcel Land Exchange (NPS). The Merced Wild and Scenic Comprehensive Management Plan (NPS) has the potential to benefit eagles by preserving riparian and riverine habitat through implementation of the River Protection Overlay. The beneficial effects of this would be enhanced by restoration of riparian and river habitats in Yosemite Valley under this alternative. Overall, the cumulative impact on bald eagles would be minor and beneficial.

PEREGRINE FALCON *(FALCO PEREGRINUS)*

Status: California endangered. Because peregrine falcons forage over a broad range of habitat types adjacent to their nesting cliffs, implementation of plans with potential widespread impact would have the greatest impact on this species. These plans include the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Merced Wild and Scenic Comprehensive Management Plan (NPS), and the Yosemite Fire Management Plan Update (NPS), which would have minor, beneficial effects. These plans are complementary to the beneficial effects of this alternative on peregrine falcons in Yosemite National Park, where the concentration of the species is among the highest in the Sierra Nevada. No current or reasonably foreseeable future projects considered would have an adverse impact on peregrine falcons because these projects are not anticipated to affect cliff nesting habitat or surrounding foraging habitat. Greater regional effects on peregrine falcons that nest in the Sierra come from degradation of seasonally used coastal and wetland habitats and pesticide residues in the peregrine falcon's food chain.

Restoration of a diversity of habitat types in Yosemite Valley under this alternative would augment regional beneficial impacts from current and reasonably foreseeable future projects outside the park. Development of the Taft Toe Visitor/Transit Center would remove an area of forest habitat near a known peregrine nest site but would have a negligible effect on the falcons. Overall cumulative impacts on peregrine falcons would be minor and beneficial, based primarily on the beneficial effects of widespread plans on Sierra Nevada habitats but limited by the continued adverse effects of pesticides.

GREAT GRAY OWL *(STRIX NEBULOSA)*

Status: California endangered. The great gray owl nests in mixed conifer and red fir forests near meadows and winters at lower elevations in mixed conifer down to blue oak woodlands. Nearly the entire California population of great gray owls breeds in the Yosemite region, where habitats are relatively intact. Some research suggests that this species is susceptible to human disturbance, which may explain its absence from Yosemite Valley, where great gray owls are rarely seen despite the presence of apparently suitable habitat. The Hazel Green Ranch (Mariposa Co.) project has the greatest potential to affect great gray owls because of this area's meadow habitats and proximity to the park. Past studies and recent surveys, however, indicate the meadows are seldom used by great gray owls, and then probably only by transient owls moving between wintering and nesting areas (Skiff 1995; Skenfield 1999). The development at Hazel Green Ranch mentioned above would likely avoid meadow habitats, but increased human disturbance in the area could deter owls from using these areas, resulting in minor, adverse effects. Sites of other current and reasonably foreseeable future projects have habitats that are unsuitable for great gray owls, or previous impact at these sites rendered the habitats unsuitable. Current and reasonably foreseeable future development projects are, therefore, expected to have a minor but adverse effect on great gray owls.

Projects that could have a beneficial effect on this species by preserving or restoring habitat include the Sierra Nevada Framework for Conservation and Collaboration (USFS), Yosemite Fire Management Plan Update (NPS), Merced Wild and Scenic Comprehensive Management Plan (NPS), and Fire Management Action Plan for Wilderness (USFS, Stanislaus). These plans could beneficially affect great gray owls by restoring habitat and limiting future impacts over wide areas of the Sierra Nevada. Under this alternative, restoration of habitats in Yosemite Valley would be beneficial to great gray owls. If stables are developed at McCauley Ranch, this could have an adverse effect on the few great gray owls that occasionally use this habitat in winter.

Overall, cumulative impacts on great gray owls from current and reasonably foreseeable future projects, in combination with actions under this alternative, would be moderate and beneficial (based primarily on implementation of regional plans with widespread effect) compared to development projects with localized adverse effects.

WILLOW FLYCATCHER *(EMPIDONAX TRAILLII)*

Status: California endangered. The willow flycatcher was formerly a common Sierra Nevada species in meadows with dense growth of willow shrubs. Likely causes for the recent steep declines in populations include destruction of habitat and nest parasitism by brown-headed

cowbirds. Willow flycatchers have not nested in Yosemite Valley for more than 30 years but in recent years have been seen at Wawona Meadow and Hodgdon Meadow. Projects that would cause degradation of meadow habitat or increased abundance of brown-headed cowbirds would adversely affect willow flycatchers through habitat loss and nest parasitism, respectively. The site of the Hazel Green Ranch (Mariposa Co.) project contains meadows that could be directly or indirectly affected. No willow flycatchers were found at this site during recent surveys, and habitat in the meadows appears to be unsuitable for this species. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced River Wild and Scenic Comprehensive Management Plan (NPS) 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. These regional benefits would be augmented by actions under this alternative that would restore willow flycatcher habitat in Yosemite Valley and reduce cowbird abundance. Overall cumulative impacts on willow flycatchers under Alternative 3 would be minor and beneficial.

SIERRA NEVADA RED FOX *(VULPES VULPES NECATOR)*

Status: Federal species of concern; California threatened. The Sierra Nevada red fox is found mostly above elevations of 7,000 feet in a wide variety of habitat types. The Sierra Nevada red fox is rare, and its population appears to be declining. The cause of this decline is unknown, but it could be related to human activities that disturb habitat, such as logging and fire suppression. Regional and parkwide planning efforts such the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced River Wild and Scenic Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for red foxes. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time.

Current and reasonably foreseeable future projects that could adversely affect suitable habitat for red foxes include the Evergreen Lodge Expansion (Tuolumne Co.) and the Hazel Green Ranch (Mariposa Co.) project. These projects would primarily affect forest habitat. In addition, actions under this alternative would have a minor adverse effect on red foxes, primarily through effects on habitat at Tioga Pass, South Landing, and Badger Pass.

Overall, there would be a moderate, beneficial, cumulative impact on Sierra Nevada red foxes, based on the potential protection of suitable habitat if regional plans are implemented. The projects with a possible adverse effect on red foxes, including the actions under this alternative, would affect a relatively small area of habitat compared to projects with potential beneficial effects.

CALIFORNIA WOLVERINE (*GULO GULO LUTEUS*)

Status: Federal species of concern; California threatened. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS),

U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for California wolverines. These regional plans would have a long-term, moderate, beneficial effect on the California wolverine.

The possible expansion of facilities at Tioga Pass, and increased visitor use in that area that would occur under this alternative, could have an adverse effect on California wolverines. However, such impact would be minor, given the apparent scarcity of this species in the Sierra Nevada.

Overall cumulative impacts on California wolverines would be moderate and beneficial, based primarily upon the implementation of management plans that have the potential for protecting wide areas of wolverine habitat in the Sierra Nevada, as compared to the limited effects of increased human use at Tioga Pass under this alternative.

SIERRA NEVADA BIGHORN SHEEP (*OVIS CANADENSIS SIERRAE*)

Status: Federal endangered; California endangered. Because this species occurs at high elevation, few of the foreseeable projects would affect it. Implementation of plans that cover wide areas of habitat outside the park, such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and U.S. Forest Service plans for wilderness adjacent to the park, could result in moderate to major beneficial effects on bighorn sheep, depending upon the alternatives selected and the extent of their implementation over time. Such benefit could be major if the plans reduce the area grazed by domestic sheep, which would reduce the threat of disease transmission to bighorns and open more areas for reintroduction of the species.

Only the Tioga Inn, Lee Vining (Mono Co.) project could adversely affect bighorn sheep. Historically, some bighorn sheep probably descended to this area during winter, and the area could be used again if the species recovers in abundance. However, existing development has already affected the quality of habitat in the area.

Possible expansion of facilities at the Tioga Pass Entrance is the only action under Alternative 4 that could affect bighorn sheep, but this impact would be negligible, given the relative inaccessibility of their habitat. This impact, coupled with the effects of current and reasonably foreseeable future projects outside the park, would result in an overall moderate and beneficial cumulative impact on Sierra Nevada bighorn sheep under Alternative 4, based on potential implementation of land management plans that could protect and improve habitat conditions over wide areas of the Sierra Nevada.

Potential Cumulative Impacts on Species that are Being Considered for Elevated Federal Listing

The U.S. Fish and Wildlife Service indicates that the following species of concern may be listed as federal threatened or endangered in the future. Because these species could be listed before the *Final Yosemite Valley Plan/SEIS* is finalized, the potential impacts to these species are also described.

YOSEMITE TOAD *(BUFO CANORUS)*

Status: Federal species of concern; California species of special concern. Projects that would have an appreciable impact on meadow habitats of this high-elevation species are most likely to affect populations of the Yosemite toad. Projects that would have a potential beneficial impact on the Yosemite toad, due to complementary management objectives, include the Fire Management Plan Update (NPS), the Sierra Nevada Framework for Conservation and Collaboration (USFS), Merced Wild and Scenic River Comprehensive Management Plan (NPS), and U.S. Forest Service plans for adjacent wilderness. Projects that would have a potentially adverse impact on the Yosemite toad include the Tioga Inn, Lee Vining (Mono Co.); Highlands, June Lake (Mono Co.); and Double Eagle Resort Construction at June Lake (Mono Co.) projects. Possible actions under this alternative that would expand facilities at Tioga Pass Entrance and lead to increased visitor use of Badger Pass could affect Yosemite toads, but such effects would be negligible.

Overall, cumulative impacts to the Yosemite toad would be moderate and beneficial, based primarily on the potential for protection of habitat and populations resulting from implementation of plans that would affect large, high-elevation areas. Projects with adverse impacts would affect relatively small areas where the presence of the Yosemite toad is questionable.

FOOTHILL YELLOW-LEGGED FROG *(RANA BOYLEI)*

Status: Federal species of concern; California species of special concern. The impact on the foothill yellow-legged frog would be similar to that of the California red-legged frog; the foothill yellow-legged frog is virtually extinct in the Sierra Nevada and, therefore, projects in its area of former occurrence would not affect any existing populations. However, projects that affect suitable habitat (e.g., wet meadows and rocky streams) may affect reintroduction or recolonization of this species. Projects that would have beneficial impacts include the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Merced Wild and Scenic Comprehensive Management Plan (NPS), and U.S. Forest Service plans for adjacent wilderness, and Fire Management Plan for Wilderness (USFS, Stanislaus).

These beneficial effects would be augmented by restoration of suitable habitat in Yosemite Valley. Overall, the cumulative impact would be minor and beneficial, based on potential protection of foothill yellow-legged frog habitat through implementation of plans that cover wide areas and restoration of potential habitats in Yosemite Valley under this alternative. The intensity of this impact would be minor because this species is almost extinct from the Sierra Nevada, but habitat should be protected for potential reintroduction or recolonization of the species. Projects with a possible adverse impact on foothill yellow-legged frogs such as the Mariposa Creek Pedestrian/Bike Path (Mariposa Co.), Yosemite View Parcel Land Exchange (NPS), and the Merced River Canyon Trail Acquisition (BLM) would affect a relatively small area of habitat compared to projects with potential beneficial impacts, but these projects could have a major, adverse impact if they affected an unknown population of foothill yellow-legged frogs, which could be among the last in the Sierra Nevada. However, site surveys would be

completed, where applicable, as required by Council on Environmental Quality and Endangered Species Act prior to disturbance to determine whether this species is present.

MOUNTAIN YELLOW-LEGGED FROG *(RANA MUSCOSA)*

Status: Federal species of concern; California species of special concern. The current and reasonably foreseeable future projects that would have beneficial impacts to aquatic habitats of the mountain yellow-legged frog due to complementary management objectives include the Yosemite Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Merced Wild and Scenic River Comprehensive Management Plan (NPS), U.S. Forest Service plans for adjacent wilderness, and Fire Management Action Plan for Wilderness (USFS, Stanislaus). Development that would occur at Badger Pass and Tioga Pass under this alternative would have a negligible effect on mountain yellow-legged frogs and, therefore, would not be a factor in cumulative impacts. Current and reasonably foreseeable future projects with potential adverse effects include the Hazel Green Ranch project, and projects at June Lake (Mono Co.). Overall, the cumulative impact is expected to be moderate and beneficial based on the amount of habitat and number of populations that would be affected by implementation of plans designed to better protect Sierra Nevada ecosystems. Projects with negative impacts could affect small areas and relatively few populations (if present).

CALIFORNIA SPOTTED OWL *(STRIX OCCIDENTALIS OCCIDENTALIS)*

Status: Federal species of concern; California species of special concern. The decline of the California spotted owl in the Sierra Nevada has been linked to degradation of its forest habitats from logging, which affects the size of forested tracts as well as tree density and age. Projects likely to have a beneficial impact on spotted owl habitat, through long-term habitat improvements plans, include the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Orange Crush Fuels Treatment Projects (USFS, Stanislaus), A-Rock Reforestation (USFS, Stanislaus), Rogge-Ackerson Fire Reforestation (Tuolumne Co.), and the Fire Management Action Plan for Wilderness (USFS, Stanislaus). In addition, actions under this alternative would restore habitats near known spotted owl nest sites in Yosemite Valley, thus providing beneficial effects. Development of the Taft Toe Visitor/Transit Center would, however, occur near a known pair of spotted owls, resulting in adverse effects. Development outside of Yosemite Valley, including parking at South Landing, would affect areas of spotted owls foraging habitat, but such areas are distant from known or suspected nesting areas. Projects with potentially adverse impacts include the Evergreen Lodge Expansion (Tuolumne Co.), Hazel Green Ranch (Mariposa Co.) project, and Yosemite West Rezone for 55 Acres (Mariposa Co.).

Overall, the cumulative impact on this species would be moderate and beneficial, based primarily on implementation of plans for ecosystem-based management of forest habitats over much of the Sierra Nevada and reforestation projects that would hasten a return of habitat more suitable for spotted owls. Projects with negative impacts would affect relatively small areas, which may impact local owls, but would not have far-ranging impacts on the California spotted owl and habitat restoration that would occur under this alternative.

MARTEN *(MARTES AMERICANA)*

Status: Federal species of concern. The marten is dependent on dense, complex coniferous forests with large trees, snags, and structural complexity near the ground. Projects likely to have a beneficial impact on marten habitat due to complementary management objectives include the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Orange Crush Fuels Treatment Projects (USFS, Stanislaus), A-Rock Reforestation (USFS, Stanislaus), Rogge-Ackerson Fire Reforestation (USFS, Stanislaus), and the Fire Management Action Plan for Wilderness (USFS, Stanislaus). Projects likely to have an adverse impact on marten habitat include the Evergreen Lodge Expansion (Tuolumne Co.), Hazel Green Ranch (Mariposa Co.) project, and the Yosemite West Rezone for 55 Acres (Mariposa Co.). Effects on martens under this alternative would be primarily adverse from development of parking facilities at South Landing and Badger Pass and expansion of entrance stations outside of Yosemite Valley, although such effects would be negligible.

Overall, the cumulative impact on martens would be moderate and beneficial, based primarily on better protection of forest habitats through implementation of plans that could affect wide areas of the Sierra Nevada. Reforestation projects could hasten the return of forest habitats that are more favorable to marten. In comparison, projects with potential adverse impacts on marten, including this alternative, would affect relatively small areas of forest habitat.

PACIFIC FISHER *(MARTES PENNANTI PACIFICA)*

Status: Federal species of concern; California species of special concern. Pacific fishers in the Sierra Nevada prefer coniferous forests (especially fir) with a high degree of canopy closure and structural complexity. Projects likely to have a beneficial effect on fisher habitat, due to complementary management objectives, include the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Orange Crush Fuels Treatment Projects (USFS, Stanislaus), A-Rock Reforestation (USFS, Stanislaus), Rogge-Ackerson Fire Reforestation (Tuolumne Co.), the Fire Management Action Plan for Wilderness (USFS, Stanislaus), and U.S. Forest Service plans for adjacent wilderness. Projects likely to have an adverse effect on fisher habitat include the Evergreen Lodge Expansion (Tuolumne Co.), Hazel Green Ranch (Mariposa Co.) project, and the Yosemite West Rezone for 55 Acres (Mariposa Co.). Effects on fishers under this alternative would be primarily adverse due to the development of parking facilities at South Landing and Badger Pass and expansion of entrance stations outside of Yosemite Valley, although such effects would be negligible.

Overall, cumulative impacts on the Pacific Fisher would be moderate and beneficial, based primarily on better protection of forest habitats provided by implementation of plans that could affect wide areas of the Sierra Nevada. Reforestation projects could also hasten the return of forest habitats more favorable to fishers. In comparison, projects with the potential to adversely impact fishers, including this alternative, would affect relatively small areas of forest.

Potential Cumulative Impacts on Federal Species of Concern and California Species of Special Concern

MERCED CANYON SHOULDERBAND SNAIL (*HELMINTHOGLYPTA ALLYNSMITHI*)

Status: Federal species of concern. Regional planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Merced Canyon shoulderband snail. These actions could have long-term, minor, beneficial effects on suitable habitat. The Incline Road Construction, Foresta Road Bridge to South Fork (Mariposa Co.) project could have a detrimental effect on snail habitat, but this is expected to be minor because it would primarily affect previously impacted areas. Development that would occur in El Portal under this alternative would cause negligible impact to this snail species because no suitable habitat would be affected.

Overall, there would be a minor, beneficial, cumulative impact on the Merced Canyon shoulderband snail, based on the potential protection of suitable habitat from regional plans, whereas actions under this alternative would have a negligible effect.

MARIPOSA SIDEBAND SNAIL (*MONADENIA HILLEBRANDI*)

Status: Federal species of concern. Regional planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Mariposa sideband snail. These actions could have long-term, minor, beneficial effects on suitable habitat. Restoration of potential habitat in Yosemite Valley under this alternative would augment this beneficial effect. Projects with potential adverse effects on this species include the El Portal Road Improvement Project (NPS); the Incline Road Construction, Foresta Road Bridge to South Fork (Mariposa Co.) project; and Yosemite Motels Expansion, El Portal (Mariposa Co.). Impacts from these projects are expected to have a local, minor, adverse effect on the species because these projects either occur in areas of previous disturbance, or in areas that do not contain suitable habitat.

Overall, there would be a minor, beneficial, cumulative impact on the Mariposa sideband snail, based on the potential protection of suitable habitat from regional plans and restoration of habitats in Yosemite Valley.

SIERRA PYGMY GRASSHOPPER (*TETRIX SIERRANA*)

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Sierra pygmy grasshopper. These actions could have long-term, minor, beneficial effects on suitable habitat. Projects with potential adverse effects include the Incline Road Construction, Foresta Road Bridge to South Fork project (Mariposa Co.) and the Yosemite Motels Expansion, El Portal (Mariposa Co.). The effects of these projects would be limited to minor and adverse because they would occur in areas that do not contain suitable habitat or in areas of previous

disturbance. Under this alternative, restoration of riparian habitats in Yosemite Valley would beneficially affect this species, while developments in El Portal and South Entrance could have a localized, adverse effect on suitable habitat.

Overall, cumulative impacts on the Sierra pygmy grasshopper are expected to be minor and beneficial, based upon the potential protection of large areas of suitable habitat resulting from implementation of regional plans, in combination with mixed effects from this alternative.

WAWONA RIFFLE BEETLE (*ATRACTELMIS WAWONA*)

Status: Federal species of concern. Cumulative effects that could have large-scale benefits to Wawona riffle beetle habitat include regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic River Comprehensive Management Plan (NPS). These beneficial effects would be augmented by restoration of large areas of riparian and meadow habitat in Yosemite Valley that would occur under this alternative. The Yosemite View Parcel Land Exchange (NPS) could affect aquatic habitat for the riffle beetle in the adjacent reach of the Merced River. Overall, there would be a minor, beneficial, cumulative impact on the riffle beetle. This is largely due to regional and parkwide planning that would protect wide areas of habitat for the Wawona riffle beetle, combined with habitat restoration that would occur under this alternative.

BOHART'S BLUE BUTTERFLY (*PHILOTIELLA SPECIOSA BOHARTORUM*)

Status: Federal species of concern. The nearest documented occurrence of this species to the park is near Briceburg, west of El Portal. Regional planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) could improve the size, integrity, and connectivity of suitable habitat for the Bohart's blue butterfly over a wide area of foothill habitat. This action could have long-term, minor, beneficial effects on suitable habitat. Further surveys conducted for this species have found the Bohart's blue butterfly in other areas such as Merced, Fresno, and Tulare counties. Projects in those areas, such as the Rio Mesa Area Plan (Madera Co.) and University of California, Merced Campus (Merced Co.), could have a minor, local, adverse effect on Bohart's blue butterfly. These effects would be limited in scale, in comparison to the Sierra Nevada Framework for Conservation and Collaboration (USFS), which would help protect wide areas of foothill woodland habitat that is declining rapidly. Development of parking, housing, and administrative facilities that would occur under this alternative could adversely affect suitable habitat, although the occurrence of the Bohart's blue butterfly in El Portal is questionable.

Overall cumulative impacts on the Bohart's blue butterfly would be minor and beneficial, based on the potential protection of wide areas of suitable habitat from the Sierra Nevada Framework, as opposed to localized potential adverse impacts in El Portal that would occur under this alternative.

MOUNT LYELL SALAMANDER (*HYDROMANTES PLATYCEPHALUS*)

Status: Federal species of concern; California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire

Management Plan Update (NPS), and the Merced Wild and Scenic Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Mount Lyell salamander over a wide area. These actions, augmented by habitat restoration in Yosemite Valley under this alternative, have the potential for long-term, minor, beneficial, cumulative effects on suitable habitat, depending on the alternatives chosen and the extent of their implementation over time. No current or reasonably foreseeable future projects are expected to have an adverse effect on Mount Lyell salamanders.

NORTHWESTERN AND SOUTHWESTERN POND TURTLE (*CLEMMYS MARMORATA MARMORATA*) AND (*CLEMMYS MARMORATA PALLIDA*)

Status: Federal species of concern; California species of special concern. Cumulative effects that could have large-scale benefits to western pond turtle habitat include regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic Comprehensive Management Plan (NPS). These beneficial effects would be augmented by restoration of large areas of riparian and wetland habitats in Yosemite Valley under this alternative. The Yosemite View Parcel Land Exchange (NPS) would directly affect a small area of habitat suitable for the western pond turtle. Overall, there would be a minor, beneficial, cumulative impact on the western pond turtle. This benefit would largely come from implementation of regional and parkwide planning that would protect habitat for western pond turtles as well as restoration of suitable habitat in Yosemite Valley under this alternative.

HARLEQUIN DUCK (*HISTRIONICUS HISTRIONICUS*)

Status: Federal species of concern; California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the harlequin duck. This alternative would restore or protect about 100 acres of suitable riparian and aquatic habitat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat for harlequin ducks, depending on the alternatives chosen and the extent of their implementation over time.

Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for the harlequin duck include the Yosemite View Parcel Land Exchange (NPS) and the Incline Road Construction, Foresta Road Bridge to South Fork (Mariposa Co.) project. There are no known populations of the harlequin duck in these areas.

Overall, there would be a moderate, beneficial, cumulative impact on the harlequin duck, based on the potential protection of suitable habitat offered by regional plans combined with restoration of suitable habitat provided under this alternative. The projects with a possible adverse impact on harlequin duck habitat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

COOPER'S HAWK (*ACCIPITER COOPERI*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced River Wild and Scenic River Comprehensive Management Plan (NPS) would benefit the size, integrity, and connectivity of suitable habitat for the Cooper's hawk. These regional plans would have a long-term, moderate to major, beneficial effect on the Cooper's hawk, depending on the alternatives chosen and the extent of their implementation over time. These beneficial effects would be augmented by restoration of habitats in Yosemite Valley under this alternative. Current and reasonably foreseeable future projects that could adversely affect suitable habitat for the Cooper's hawk include the Hazel Green Ranch (Mariposa Co.) project; Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Evergreen Lodge Expansion (Tuolumne Co.); and Yosemite West Rezone for 55 Acres (Mariposa Co.). Development of the Taft Toe Visitor/Transit Center under this alternative would also cause adverse effects resulting from removal of forest habitat, as would development at El Portal and South Landing.

Overall cumulative impacts on Cooper's hawks would be moderate and beneficial, based primarily on implementation of wide-ranging plans that would protect large areas of the Sierra Nevada, in combination with restoration of habitats in Yosemite Valley under this alternative. In comparision, adverse effects from individual projects would be localized in relatively small areas.

NORTHERN GOSHAWK (*ACCIPITER GENTILIS*)

Status: Federal species of concern; California species of special concern. Projects likely to have a beneficial effect on northern goshawk habitat include the Fire Management Plan Update (NPS), the Sierra Nevada Framework for Conservation and Collaboration (USFS), Wilderness Management Plan Update (NPS), and U.S. Forest Service plans for adjacent wilderness. Implementation of these plans would have a moderate to major effect on northern goshawks, depending on the alternatives chosen and the extent of their implementation over time.

Projects that could have an adverse effect on northern goshawk habitat include the Hazel Green Ranch (Mariposa Co.) project, Evergreen Lodge Expansion (Tuolumne Co.), and the Yosemite West Rezone for 55 Acres (Mariposa Co.). Development of parking at South Landing under this alternative would adversely affect an area of forest habitat that could affect northern goshawks. However, these projects would affect relatively small areas of habitat.

Overall there would be a long-term, moderate, beneficial, cumulative impact on the northern goshawk, primarily from the potential protection of wide areas of habitat provided by implementation of regional land management plans. In comparison, adverse effects from individual projects including effects from this alternative would be localized in small areas of habitat.

SHARP-SHINNED HAWK (*ACCIPITER STRIATUS*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of wide areas of suitable habitat for the sharp-shinned hawk. A mix of habitats favorable to sharp-shinned hawks would be restored in Yosemite Valley under this alternative, but such effects would be diminished by the development of the Taft Toe Visitor/Transit Center, which would affect forest habitat. These regional plans, in combination with this alternative, would have a long-term, minor to moderate, beneficial effect on the sharp-shinned hawk, depending upon the alternatives chosen and the extent of their implementation over time. This effect is of lower intensity than it is for other *Accipiter* species because sharp-shinned hawks do not commonly nest in the Sierra Nevada.

Current and reasonably foreseeable future projects that could adversely affect suitable habitat for the sharp-shinned hawks include the Hazel Green Ranch (Mariposa Co.) project; Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement (NPS); Evergreen Lodge Expansion (Tuolumne Co.); and Yosemite West Rezone for 55 Acres (Mariposa Co.). Under this alternative, some habitat would be adversely affected by development of parking at Taft Toe and areas of smaller development outside of Yosemite Valley, including South Landing and El Portal.

Overall cumulative impacts on sharp-shinned hawks would be moderate and beneficial, based primarily upon implementation of plans that would protect large areas of the Sierra Nevada and restoration of diverse habitats in Yosemite Valley under this alternative. In comparison adverse effects would be localized in relatively small areas from individual projects.

GOLDEN EAGLE (*AQUILA CHRYSAETOS*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for golden eagles. These regional plans would have a long-term, moderate, beneficial effect on golden eagles. Restoration of habitats in Yosemite Valley under this alternative would likewise benefit golden eagles.

Current and reasonably foreseeable future projects that could adversely affect golden eagles include the Rio Mesa Area Plan (Madera Co.); University of California, Merced campus (Merced Co.); and Buildout of City of Merced, General Plan; and the Tioga Inn, Lee Vining (Mono Co.). These projects, in total, would have a minor, adverse effect on golden eagles because of the limited area they would affect.

Overall cumulative effects on golden eagles would be minor and beneficial, based primarily on the protection of habitat provided by implementation of land management plans that would cover large areas of the Sierra Nevada in combination with restoration of habitats in Yosemite

Valley due to this alternative. There would be a limited area of impact caused by projects that have an adverse effect on golden eagles, including development in some habitat under this alternative.

MERLIN (*FALCO COLUMBARIUS*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of large areas of suitable habitat for the merlin. These regional plans would have a long-term, minor to moderate, beneficial effect on the merlin, depending on the alternatives chosen and the extent of their implementation over time. Merlin habitat would be further supplemented by restoration of meadow and riparian habitats in Yosemite Valley, as would occur under this alternative.

Current and reasonably foreseeable future projects that could adversely affect merlins include the Yosemite View Parcel Land Exchange (NPS); Rio Mesa Area Plan (Madera Co.); Yosemite Motels Expansion, El Portal (Mariposa Co.); University of California, Merced campus (Merced Co.); and Buildout of City of Merced, General Plan. These projects would have a minor, adverse effect on merlins. Under this alternative, habitat could be adversely affected by development in Foresta and El Portal, but the areas affected would be less suitable merlin habitat.

Overall cumulative effects on merlins would be moderate and beneficial, based primarily on the implementation of land management plans that could affect large areas of the Sierra Nevada combined with restoration of habitats in Yosemite Valley that would occur under this alternative.

PRAIRIE FALCON (*FALCO MEXICANUS*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the prairie falcon. These actions could have long-term, moderate to major, beneficial effects on prairie falcon habitat, depending on the alternatives chosen and the extent of their implementation over time. Further benefit to this species would be provided by restoration of habitats in Yosemite Valley, as would occur under this alternative.

Current and reasonably foreseeable future projects that could adversely affect prairie falcons include the Rio Mesa Area Plan (Madera Co.); University of California, Merced campus (Merced Co.); Buildout of City of Merced, General Plan; and Tioga Inn, Lee Vining (Mono Co.). These projects, in total, would have a minor, adverse effect on prairie falcons because of the limited area they would affect.

Overall cumulative effects on prairie falcons would be moderate and beneficial, based primarily on the protection of habitat resulting from implementation of land management plans that would cover large areas of the Sierra Nevada combined with restoration of Yosemite Valley habitats under this alternative. In comparison to the limited area of effect caused by projects that have an adverse effect on prairie falcons would affect a limited area.

LONG-EARED OWL (*ASIO OTUS*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for long-eared owls. These regional plans would have a long-term, minor to moderate, beneficial effect on long-eared owls, depending on the alternatives chosen and the extent of their implementation over time. Restoration of extensive riparian habitats in Yosemite Valley that would occur under this alternative would provide additional benefit to long-eared owls.

Current and reasonably foreseeable future projects that could adversely affect suitable habitat for long-eared owls include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); and Evergreen Lodge Expansion (Tuolumne Co.). Development of parking, housing, and administrative facilities in El Portal under this alternative could affect some areas of potential habitat.

Overall cumulative impacts on long-eared owls would be minor and beneficial, based primarily on the protection of habitat provided by implementation of wide-ranging land management plans that would cover large areas of the Sierra Nevada and restoration of large areas of riparian habitat in Yosemite Valley from implementation of this alternative. A limited area would be affected by projects that have an adverse impact on long-eared owls.

YELLOW WARBLER (*DENDROICA PETECHIA*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of large areas of suitable habitat for the yellow warbler. These regional plans would have a long-term, moderate to major, beneficial effect on the yellow warbler, depending on the alternatives chosen and the extent of their implementation over time. Under this alternative, extensive areas of riparian habitat would be restored, thus providing high-quality habitat for yellow warblers. If stables are removed from Yosemite Valley, this would also benefit yellow warblers by reducing brown-headed cowbird parasitism.

Current and reasonably foreseeable future projects with the potential to adversely affect yellow warblers include the Hazel Green Ranch (Mariposa Co.) project, Yosemite View Parcel Land Exchange (NPS), and the Yosemite West Rezone of 55 Acres (Mariposa Co.). Development

in El Portal and Foresta that would occur under this alternative would affect yellow warblers habitat. These projects would have a minor, adverse effect because the affected area is generally lower quality habitat for yellow warblers, the affected area is limited, and large areas of suitable, unaffected habitat would continue to exist in surrounding areas.

Overall cumulative effects on yellow warblers would be moderate and beneficial, based primarily on the protection of large areas of high-quality habitat resulting from implementation of regional land management plans that would cover large areas of the Sierra Nevada and restoration of large areas of high quality riparian habitat in Yosemite Valley from this alternative. There would be a limited area of impact on lower-quality habitat caused by projects that would adversely affect yellow warblers.

MOUNT LYELL SHREW (*SOREX LYELLI*)

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), the Wilderness Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Mount Lyell shrew. These regional plans would have a long-term, minor, beneficial effect on suitable habitat for the Mount Lyell shrew. Possible development at Tioga Pass, the only area of potential effect, would have a negligible impact on Mount Lyell shrews. No reasonably foreseeable projects are expected to have an adverse effect on this species; therefore, overall cumulative impacts from this alternative combined with current and reasonably foreseeable future projects would be minor and beneficial.

PALLID BAT (*ANTROZOUS PALLIDUS*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration, U.S. Forest Service (USFS) plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the pallid bat. These regional plans would have a long-term, minor to moderate, beneficial effect on the pallid bat, depending on the alternatives chosen and the extent of their implementation over time. Restoration of large areas of riparian, meadow, and California black oak habitats that would occur under this alternative would further benefit pallid bats by providing important foraging habitat.

Current and reasonably foreseeable future projects that could adversely affect suitable habitat for the pallid bat include the Hazel Green Ranch (Mariposa Co.) project; Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). New development that would occur at El Portal, Foresta, and South Landing under this alternative could affect pallid bats by a local reduction in habitat. Development of the Taft Toe Visitor/Transit Center under this alternative would affect an area of forest habitat that could be used by pallid bats.

Overall, there would be a minor, beneficial, cumulative impact on the pallid bat, based on the potential protection of suitable habitat resulting from regional plans and restoration of diverse habitats in Yosemite Valley under this alternative. The projects with the potential to adversely affect the pallid bat, including new development under this alternative, would affect a relatively small area of habitat compared to projects with potential beneficial effects.

TOWNSEND'S BIG-EARED BAT (*CORYNORHINUS TOWNSENDII TOWNSENDII*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of large areas of suitable habitat for the Townsend's big-eared bat. These regional plans would have a long-term, minor to moderate, beneficial effect on the Townsend's big-eared bat, depending on the alternatives chosen and the extent of their implementation over time. Such benefits would be augmented under this alternative through the restoration of large areas of riparian, meadow, and California black oak habitats in Yosemite Valley. These areas are important foraging areas for Townsend's big-eared bats.

Current and reasonably foreseeable future projects that could adversely affect suitable habitat for Townsend's big-eared bats include the Hazel Green Ranch (Mariposa Co.) project; Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Evergreen Lodge Expansion (Tuolumne Co.); and Yosemite West Rezone for 55 Acres (Mariposa Co.). New development at Foresta, El Portal, and South Landing could affect small areas of suitable habitat. Development of the Taft Toe Vistor/Transit Center would affect a block of forest habitat that could be used by Townsend's big-eared bats.

Overall, this alternative would result in minor, beneficial, cumulative impacts on Townsend's big-eared bat, based on the potential protection of suitable habitat provided by implementation of regional plans and restoration of Yosemite Valley habitats under this alternative. The projects with the potential to adversely impact the Townsend's big-eared bat would affect a relatively small area of marginal habitat compared to projects with potential beneficial effects.

SPOTTED BAT (*EUDERMA MACULATUM*)

Status: Federal species of concern; California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the spotted bat. These actions have the potential for long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Such benefits would be augmented by restoration of large areas of riparian and meadow habitats that would occur under this alternative. These habitats are important foraging areas for spotted bats.

Projects that could adversely affect suitable habitat for the spotted bat include the Yosemite View Parcel Land Exchange (NPS); El Portal Road Improvement Project (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); Evergreen Lodge Expansion (Tuolumne Co.); Hazel Green Ranch (Mariposa Co.) project; and Yosemite West Rezone for 55 Acres (Mariposa Co.). New development at Foresta, El Portal, and South Landing would affect potential habitat. Development of the Taft Toe Visitor/Transit Center would affect an area of forest, but such habitat is not preferred by spotted bats. Cumulative impacts on spotted bats would be minor, based on the relatively limited area of effect and the type of habitat affected.

In total, this alternative would result in moderate, beneficial impacts on the spotted bat, based primarily on the potential protection of large areas of suitable habitat from regional plans, in combination with restoration of important habitats in Yosemite Valley that would occur under this alternative. The projects with a possible adverse impact on the spotted bat would affect a relatively small area of less suitable habitat compared to projects with potential beneficial impacts.

SMALL-FOOTED MYOTIS BAT *(MYOTIS CILIOLABRUM)*

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the small-footed myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Further benefits would occur under this alternative from restoration of large areas of riparian and meadow habitats in Yosemite Valley, which are important foraging habitat for the small-footed myotis bat.

Projects that could adversely affect suitable habitat for the small-footed myotis bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development in El Portal, Foresta, and South Landing under this alternative. Development of the Taft Toe Visitor/Transit Center would affect an area of forest habitat, although such habitat is less preferred by this species.

In total, cumulative impacts on the small-footed myotis bat would be moderate and beneficial, based primarily on implementation of large-scale regional land plans that could protect wide areas of habitat in combination with restoration of important habitats in Yosemite Valley under this alternative. In comparison, projects with potential adverse impacts would affect relatively small areas of small-footed myotis bat habitat.

LONG-EARED MYOTIS BAT (*MYOTIS EVOTIS*)

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans

for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the long-eared myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Further benefits would occur under this alternative from restoration of large areas of riparian and meadow habitats in Yosemite Valley, which are important foraging areas for long-eared myotis bats.

Current and reasonably foreseeable future projects that could adversely affect suitable habitat for the long-eared myotis bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development in El Portal, Foresta, and South Landing under this alternative. Some of the benefits of habitat restoration in Yosemite Valley would be offset by development of parking in forest habitat at Taft Toe.

Overall, this alternative would result in moderate, beneficial, cumulative impacts on long-eared myotis bats, based on the potential protection of suitable habitat from implementation of regional plans in combination with restoration of important habitats in Yosemite Valley. The projects with the potential to adversely impact the long-eared myotis bat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

FRINGED MYOTIS BAT (*MYOTIS THYSANODES*)

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the fringed myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Further beneficial effects would be provided by restoration of large areas of riparian and meadow habitats in Yosemite Valley that would occur under this alternative. Such areas are important foraging habitat for fringed myotis bats.

Current and reasonably foreseeable future projects that could adversely affect suitable habitat for fringed myotis bats include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development in El Portal, Foresta, and South Landing under this alternative. Development of the Taft Toe Visitor/Transit Center would affect an area of forest that could be foraging habitat for fringed myotis bats.

Overall, this alternative would result in moderate, beneficial, cumulative impacts on the fringed myotis bat, based on the potential protection of suitable habitat from wide-reaching regional

plans coupled with actions under this alternative that would restore important habitats in Yosemite Valley. The projects with the potential to adversely impact the fringed myotis bat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

LONG-LEGGED MYOTIS BAT (*MYOTIS VOLANS*)

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the long-legged myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Further beneficial effects would be provided by restoration of large areas of riparian and meadow habitats in Yosemite Valley that would occur under this alternative. Such areas are important foraging habitat for long-legged myotis bats.

Current and reasonably foreseeable future projects that could adversely impact suitable habitat for the long-legged myotis bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development in El Portal, Foresta, and South Landing under this alternative. Development of the Taft Toe Visitor/Transit Center would affect an area of forest that could be foraging habitat for long-legged myotis bats.

Overall, this alternative would result in moderate, beneficial, cumulative impacts on the long-legged myotis bat, based on the potential protection of suitable habitat provided by implementation of regional plans in combination with restoration of important habitats in Yosemite Valley under this alternative. The projects with the potential to adversely impact the spotted bat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

YUMA MYOTIS BAT (*MYOTIS YUMANENSIS*)

Status: Federal species of concern; California species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Yuma myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Actions under this alternative would provide additional benefit to Yuma myotis bats by restoring large areas of meadow and riparian habitats in Yosemite Valley, which are important foraging areas for this species.

Current and reasonably foreseeable future projects that could adversely impact suitable habitat for the Yuma myotis bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development in El Portal, Foresta, and South Landing under this alternative. Development of parking at Taft Toe would affect an area of forest, but such habitat is not preferred by Yuma myotis bats.

Overall, there would be a moderate, beneficial, cumulative impact on the Yuma myotis bat, based on the potential protection of suitable habitat resulting from implementation of regional plans, augmented by restoration of important habitats in Yosemite Valley under this alternative. The projects with possible adverse impacts on Yuma myotis bats would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

GREATER WESTERN MASTIFF BAT (*EUMOPS PEROTIS CALIFORNICUS*)

Status: Federal species of concern; California species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of large areas of suitable habitat for the greater western mastiff bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat depending on the alternatives chosen for implementation and the extent of their implementation over time. Further benefits would be provided by this alternative through restoration of large areas of meadow and riparian habitats that are important foraging areas for this bat species.

Current and reasonably foreseeable future projects that could adversely impact suitable habitat for the greater western mastiff bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development in El Portal, Foresta, and South Landing under this alternative, although no suitable roosting habitat (cliffs) is nearby. Development of the Taft Toe Visitor/Transit Center would remove an area of forest, but such habitat is not preferred by mastiff bats.

Overall, this alternative would result in moderate, beneficial, cumulative impacts on the greater western mastiff bat, based on the potential protection of suitable habitat provided by implementation of regional plans in combination with restoration of important habitats in Yosemite Valley that would occur under this alternative. The projects with the potential to adversely impact the greater western mastiff bat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

SIERRA NEVADA SNOWSHOE HARE (*LEPUS AMERICANUS TAHOENSIS*)

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for snowshoe hares. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time.

Current and reasonably foreseeable future projects that could have adverse impacts on suitable habitat for snowshoe hares include Evergreen Lodge Expansion (Tuolumne Co), and Hazel Green Ranch (Mariposa Co.) project. These projects would primarily affect forest habitat. New development at South Landing, as would occur under this alternative, could affect snowshoe hare habitat, although the apparent scarcity of this species makes this unlikely.

Overall, there would be a minor and beneficial, cumulative impact on snowshoe hares under this alternative, based on the potential protection of suitable habitat from implementation of regional plans. The projects with the potential to adversely impact snowshoe hares would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

WHITE-TAILED HARE (*LEPUS TOWNSENDII*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the white-tailed hare. These regional plans would have a long-term, moderate, beneficial, cumulative effect on the white-tailed hare. No foreseeable projects are expected to have an adverse effect on white-tailed hares, including the possible minor expansion of Tioga Pass Entrance under this alternative.

SIERRA NEVADA MOUNTAIN BEAVER *(APLODONTIA RUFA CALIFORNICA)*

Status: Federal species of concern; California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the mountain beaver. These regional plans would have a long-term, moderate, beneficial, cumulative impact on suitable habitat for the mountain beaver. No foreseeable projects are expected to adversely affect Sierra Nevada mountain beaver, including increased visitor use at Badger Pass that would occur under this alternative.

Cumulative Impacts Conclusion

Many of the cumulative impact principles given in the conclusion for general wildlife earlier in this alternative also apply to special-status species.

Overall, current and reasonably foreseeable projects within the cumulative impact assessment area considered, in conjunction with the actions under Alternative 4, would have a moderate, beneficial effect on special-status species and their habitats. This is primarily due to the potential effects that would come from implementation of large-scale planning documents that could protect and restore wildlife habitats over much of the Sierra Nevada. These plans would compliment actions under this alternative, which would restore large areas of meadow, riparian, and California black oak habitats that are important to many special-status species.

Under Alternative 4, adverse impacts would affect some special-status species, such as Valley elderberrry longhorn beetle from new development outside of Yosemite Valley, and California spotted owl, Cooper's hawk, and sharp-shinned hawk, and three bat species from new development in Yosemite Valley. Development of parking at South Landing would affect an area of prime fisher habitat. Such impacts would add to the adverse effects of some current and reasonably foreseeable projects. These impacts would, however, be of limited severity, because of the limited area of habitat affected, and would have little effect on the overall cumulative impacts on special-status species under this alternative, which would be moderate and beneficial.

VEGETATION

Forty-seven special-status plant species within Yosemite Valley and other out-of-Valley areas could be affected by Alternative 4. Refer to table 3-7 (Vol. IA, Chapter 3) for a list of these plant species; their state, federal, and local status; and their general habitat requirements and locations. The impacts that have been identified in this section are generally long term except where noted.

Out-of-Valley areas affected by this alternative include El Portal, Badger Pass, South Landing, and Foresta, and the park entrances at Big Oak Flat, Tioga Pass, and South Entrance.

Yosemite Valley

No federal- or state-listed plant species are known to occur in Yosemite Valley. Twelve park rare plant species currently exist in the Valley: sugar stick, round-leaved sundew, stream orchid, fawn-lily, northern bedstraw, Sierra laurel, false pimpernel, azure penstemon, phacelia, wood saxifrage, giant sequoia, and ladies' tresses. Of these twelve park rare plant species, northern bedstraw, false pimpernel, ladies' tresses, round-leaved sundew, and Sierra laurel would experience a moderate beneficial impact through the restoration of large portions of potentially wet meadows and riparian areas (at former developed areas of Yosemite Lodge, Camp 6, and the former Upper and Lower River Campgrounds, and a portion of Housekeeping Camp), and the removal and ecological restoration of a portion of current Lower Pines and all of North Pines Campgrounds, riparian and highly valued resource portions of Housekeeping Camp, and the Ahwahnee Row houses. Potential increased radiating impacts to El Capitan Meadow by development of the Taft Toe Visitor/Transit Center would not affect these four species. Removal of the Happy Isles snack stand would increase the potential for re-establishment of the stream orchid in its natural habitat, with minor, beneficial impacts.

Removal of the Ahwahnee tennis courts would have a long-term, major, adverse impact on the planted giant sequoia trees in this area because these trees would be removed and the site restored to California black oak woodland. Redesign of the Ahwahnee parking lot could have adverse

impacts on planted giant sequoias, depending on final alignment of parking lots and driveways. Removal of the Superintendent's House (Residence 1) and development of a picnic area could result in removal of the single planted giant sequoia along the access road. None of these actions would affect overall sustainability of giant sequoia in the park's three naturally occurring groves, and impacts to the species would be negligible.

The fawn-lily is currently affected by trampling and picking of its showy flowers. This species would not be further impacted under Alternative 4. The wood saxifrage typically grows on moist cliffs and would not be affected by the actions under Alternative 4.

Out-of-Valley

This alternative would have no impacts on rare plant species in Wawona, Henness Ridge, or Hazel Green, given that no actions are proposed in these areas.

El Portal

Currently one federal species of concern (Congdon's lomatium), four state-listed rare species (Yosemite onion, Tompkin's sedge, Congdon's woolly-sunflower, and Congdon's lewisia), and six park rare species (Indian paintbrush, collinsia, pitcher sage, Congdon's monkeyflower, Palmer's monkeyflower, and phacelia) occur within the general El Portal area.

Adverse impacts from trampling would continue to occur to all of these species except for Yosemite onion and Congdon's lomatium, which occur on steep, inaccessible slopes in association with poison oak. Impacts to the remaining species under Alternative 4 would increase compared to Alternative 1 because of a substantially increased residential population. Habitat loss and competition for resources (e.g., light, water, and nutrients) would continue to adversely affect most species due to the continued high degree of non-native species encroachment expected in this area and the increased potential for new introductions, resulting in minor, adverse impacts. Potential impacts would occur to Tompkin's sedge, Indian paintbrush, collinsia, pitcher sage, Palmer's and Congdon's monkeyflowers, and phacelia from development of out-of-Valley parking and employee housing. These impacts could be mitigated through avoidance (site selection), plant salvage and replanting of perennials (Tompkin's sedge in particular), and topsoil salvage and reapplication after construction to protect annual species, with minor, adverse effects.

Restoration of habitat at the old treatment plant at Rancheria Flat and at the sand pit, including removal of remaining concrete wing walls and re-establishment of riparian vegetation, would enhance the river corridor and increase potential habitat for Congdon's woolly-sunflower, a state-listed rare plant. Moderate, beneficial impacts to this species are anticipated.

Overall impacts to these El Portal special-status species would be minor and adverse.

Foresta

No federal- or state-listed plant species occur in Foresta, but five park rare species are found within the general Foresta area (snapdragon, Small's southern clarkia, goldenaster, inconspicuous monkeyflower, and pansy monkeyflower). These species would experience slightly greater radiating impacts due to increased human activity resulting from the reconstruction of 14 houses and potential relocation of the National Park Service and concessioner administrative stables in

Foresta; however, direct loss of individual plants or populations from construction is not expected because these species are not known to occur in the development area. There would be a potential increase in impacts on rare plant habitat by encroachment of non-native species associated with landscaping activities and increased numbers of residential and horse trailer vehicles. Overall impacts to special-status species in Foresta would be negligible and adverse.

Badger Pass

No federal- or state-listed plant species occur at Badger Pass. The surrounding montane meadow areas are inhabited by one federal species of concern (Bolander's clover) and two park rare species (dwarf sandwort and Yosemite ivesia). These species would experience adverse impacts from visitor activity radiating from the day-visitor parking area at Badger Pass. Impacts would be reduced through design of the Badger Pass parking facility and installation of signs or fencing to direct people away from sensitive areas. Therefore, impacts in this area would be minor and adverse.

South Landing

No federal- or state-listed plant species occur at South Landing. One park rare plant species (whitneya) occurs at South Landing and two other park rare species (giant sequoia and round-leaved sundew) occur within walking distance of South Landing. Whitneya could be directly impacted by proposed construction activities at the site. Impacts could be lessened by salvaging and re-using topsoil at the site to encourage re-establishment of this species in the general area, but there would be a long-term minor, adverse impact on the whitneya population in the park due to habitat loss. There could be minor, indirect effects on the round-leaved sundew and giant sequoia from increased visitor use radiating away from the South Landing parking area. Fences, signs, and other measures would be used to direct visitors away from sensitive habitats. Overall impacts to rare plants at South Landing would be minor and adverse resulting from habitat loss for one species.

Big Oak Flat Entrance

No impacts to federal-, state-, or park-listed plant species would occur because no special-status species are known to occur in the general vicinity of the Big Oak Flat Entrance area.

South Entrance

No known federal- or state-listed plant species occur in the South Entrance area. One park rare species (Sierra sweet-bay) is located within the riparian areas adjacent to the current road alignment. Expanded parking and visitor center structures in this vicinity would be designed to avoid riparian areas as much as possible, which would minimize the potential impact on the Sierra sweet-bay. The effects of Alternative 4 on this species would be minor and adverse as a result of increased visitor use in the South Entrance area and loss of a small area of habitat.

Tioga Pass Entrance

One federal species of concern (Tiehm's rock-cress) and thirteen park rare species occur within hiking distance of Tioga Pass. One species, the common juniper, could be directly impacted by construction of a new or expanded entrance/visitor contact station at Tioga Pass. Construction

may result in loss of habitat or direct loss of individual plants. There could be indirect effects on Tiehm's rock-cress and all 13 park rare species from increased foot traffic and associated trampling in the area. There could also be increased hiking on Mt. Dana, which is within a day's hike from the Tioga Pass Entrance Station. The popular hike to the top of Mt. Dana is a cross-country path, without a formal route. Increased use on Mt. Dana could have a long-term, moderate, adverse impact on these rare plant species on Mt. Dana.

Conclusion

Forty-seven special-status plant species would potentially be impacted by actions proposed in Alternative 4. Although the proposed actions would include mitigation measures to minimize radiating adverse impacts on rare plant species. As a result, radiating impacts from development actions, such as trampling, picking, and increased non-native plant species from increased visitor uses in and out of the Valley would be limited to negligible to minor by managing uses in these sensitive areas and increasing management efforts to control non-native plant species.

Adverse impacts as a result of habitat loss would occur in El Portal for two state-listed rare and six park rare species, at South Landing for one park rare species, at Tioga Pass for one park rare species, and in the Valley for the giant sequoia. These impacts would be mitigated by reasonable designs to avoid these species (as identified in site-specific surveys) and for some species, retention and reuse of salvaged topsoil at the site to encourage re-establishment, resulting in minor local adverse impacts.

Moderate beneficial impacts would occur to northern bedstraw, false pimpernel, round-leaved sundew, phacelia, Sierra laurel, and ladies' tresses because of extensive restoration of riparian and meadow habitats. Moderate beneficial impacts would also occur in El Portal, with restoration of habitat for rare species at the old treatment plant at Rancheria Flat and the sand pit.

Therefore, the overall impact to park rare or special concern plant species would be minor adverse, primarily due to habitat loss at El Portal, South Entrance, and South Landing.

Cumulative Impacts

The description of impacts of reasonably foreseeable future projects within the cumulative impact assessment area is the same as described for Alternative 2. The projects considered in this analysis are listed in Vol. II, Appendix H. Reasonably foreseeable future management and planning projects within the cumulative impact assessment area would have regional minor to moderate, beneficial impacts to rare species and their habitats because of similar management objectives. Development projects such as the Yosemite View Parcel Land Exchange and Yosemite Motels Expansion, El Portal (Mariposa Co.) would have the potential for localized minor to moderate adverse impacts on rare species habitat; however, with the implementation of site-specific surveys and state and federal required mitigation measures, these localized adverse impacts would be minor.

As summarized in the conclusions for this alternative, actions proposed under this alternative alone would have minor, adverse impacts on rare species because of the effects of small areas of habitat loss and increased impacts of trampling.

When looking at Alternative 4 in conjunction with other regional planning and development activities, the cumulative impact on park special-status plant species would be minor and adverse, largely due to habitat loss from developments regionally and within the out-of-Valley areas.

VEHICLE-GENERATED EMISSIONS

A summary of the traffic air emissions in Yosemite Valley under Alternative 4 is provided in table 4-93. The emissions data noted in table 4-93 reflect emissions from the following major vehicle fleet categories:

- Visitor vehicles
- Commercial tour buses
- In-Valley and out-of-Valley shuttle buses (four propulsion/fuel technology options including diesel, propane, compressed natural gas, and fuel cell were analyzed)
- National Park Service and concessioner employees vehicles
- National Park Service and concessioner maintenance and administration road vehicles
- National Park Service and concessioner maintenance and administration non-road vehicles

Compared to air emissions under Alternative 1 in 2015, with the use of diesel fuel technology in the shuttle bus fleet, volatile organic compounds emissions would decrease by 12%, carbon monoxide would decrease by about 47%, nitrogen oxides would increase by 30%, and particulate matter (PM_{10}) would decrease by about 45%. A major decrease in PM_{10} would be caused by the sharp reductions in vehicle miles traveled and associated reductions in road dust.

If compressed natural gas were to be used in the shuttle bus fleet instead of diesel fuel, emissions of all pollutants except carbon monoxide and particulate matter would be reduced under Alternative 4. Compared to the use of diesel fuel, the use of propane would result in a reduction in all emissions except volatile organic compounds and carbon monoxide. The use of fuel cells in the shuttle bus fleet would result in reductions in all emissions compared to the use of diesel fuel.

AMBIENT AIR QUALITY

Traffic flow was modeled to perform carbon monoxide and PM_{10} hot-spot analyses for Northside Drive from Yosemite Lodge to park headquarters. For the inbound peak travel hour, the EMFAC model predicted a maximum 1-hour average carbon monoxide concentration of 0.5 parts per million, and a carbon monoxide concentration of 0.6 parts per million for the outbound peak travel hour. When added to a background carbon monoxide concentration of 3.0 parts per million, the estimated carbon monoxide concentrations of 3.5 and 3.6 parts per million for inbound and outbound traffic scenarios, respectively, would not exceed the federal or California 1-hour carbon monoxide standards of 35 parts per million and 20 parts per million. Based on the inbound peak travel hour, the calculated maximum 8-hour average carbon monoxide concentration was 2.45 parts per million, and the maximum 8-hour average carbon monoxide concentration was 2.52 parts per million based on traffic in the outbound peak travel hour. The carbon monoxide concentrations for this alternative would not exceed the federal or California 8-hour carbon monoxide standard of 9 parts per million. As shown in table 4-94, these carbon monoxide concentrations would represent major reductions in ambient carbon monoxide levels when compared to Alternative 1.

Table 4-93
Summary of Annual Air Emissions from Vehicles in Yosemite Valley (Tons/Yr)

Alter-native	2000				2005				2010				2015			
	Shuttle Bus Fuel Type				Shuttle Bus Fuel Type				Shuttle Bus Fuel Type				Shuttle Bus Fuel Type			
	Diesel	CNG	Propane	FC	Diesel[1]	CNG	Propane	FC	Diesel[1]	CNG	Propane	FC	Diesel[1]	CNG	Propane	FC
VOC Emissions																
1[2]	50.9	No alternative fuels			28.0	No alternative fuels			14.0	No alternative fuels			8.6	No alternative fuels		
4	NA				16.6	15.9	19.3	NA[3]	10.1	9.4	12.8	6.9	7.6	6.9	10.3	4.4
CO Emissions																
1[2]	568.2	No alternative fuels			364.1	No alternative fuels			249.2	No alternative fuels			189.8	No alternative fuels		
4	NA				179.2	203.0	171.6	NA[3]	127.4	160.7	127.8	111.8	100.6	142.1	108.0	85.0
NO_X Emissions																
1[2]	84.2	No alternative fuels			59.3	No alternative fuels			44.9	No alternative fuels			38.8	No alternative fuels		
4	NA				60.1	53.2	46.6	NA[3]	53.4	46.9	39.9	23.0	50.7	44.4	37.2	20.2
SO_2 Emissions																
1[2]	6.3	No alternative fuels			5.8	No alternative fuels			5.6	No alternative fuels			5.4	No alternative fuels		
4	NA				4.3	3.2	3.2	NA[3]	4.1	3.1	3.1	3.1	4.0	3.0	3.0	3.0
PM_{10} Emissions																
1[2]	2.5	No alternative fuels			2.3	No alternative fuels			2.2	No alternative fuels			2.2	No alternative fuels		
4	NA				1.2	1.2	1.2	NA[3]	1.2	1.2	1.1	1.1	1.2	1.2	1.1	1.1
PM_{10} Road Dust																
1[2]	165				165				165				165			
4	78				78				78				78			

1. Assumes that in-Valley shuttle buses are conventional diesel buses that would meet emissions standards in effect in 2000. Shuttle buses in this alternative would employ advanced technologies to lower emissions.
2. No Action
3. NA = Not Applicable; fuel cell scenarios were assumed not be available until the year 2010.
Note: Values expressed in tons per year.
CNG = compressed natural gas
FC = Fuel Cell

Table 4-94 Predicted Maximum Carbon Monoxide Concentrations						
Alternative	Standard		Inbound Peak Hour		Outbound Peak Hour	
	CA	Fed	Maximum (ppm)	Reduction[1] (%)	Maximum (ppm)	Reduction[1] (%)
	(ppm)					
1-Hour Concentration						
1	20	35	5.10	NA	6.50	NA
4			3.50	76.2	3.60	82.9
8-Hour Concentration						
1	9	9	3.57	NA	4.55	NA
4			2.45	76.2	2.52	82.9

1. Based on results without background concentrations and relative to the No Action Alternative
NA = Not applicable

For the inbound peak travel hour, the maximum 24-hour PM_{10} concentration would be 27.8 micrograms per cubic meter ($\mu g/m^3$), and the analogous PM_{10} concentration would be 28.2 $\mu g/m^3$ for the outbound peak travel hour. The estimated PM_{10} concentrations for the inbound and the outbound peak hours would not exceed the federal standard of 150 $\mu g/m^3$ or the California standard of 50 $\mu g/m^3$. As shown in table 4-95, these PM_{10} concentrations would represent major reductions in ambient PM_{10} levels for the inbound and outbound peak hours when compared to Alternative 1.

Table 4-95 Predicted Maximum 24-Hour PM_{10} Concentrations						
Alternative	Standard[1]		Inbound Peak Hour		Outbound Peak Hour	
	CA	Fed	Maximum ($\mu g/m^3$)	Reduction[1] (%)	Maximum ($\mu g/m^3$)	Reduction[1] (%)
	($\mu g/m^3$)					
1	50	150	46.2	NA	64.2	NA
4			27.8	73.0	28.2	83.3

1. Based on results without background concentrations and relative to the No Action Alternative

Construction-Generated Air Emissions

Air emissions associated with construction activities proposed for Alternative 4 are summarized in table 4-96.

A description of construction-related emissions and the approach used for this analysis are included in the Methodologies and Assumptions section of this chapter. These construction-related emissions would cause minor, adverse impacts to air emission in the short term.

Table 4-96 Air Emissions from Construction Activities					
Construction Activity	Emissions (tons/yr)				
	VOC	CO	NO_x	PM_{10}	SO_2
Yosemite Lodge Redevelopment	0.32	1.37	1.75	4.16	0.49
Yosemite Falls Parking Removal and Trails	0.07	0.38	0.39	3.66	0.11
Meadow Roads Removal	0.01	0.05	0.05	1.76	0.02
Traffic Management Facility at El Capitan crossover	0.02	0.07	0.12	0.39	0.08
Taft Toe Day-Visitor Parking Area	0.23	0.47	0.95	6.41	1.11
Southside Drive Reconstruction	0.31	0.61	1.24	8.85	1.52
Out-of-Valley Parking	0.38	0.93	1.86	11.86	2.43
Transit Facility/Visitor Center	0.03	0.16	0.19	1.23	0.05

Table 4-96 Air Emissions from Construction Activities					
	Emissions (tons/yr)				
Construction Activity	VOC	CO	NO_x	PM_{10}	SO_2
El Portal Employee Housing	1.31	6.46	6.87	43.03	1.94
NPS/Concessioner Headquarters	0.09	0.39	0.51	1.88	0.15
El Portal Road Segment D	0.15	0.46	0.71	2.50	0.48
Total	**2.92**	**11.35**	**14.64**	**85.73**	**8.38**

CO = carbon monoxide
NO_x = nitrogen oxide
PM_{10} = particulate matter less than 10 microns in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compounds
NPS = National Park Service

CONCLUSION

Compared with Alternative 1, Alternative 4 would produce minor, beneficial impacts on volatile organic compounds emissions; moderate, beneficial impacts on carbon monoxide emissions; minor, beneficial impacts on PM_{10} emissions; and moderate adverse impacts on nitrogen oxide emissions by 2015 with the use of diesel buses in the shuttle bus fleet. A major reduction in road dust PM_{10} emissions would be achieved with a reduction in vehicle miles traveled between Alternatives 1 and 4. In comparison with the use of diesel fuel in the shuttle fleet under Alternative 4, the use of fuel cell technology would produce lower vehicle traffic emissions for all pollutants by 2015. Emission reductions from the use of fuel cells would be the largest among the three alternative fuel scenarios for all pollutants.

Air emissions associated with construction and demolition projects would be minor, occur only once, and be generated over a relatively short-term period.

CUMULATIVE IMPACTS

Air quality in Yosemite National Park is currently affected by internal air pollution sources, such as furnaces, boilers, woodstoves, and campfires. Estimates of air emissions from these sources are provided in table 3-12 (Vol. IA, Chapter 3). For purposes of this analysis, these air pollution sources would continue to exist, with emission levels remaining relatively similar to existing levels. These emission sources are relatively small when compared to vehicle emissions and overall air emissions in the region.

The cumulative impacts on air emissions associated with Alternative 4 would include new housing and lodging developments outside the park. These developments include the construction of new housing in the City of Merced, in the Rio Mesa area in Madera County, and at University of California facilities in Merced. Other factors include overall population increases in the area that are expected to range from 25% to 30% by 2015. These impacts would be the same as those associated with Alternative 2. Considered with the moderate, adverse impact resulting from past, present, and reasonably foreseeable future projects in the Yosemite region, impacts resulting from Alternative 4 in Yosemite National Park would remain moderate and beneficial.

Geologic Hazards

Impacts are described as levels of risk to human life and property, and are based on the facility categories defined in the *Yosemite Valley Geologic Hazard Guidelines*, see Vol. II, Appendix C, and the presence or absence of geologic hazards as mapped by the U.S. Geological Survey (USGS 1998).

This impact analysis was completed only for those areas currently within the talus slope zone and the shadow line zone in the Valley. Rockfall hazards would likely be long term and permanent. The potential for rockfall is ongoing, as this natural process continues to occur in Yosemite Valley. With the exception of the Arch Rock Entrance Station, there are no permanent structures planned for the area between Yosemite Valley and El Portal. Also, traffic along the roadway in this area is considered transitory and not a permanent population. The transitory nature of the traffic allows little exposure at any one time to potential geologic hazards. For these reasons, this area was not included in the analysis of geologic hazards for Yosemite Valley. Other out-of-Valley areas were not included in the analysis. The relative risk of rockfall in these areas is negligible due to the lack of evidence of past rockfall events in these areas.

HOUSEKEEPING CAMP AREA

All of the Housekeeping Camp facilities and the LeConte Memorial Lodge are within the talus slope zone. Under this alternative, the occupancy category (based on the *Geologic Hazard Guidelines*) and location of these facilities would not change. The LeConte Memorial Lodge is standard occupancy and a historic structure; thus, the action would have an adverse impact and moderate risks would be retained. Housekeeping Camp (standard occupancy) would be reduced by 212 units, thus reducing the density of individuals and facilities within the shadow line zone. The net impact of this action would be beneficial, but the risks would remain moderate due to the reduction in density of individuals within the shadow line zone.

CURRY VILLAGE AREA

Facilities, specifically tent cabins, are being proposed to be removed from the talus slope zone. Proposed new development and redevelopment would be both within and outside the shadow line zone, and thus are consistent with the *Geologic Hazard Guidelines.*

Numerous visitor and employee facilities are located within Curry Village. This alternative calls for the removal of most tent cabins and many other cabins from the talus slope zone, a beneficial impact because it would reduce risk. The redevelopment of the guest parking areas in the talus slope and shadow line zones would also reduce risk to life and property, and would adhere to the *Geologic Hazard Guidelines* because new miscellaneous structures (parking) may be placed in any area. Employee housing proposed for the area would be constructed within the shadow line zone. All temporary employee housing and tent cabin housing would be removed. These facilities are considered standard occupancy, except the pavilion, which is considered special occupancy. Consequently, these actions would be beneficial, and would reduce the level of risk to minor, except at the pavilion, where risks would remain moderate.

Campground Areas

The majority of the existing campgrounds, as well as new campsites and facilities, would be located outside of both the talus slope and shadow line zones. A small portion of Upper Pines Campground would remain in the talus slope zone. Campgrounds are considered miscellaneous structures, and those portions of the campgrounds currently located in the talus slope and shadow line zones would remain. This would be consistent with the *Geologic Hazard Guidelines*. Current risks to life and property would remain adverse and minor.

The Ahwahnee Area

The Ahwahnee and associated support facilities, which are considered to be in the special occupancy category, are within the shadow line zone. A small portion of the hotel parking lot is within the talus slope zone. Retaining existing conditions would be an adverse effect. This action would be consistent with the *Geologic Hazard Guidelines*. Current risks to life and property would remain adverse and moderate.

Yosemite Village Area

The entire Yosemite Village development is within the shadow line zone, and approximately one-half of the area is within the talus slope zone. This alternative relocates several facilities from the talus slope zone to areas outside the shadow line zone, including essential facilities (fire station, law enforcement, jail, court, communication center); special occupancy facilities (visitor center and auditoriums); and one hazardous facility category (fuel storage). Medical facilities (essential facilities) would remain within the talus slope zone. Numerous standard occupancy facilities would remain within both the talus slope and shadow line zones (employee housing, maintenance facilities, retail sales, and post office), which would be consistent with the *Geologic Hazard Guidelines*. Under this alternative, actions would lower the density of facilities within both the talus slope and shadow line zones. Actions within the Yosemite Village area are considered beneficial, and would reduce risks to moderate.

Yosemite Lodge Area

Existing and proposed new lodge buildings, standard occupancy facilities, would be in the shadow line zone, and their location and functions would be consistent with the *Geologic Hazard Guidelines*. These actions would be adverse due to the increase in density within the shadow line zone, but risks would remain moderate.

Existing conditions at Camp 4 (Sunnyside Campground) and the proposed expansion of the campground are within the shadow line zone, which would be consistent with the *Geologic Hazard Guidelines*. Although the density of individuals within the shadow line zone would increase, the adverse risks would remain minor.

All existing, rebuilt, and/or proposed facilities at Yosemite Falls (i.e., trails, bridges, comfort station, and shuttle bus stop) can be located anywhere; therefore, their location is not a geologic hazard issue. However, the majority of the development would be outside the talus slope and shadow line zones. The parking lot would be removed and the comfort station would be relocated

outside the shadow line zone, which will reduce the risk to life and property. Under this alternative, actions would be beneficial, and risk would be minor.

Bridalveil Fall Area

No facilities are currently located within the talus slope or shadow line zones in this area; consequently, there would be a negligible risk of adverse impacts from rockfall.

Taft Toe Area

The Taft Toe Visitor/Transit Center, a special occupancy facility, would be within the shadow line zone. This action is consistent with the *Geologic Hazard Guidelines*; however, it increases the density of individuals and facilities exposed to risk in this area, and would be adverse. Under this alternative, day-visitor parking would be located within the shadow line zone; consequently, the risk would be minor.

Conclusion

As previously stated, regardless of the number of relocations or removal of facilities proposed, there would always be potential for adverse impacts on life and property due to geologic hazards within the Valley. However, under Alternative 4, the level of risk to life and property would be reduced by decreasing the density of standard occupancy structures from the talus slope zone, primarily from the Curry Village and Housekeeping Camp areas. In addition, essential facilities, hazardous facilities, and one special occupancy facility would be relocated out of the talus slope and shadow line zones. The development of the Taft Toe facility within the shadow line zone would result in a minor, adverse impact. Overall, the actions of this alternative would be considered beneficial, as a result of reduction in the density of individuals and facilities in the talus slope. This would reduce the risk from geologic hazards in the Valley from major to moderate.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects could have a cumulative effect, in conjunction with impacts of Alternative 4, if such projects would affect the characteristics of the geologic resource, specifically the steep granite walls and drainage systems within Yosemite Valley. Risks associated with the Indian Cultural Center cannot be evaluated because the occupancy category has not yet been determined; however, it would be located within the shadow line zone. These buildings are likely to be categorized as standard occupancy, and their placement would be consistent with the *Geologic Hazard Guidelines*. Past and present actions, which at times require the use of explosives for trail maintenance or road work, could potentially trigger rockfall events. This would be an adverse impact. Risk of such impacts would be evaluated before decisions would be made concerning the type of work to be undertaken. There are no reasonably foreseeable future projects (see Vol. II, Appendix H) that would impact or change the geologic structure of the granite walls within Yosemite Valley. The park uses explosives guidelines; if these guidelines are applied consistently and effects of blasting are monitored, the cumulative impacts would not increase the level of risk at facilities in the Valley.

Scenic Resources

YOSEMITE VALLEY

Under this alternative, 165 acres of developed land would be restored to natural conditions, thus improving the scenic quality of Yosemite Valley. Proposed restoration and development (in acres) within each scenic category are found in table 4-97. The primary improvements would be the restoration of a large tract of highly valued resources along the Merced River, primarily in the former Upper and Lower River Campground, North Pines Campground, a portion of Lower Pines Campground, Housekeeping Camp, and Camp 6. Roads would also be removed from Ahwahnee and Stoneman Meadows. These improvements would result in long-term, major, beneficial impacts.

Although there would be a net improvement in the east Valley, 99 acres of new development would occur within the Valley. This new development would primarily be located in the west Valley at Taft Toe near the El Capitan crossover and concentrated at the Taft Toe Visitor/Transit Center facility. This facility would be visible from both Dewey and Taft Points, which are within designated wilderness. The impact of this particular action would be long-term, major, and adverse.

The overall impact of this alternative on scenic resources would be long-term, moderate, and beneficial, due to the large-scale restoration, mostly within the A Scenic category.

Table 4-97
Proposed Restoration and Development by Scenic Category (acres)

Action	A Scenic	B Scenic	C Scenic	Alternative 4 Totals[1]	Alternative 1 Totals
Natural Resource Restoration	124 acres	73 acres	1	165 acres[2]	0
Developed[3]	67 acres	146 acres	28 acres	240 acres	406 acres
New Development	37 acres	54 acres	6 acres	99 acres[3]	0
Total Development				**339 acres[4]**	**406 acres**
Development Difference				**-66 acres**	

1. Totals may differ due to rounding.
2. Of the total 198 acres of natural resource restoration in A, B, and C Scenic areas, only 162 acres currently contain intrusions to scenic views, i.e., developed facilities. Thus, 36 acres of restoration are not included in this analysis of acreage of restored scenery. Because these 36 acres have not been further analyzed to determine their exact locations within A, B, and C Scenic categories, only the total acreage figure reflects the reduction of these 36 acres from the analysis. Also, the total acreage has been increased by the three acres of restoration in areas not classified as either A, B, and C Scenic in the 1980 *General Management Plan*.
3. Developed acres include existing development areas that are redeveloped or that remain unchanged.
4. Two acres not classified as either A, B, or C Scenic in the 1980 *General Management Plan* would be newly developed and increase the total acreage figure by 2.

Table 4-98 lists the impacts on each vantage point (vantage points are site-specific locations that have either been designed for or provide specific opportunities for visitors to view the scenery). All impacts would be long term in duration.

Table 4-98
Potential Impacts on Vantage Points

Vantage Point	Major Impacts of this Alternative	Intensity of Impact	Type of Impact
Tunnel View	None	Negligible	Neutral
Bridalveil Fall turnout along Southside Drive	None	Negligible	Neutral
Valley View	None	Negligible	Neutral
Dewey Point	Taft Toe parking and transit facility would be visible.	Major	Adverse
Taft Point	Taft Toe parking and transit facility would be visible.	Major	Adverse

Table 4-98 Potential Impacts on Vantage Points			
Vantage Point	**Major Impacts of this Alternative**	**Intensity of Impact**	**Type of Impact**
Upper Yosemite Fall	66 acres less development in east Valley. Restoration would principally be located at Camp 6, Upper and Lower River, Lower Pines and North Pines Campgrounds, and Housekeeping Camp. Removal of roads and traffic from Ahwahnee and Stoneman Meadows. Implementation of the River Protection Overlay.	Major	Beneficial
Sentinel Dome	None	None	Neutral
Glacier Point	66 acres less development in east Valley. Restoration would be visible from Glacier Point. New employee housing in Curry Village may be visible. Removal of roads and traffic from Ahwahnee and Stoneman Meadows. Implementation of the River Protection Overlay.	Moderate	Beneficial
El Capitan Meadow	Taft Toe parking and transit facility may be visible.	Moderate	Adverse
Sentinel Meadow turnout along Southside Drive	None	Negligible	Neutral
Sentinel Bridge	None	Negligible	Neutral
Four Mile Trailhead	None	Negligible	Neutral
Columbia Point	Yosemite Falls parking area would be removed. There would be less development in east Valley.	Moderate	Beneficial
Lower Yosemite Fall View	Improved by removal of adjacent vehicles, reduced traffic, and redesign of area.	Minor	Beneficial
Cook's Meadow	Improved by removal of Superintendent's House (Residence 1) and reduction of vehicles along the road to the north.	Minor	Beneficial

Table 4-99 lists the impacts on the 11 most important scenic features within the Valley. All impacts would be long-term in duration.

Table 4-99 Potential Impacts on Scenic Features			
Scenic Feature	**Major Impacts of this Alternative**	**Intensity of Impact**	**Type of Impact**
Yosemite Falls	Crowding and traffic would be reduced and parking along Northside Drive could be eliminated.	Minor	Beneficial
Sentinel Rock	None	Negligible	Neutral
Glacier Point	Some views would be improved by removal of traffic through Stoneman and Ahwahnee Meadows, the restoration of Camp 6, and the restoration of the following campgrounds: the former Upper and Lower River, Lower Pines and North Pines. The south portion of Yosemite Village may be less visible; however, the new employee housing in Curry Village may be visible.	Moderate	Beneficial
Half Dome	Views would be improved by removal of traffic from Stoneman and Ahwahnee Meadows; the removal of Camp 6 parking and the implementation of the River Protection Overlay.	Negligible	Beneficial
North Dome	None	Negligible	Neutral
Royal Arches	Vistas near Ahwahnee Meadow would be improved by removal of the tennis courts; removal of traffic from Ahwahnee Meadow; foreground restoration of the former Upper and Lower River Campground and the implementation of the River Protection Overlay.	Moderate	Beneficial

Table 4-99 Potential Impacts on Scenic Features			
Scenic Feature	**Major Impacts of this Alternative**	**Intensity of Impact**	**Type of Impact**
El Capitan	The new parking/transit facility would be in the view.	Moderate	Adverse
Bridalveil Fall	None	Negligible	Neutral
Cathedral Rock and Spires	View from El Capitan would include the parking/transit facility at Taft Toe.	Moderate	Adverse
Washington Column	Vistas near Ahwahnee Meadow would be improved by removal of the tennis courts; removal of traffic from Ahwahnee Meadow; foreground restoration of the former Upper and Lower River Campgrounds, and the implementation of the River Protection Overlay.	Moderate	Beneficial
Three Brothers	Traffic would be removed along Northside Drive.	Minor	Beneficial

OUT-OF-VALLEY

Under this alternative, three out-of-Valley parking facilities (Badger Pass, El Portal, and South Landing) would be constructed, facilities at each entrance station would be expanded, and housing and administrative facilities in El Portal would be increased. The parking facility at Badger Pass would have a long-term, minor, adverse impact, since a parking facility already exists there. The construction of the South Landing parking facility would not be visible from the Big Oak Flat Road or any scenic turnouts along the road; thus, it would have a localized, long-term, minor, and adverse impact. The impact of relocated parking and administrative facilities in El Portal would be long-term, minor, and adverse, because actions would be visible from Highway 140 as the visitor approaches Yosemite National Park. The expansion of entrance station facilities would be mitigated through design, and the impacts would be long-term, minor, and adverse because they would cause new intrusions to views at already developed locations.

CONCLUSION

This alternative would have a long-term, moderate, beneficial impact on the overall scenic quality of Yosemite Valley. There would be a net decrease of 66 acres in the development footprint within Yosemite Valley. Of the 165 acres of restoration, the majority are within the A Scenic category. The majority of the actions do result in a net improvement of scenic views and vantage points, especially in east Valley, where there is the greatest opportunity for a number of scenic views from individual locations. This alternative would, however, introduce a new scenic impact in an A Scenic area in the west Valley.

Yosemite Valley would remain one of the world's premier landscapes. The amount of intrusion into Yosemite Valley scenery would be reduced in the east end, but consolidated parking in the west Valley would add an intrusion that does not exist today in this premier landscape. No visual intrusions would occur from the Tunnel View vantage point. Collectively, there would be long-term, adverse, minor impacts in all out-of-Valley locations because intrusions to these locations would be adjacent to previously developed areas. However, impacts in these areas can be directly related to the improvement of the views within the Valley.

CUMULATIVE IMPACTS

Projects approved or planned that could impact scenic resources within Yosemite National Park or close to park boundaries, and the impacts of those projects, would be the same as those described under Alternative 2. Cumulatively, Alternative 4 would result in a long-term, moderate, beneficial impact.

Cultural Resources

ARCHEOLOGICAL RESOURCES

Impacts to archeological resources are considered permanent unless otherwise noted.

As described for Alternative 2, every effort would be made to avoid archeological sites through careful project design and subsequent site-specific environmental compliance. If sites could not be avoided, all data recovery to retrieve important information would be done in accordance with the Yosemite Programmatic Agreement (see Vol. II, Appendix D).

Yosemite Valley

Yosemite Lodge and Vicinity

Undertakings proposed in the vicinity of Yosemite Lodge would involve major grading, trenching, and other earthmoving activities that would likely disturb intact deposits at all or portions of four archeological sites (prehistoric/historic American Indian habitation sites with moderate to high data potential). Actions include constructing parking lots and lodging units; realigning access roads and Northside Drive; placing utilities; and rehabilitating natural areas, similar to Alternatives 2 and 3. Data recovery excavations carried out in accordance with the Programmatic Agreement would reduce the intensity of adverse impacts from moderate to minor.

Lower Yosemite Fall

The impacts would be the same as these described for Alternative 2, except that the restroom would be built at the site of the existing parking lot, which would result in additional, direct impacts to one of the two prehistoric/historic American Indian sites with moderate data potential. Data recovery, carried out in accordance with the Programmatic Agreement (see Vol. II, Appendix D), would retrieve important information about the site prior to construction, thereby reducing the intensity of the adverse impact from moderate to minor.

Yosemite Village

Proposed undertakings include redesigning the National Park Service maintenance area; rehabilitating the Yosemite Village housing area; constructing a new collections storage facility adjacent to the visitor center; construction of a new fire station; and removing a picnic area. As described for Alternatives 2 and 3, these actions would involve grading, trenching, and other earthmoving activities that would potentially disturb portions of two prehistoric/historic American Indian habitation sites. Site data potential ranges from low to high. Data recovery, to retrieve important information conducted in accordance with the Programmatic Agreement, would reduce the intensity of adverse impacts from moderate to minor. The burial area in Yosemite

Village that is currently paved and used for materials staging would be restored to a natural condition, and protected from future development. All work in the vicinity of the burial area would be carefully designed to avoid disturbance to intact deposits, and would be monitored by archeologists and representatives of culturally associated American Indian tribes (as described in Alternative 2).

The Ahwahnee

Impacts would be the same as in Alternatives 2 and 3. With data recovery excavations, the resultant impact would be minor and adverse.

Housekeeping

Impacts would be the same as in Alternatives 2 and 3. With data recovery excavations, the resultant impact would be negligible.

Campgrounds

Impacts would be the same as in Alternatives 2 and 3. With data recovery excavations, the resultant adverse impacts would be minor. Beneficial impacts would be minor.

Curry Village

Impacts would be the same as in Alternatives 2 and 3. With data recovery excavations, the resultant impact would be negligible.

Merced River Restoration

Removing Sugar Pine Bridge would involve earthmoving that would possibly disturb some intact deposits at a prehistoric American Indian habitation site with high data potential (as described in Alternatives 2 and 3). In addition, removing Superintendent's Bridge would potentially impact a historic-era dump with unknown data potential (as described in Alternative 3). If sites could not be avoided, data recovery prior to construction would reduce the intensity of adverse impacts from moderate to minor.

Meadow Restoration

Impacts would be the same as described in Alternatives 2 and 3. With data recovery excavations, the resultant impacts would be minor and adverse or negligible.

Circulation Changes

Under this alternative, the construction of a major parking facility, vehicle check station, visitor center/transit center, shuttle parking, and light maintenance facility at Taft Toe would disturb or destroy three intact prehistoric/historic American Indian habitation sites (one with high data potential, and two with low data potential). There are also historic-era deposits with unknown data potential. If these sites could not be avoided, data recovery carried out in accordance with the Programmatic Agreement would retrieve important information prior to construction, and reduce the intensity of adverse impacts from moderate to minor or negligible.

As described for Alternatives 2 and 3, widening Southside Drive between El Capitan Bridge and Curry Village (with realignment at the Sentinel Bridge intersection, as well as other minor realignments) would involve grading that would disturb portions of one small prehistoric/historic American Indian habitation site with high data potential, one large prehistoric/historic American Indian habitation site with moderate data potential, and one large prehistoric/historic American Indian and Euro-American site with moderate data potential. Through careful project design every effort would be made to avoid known archeological sites. If these sites could not be avoided, data recovery prior to construction would reduce the intensity of adverse impacts from moderate to minor.

Establishing a new multi-use trail between Swinging Bridge and El Capitan Bridge south of and adjacent to Southside Drive would involve minor grading that would impact portions of two prehistoric and historic American Indian habitation sites (one with Euro-American archeological deposits) with high data potential, as described for Alternatives 2 and 3. Data recovery would reduce the intensity of adverse impacts from moderate to minor.

As described for Alternatives 2 and 3, realigning the multi-use paved trail between Yosemite Village and Mirror Lake would involve minor grading that would disturb portions of one prehistoric/historic American Indian site with high data potential. Data recovery carried out in accordance with the Programmatic Agreement would retrieve important information and reduce the intensity of adverse impacts from moderate to minor.

Establishing a new multi-use paved trail between the northern abutment of Sentinel Bridge and Yosemite Village would involve minor grading that could impact an archeological site exhibiting both prehistoric and historic components with high data potential. The park would strive to avoid adverse impacts by siting the trail in such a way as to avoid impacting the site. However, if such impacts were unavoidable, data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information and reduce the intensity of adverse impacts from minor to negligible.

Establishing a new multi-use paved trail between The Ahwahnee and the existing bicycle path to Mirror Lake would involve minor grading that would impact four previously recorded archeology sites. All four of these sites contain both prehistoric and historic components. Three of the four have been determined to be of high data potential, while the fourth has moderate data potential. The park would strive to avoid adverse impacts by siting the trail in such a way as to avoid impacting the site. However, if such impacts were unavoidable, data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information and reduce the intensity of adverse impacts from minor to negligible.

As described for Alternative 2, placement of multi-use paved trails, picnic areas, and campgrounds within the immediate vicinity of known archeological resources could result in long-term, minor, adverse impacts associated with visitor use, including artifact collection, soil compaction, and accelerated erosion. Given the potential for these impacts, sites subject to such visitor use would be monitored according to the Visitor Experience and Resource Protection Program, as described in Chapter 2. Through this monitoring program, threats and disturbances would be noted. Every effort would be made to avoid or reduce adverse impacts through changes

in visitor access, relocation of facilities, or archeological data recovery carried out according to stipulations of the Programmatic Agreement.

General Valley Actions

Impacts would be the same as described for Alternatives 2 and 3. With data recovery, direct impacts would be negligible and adverse. Indirect impacts, with mitigation, would be both minor and beneficial as well as negligible and adverse. Potential adverse impacts to known archeological sites in Yosemite Valley are shown in table 4-100.

Table 4-100
Potential Adverse Impacts to Known Sites in Yosemite Valley (Alternative 4)

Number of Sites with High Data Potential	Number of Sites with Moderate Data Potential	Number of Sites with Low Data Potential	Number of Sites with Unknown Data Potential
9	14	6	4

Out-of-Valley

El Portal

The following impact analysis is based on general land-use planning actions for El Portal, as described for Alternatives 2 and 3. The National Park Service would undertake site-specific design studies and environmental review to evaluate options for new housing and administrative facilities in El Portal. These studies would include, as necessary, additional resource surveys (i.e., archeological inventory and testing). The National Park Service would initiate further consultation with the State Historic Preservation Officer, the culturally associated American Indian tribes, and the public, as provided for in the Programmatic Agreement. A complete and detailed assessment of impacts to archeological resources would be presented as part of that review.

As described for Alternatives 2 and 3, several actions at Old El Portal and Village Center (e.g., constructing a multi-use paved trail, employee housing, and support facilities), would disturb or destroy portions of up to 14 prehistoric and historic-era archeological sites (11 of the sites have moderate data potential, one has low data potential, and two have unknown data potential). Through careful project design and subsequent site-specific environmental compliance, every effort would be made to avoid known archeological sites. If these sites could not be avoided, data recovery carried out in accordance with the Programmatic Agreement prior to construction would retrieve important information and reduce the intensity of adverse impacts from moderate to minor.

Developing day-visitor and employee parking in the Middle Road area would involve major grading and earthmoving activities, as described for Alternative 2. These actions would disturb major portions of two archeological sites: one prehistoric American Indian habitation site with historic-era deposits containing low data potential, and one historic-era site with unknown data potential. Through careful project design and subsequent site-specific environmental compliance, every effort would be made to avoid known archeological sites. If these sites could not be avoided, data recovery, carried out in accordance with the Programmatic Agreement, would retrieve

important information prior to construction, and reduce the intensity of adverse impacts from moderate to minor.

Constructing National Park Service and concessioner administrative facilities at Railroad Flat, as described for Alternatives 2 and 3, would involve major grading, trenching, and excavation, with the potential to disturb archeological deposits at portions of one prehistoric/historic American Indian habitation site with low data potential. Data recovery would retrieve important information, and reduce the intensity of adverse impacts from minor to negligible.

Constructing housing facilities at Hillside East and West, as described for Alternatives 2 and 3, would involve major grading, excavation, and trenching that would destroy major portions of an intact prehistoric and historic American Indian habitation site (with some Euro-American deposits) with high data potential. A site-specific data recovery program, negotiated between the National Park Service, the State Historic Preservation Office (SHPO), and local culturally associated American Indian tribes would recover important information, thereby reducing the intensity of adverse impacts from major to moderate.

Constructing housing and related facilities in Rancheria Flat would entail grading, trenching, and excavation that would potentially disturb intact archeological deposits at two archeological sites with moderate data potential. Data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information, thereby reducing the intensity of adverse impacts from moderate to minor.

Constructing high-density housing and support facilities at Hennessey's Ranch, as described for Alternative 3, would disturb a prehistoric American Indian habitation site and part of a historic-era ranch, both of which were heavily damaged when the Trailer Village was constructed; data potential of this site is unknown. Data recovery carried out in accordance with the Programmatic Agreement would retrieve important information and reduce the intensity of any adverse impacts.

Removing an abandoned wastewater treatment plant and restoring the area to natural conditions, as described for Alternatives 2 and 3, would be carefully designed to avoid disturbance to intact areas of a prehistoric American Indian habitation site and burial area. Actions would be monitored by archeologists and culturally associated American Indian people, in accordance with the Programmatic Agreement, and negligible impacts to archeological resources would be anticipated. Since surface conditions at this site would be restored to natural conditions, long-term impacts associated with the presence of this facility would be reduced. This would result in a long-term, minor, beneficial impact.

Similar to Alternatives 2 and 3, the Johnny Wilson Ranch (Riverside area), previously proposed for high-density housing (NPS 1996a), would not be developed. Instead, these archeological sites and burial area would continue to be relatively inaccessible.

Foresta and McCauley Ranch

Impacts would be similar to those in Alternative 2, with the exception that no day-visitor parking would be constructed at Foresta. Actions could impact archeological resources of unknown data

potential, depending on the design of any road improvements, stables facilities, and the location of proposed housing. Data recovery excavations would reduce the intensity of any adverse impacts.

Other Out-of-Valley Areas

Under this alternative, constructing day-visitor parking and support facilities at South Landing would have unknown impacts on archeological resources. Through careful project design and subsequent site-specific environmental compliance, every effort would be made to avoid known archeological sites. If archeological sites could not be avoided, data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information prior to construction and reduce the intensity of adverse impacts.

As described for Alternatives 2 and 3, reconstructing El Portal Road between the intersection of El Portal Road/Big Oak Flat Road and Pohono Bridge would involve widening the road corridor, potentially removing or disturbing a portion of a large prehistoric and historic-era American Indian habitation site with high data potential. Data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information and reduce the intensity of adverse impacts from major to minor.

Removing four residences at Cascades, as described for Alternatives 2 and 3, would involve minor grading and trenching that could disturb intact deposits at one prehistoric archeological site with unknown data potential. However, the project would be carefully designed to avoid ground disturbance in intact site areas, and would be monitored by archeologists to ensure site protection. By implementing these measures, negligible impacts would result.

Removing the Cascades Diversion Dam would not impact any archeological resources (the same as under Alternatives 2 and 3). Earthmoving and facility removal would be monitored by an archeologist in the event historic archeological features or artifacts associated with construction and use of the dam were discovered during removal.

As described for Alternatives 2 and 3, since the location and design of visitor centers associated with park entrance stations are unknown at this time, it is not possible to predict the potential for impacts to archeological resources. The park would conduct archeological inventory, site evaluation, and data recovery, as necessary, and further environmental review. In accordance with the Programmatic Agreement, the National Park Service would first seek to avoid impacts to any archeological resources, and would retrieve important scientific information at sites that could not be avoided, thereby reducing the intensity of any adverse impacts.

Archeological Resources Conclusion

Proposed project activities would have varied impacts on as many as 58 known archeological sites, with intensities of impacts depending on the potential of the sites to yield significant information about prehistoric and historic lifeways, and on the nature and design of proposed development. Descriptions of low, moderate, and high data potential are included in Chapter 3, Cultural Resources.

In all instances, where identified sites could not be avoided and would be disturbed, the park would carry out data recovery excavations in accordance with the Programmatic Agreement to

retrieve important scientific information, thereby reducing the intensity of adverse impacts. For some proposed project areas, information regarding the nature and importance of archeological resources is unknown; in these instances, the park would first inventory project areas, test/evaluate the significance of identified sites, and carry out appropriate data recovery excavations as necessary prior to construction disturbance.

Cumulative Impacts

Cumulative impacts would be the same as these described for Alternative 2, except this alternative would contribute to the loss of regional archeological resources as a consequence of the disturbance or degradation of as many as 58 additional known archeological sites. To mitigate adverse impacts, important information contained within these sites would be recovered according to stipulations of the Programmatic Agreement. Therefore, with appropriate mitigation, the cumulative adverse impacts associated with implementing this alternative, in conjunction with other past, present, and reasonably foreseeable future projects, would be minor.

ETHNOGRAPHIC RESOURCES

Yosemite Valley

Yosemite Lodge and Vicinity

Impacts would be the same as in Alternative 2. With mitigation, the resultant adverse impacts would be negligible; and beneficial impacts would be long-term and minor.

Yosemite Falls

Impacts would be the same as in Alternative 2. With mitigation, the resultant adverse impacts would be negligible; and beneficial impacts would be permanent and minor.

Yosemite Village

As described for Alternatives 2 and 3, rehabilitating the historic district housing area would improve habitat conditions for California black oak, a traditionally gathered resource. Conversely, constructing a new fire station in the historic district housing area would disturb a small portion of the same traditional gathering area, a contributing element of the Valleywide ethnographic landscape, thus causing long-term, minor, adverse impacts. Appropriate mitigating strategies would reduce the intensity of adverse impacts from minor to negligible. With mitigation, the resultant impact would be long-term, negligible, and adverse.

The Ahwahnee

Impacts would be the same as in Alternatives 2 and 3. There would be no impact to ethnographic resource.

Housekeeping

Impacts would be the same as in Alternatives 2 and 3. There would be a negligible, beneficial impact to ethnographic resources.

Campgrounds

Impacts would be the same as in Alternatives 2 and 3. Actions would result in a long-term, moderate, beneficial impact; and with mitigation, permanent, minor, adverse impacts.

Curry Village

Impacts would be the same as in Alternatives 2 and 3. Actions would result in negligible adverse impacts.

Merced River Restoration

Removing Sugar Pine, Stoneman, Housekeeping, and Superintendent's Bridges, along with the raised causeway between Sugar Pine and Ahwahnee Bridges, would have long-term, minor, beneficial impacts by partly restoring habitat in a traditional gathering area, a contributing element of the ethnographic landscape, the same as under Alternative 3. This could allow the recovery of traditionally used plants and enhance their availability for procurement.

Meadow Restoration

Impacts would be the same as in Alternatives 2 and 3. Impacts would be long-term, minor, and beneficial.

Circulation Changes

Constructing a visitor center, transit center, and day-visitor parking at Taft Toe would have long-term, minor, adverse impacts on the ethnographic landscape by disturbing or destroying a traditional gathering area, as described for Alternative 2. The National Park Service would consult with culturally associated American Indian tribes, in accordance with the Programmatic Agreement, regarding sensitive design guidelines and other appropriate mitigation (such as identifying and helping provide access to alternative resource-gathering areas), to reduce the intensity of the impacts from minor to negligible.

Realigning Southside Drive south of Sentinel Bridge would disturb a portion of a historic village area, as described for Alternative 3. This action would result in a permanent, minor, adverse impact on the Valleywide ethnographic landscape. The National Park Service, in consultation with culturally associated American Indian people, and in keeping with the Programmatic Agreement, would develop appropriate mitigating strategies for impacts to ethnographic resources. Such strategies could include recovering important archeological data, and using any other measures identified during consultation, which would reduce the intensity of adverse impacts from minor to negligible.

Widening Southside Drive between El Capitan Bridge and Curry Village, as described for Alternatives 2 and 3, would disturb portions of four historic villages, and possibly disturb resources at one traditional gathering area, although it may be possible to avoid this resource through careful site design. This would result in permanent, minor, adverse impacts to the Valleywide ethnographic landscape. The National Park Service, in consultation with culturally associated American Indian people, and in accordance with the Programmatic Agreement, would develop appropriate mitigation strategies for impacts to ethnographic resources. Such strategies, which could include identifying and helping provide access to alternative resource-gathering

areas, continuing to provide access to traditional use or spiritual areas, and screening new development from traditional use areas, would reduce the intensity of adverse impacts from minor to negligible.

As described for Alternatives 2 and 3, actions and related impacts associated with constructing multi-use paved trails in east Valley would not impact any ethnographic resources. Constructing a new multi-use paved trail between Swinging Bridge and El Capitan Bridge could disturb two historic village areas, causing permanent, minor, adverse impacts to the Valleywide ethnographic landscape. The National Park Service, in consultation with culturally associated American Indian tribes and in keeping with the Programmatic Agreement, would develop appropriate mitigation strategies for impacts to ethnographic resources. Such strategies could include recovering important archeological data, as well as using any other measures identified during consultation, which would reduce the intensity of adverse impacts from minor to negligible.

General Valley Actions

Impacts would be essentially the same as in Alternatives 2 and 3. With mitigation, the resultant impacts would be long-term, minor, and adverse.

Out-of-Valley

El Portal

The impact analysis presented below is based on general land-use planning actions for El Portal, and is based on incomplete information about the location and significance of ethnographic properties. The National Park Service would undertake site-specific design studies and environmental review to evaluate options for new housing and administrative facilities in El Portal. These studies would include, as necessary, additional resource surveys (i.e., ethnographic resources inventory and evaluation). The National Park Service would initiate further consultation with the State Historic Preservation Office, culturally associated American Indian tribes, and the public, as provided for in the Programmatic Agreement. A complete and detailed assessment of impacts to ethnographic resources would be presented as part of that review.

Constructing single-family homes at Hillside West, studio apartments at Hillside East and West, and employee housing at Village Center, would destroy a large portion of a historic village area, resulting in a permanent, major, adverse impact similar to Alternatives 2 and 3. The portions of this historic village site that are known to contain human burials would be protected from development. As described in Alternatives 2 and 3, mitigation would reduce the intensity of adverse impacts from major to moderate. Constructing single-family homes, apartments, and housing support facilities at Rancheria Flat, Hennessey's Ranch, and Old El Portal, as well as administrative facilities at Railroad Flat, would disturb or destroy portions of at least three traditional gathering areas, resulting in long-term, minor, adverse impacts. These impacts would be reduced in intensity, as described in Alternatives 2 and 3.

Removing the abandoned wastewater treatment facility would have permanent, moderate, beneficial impacts on a prehistoric village and burial area by eliminating modern, intrusive development (the same as under Alternatives 2 and 3). To ensure protection of intact deposits and burials, this removal would be designed and implemented carefully, and the work would be

monitored by an archeologist and representatives from culturally associated American Indian tribes.

Other Out-of-Valley Areas

Impacts associated with the construction of an access route, parking, and other amenities at South Landing under this alternative are unknown, due to the lack of information regarding the location and significance of ethnographic properties. The National Park Service would undertake site-specific studies and environmental review to evaluate options for where to build the structures. These studies would include, as necessary, additional resource surveys (i.e., ethnographic resources inventory and evaluation). The National Park Service would initiate further consultation with the State Historic Preservation Office, culturally associated American Indian tribes, and the public, as provided for in the Programmatic Agreement. A complete and detailed assessment of impacts to ethnographic resources would be presented as part of that review.

The National Park Service has consulted with the American Indian Council of Mariposa County, Inc., during planning and preliminary design for the reconstruction of El Portal Road. The proposed reconstruction of the easternmost portion of the road, the removal of the Cascades Diversion Dam and screenhouse, and the removal of the four Cascades residences would not impact any known ethnographic resources.

Ethnographic Resources Conclusion

Proposed undertakings would have varied impacts (from potentially major to negligible), depending in part on the nature and design of proposed development and the sensitivity of the different traditional use areas. In Yosemite Valley, proposed actions would disturb or destroy parts of up to eight traditional gathering areas; would add or expand modern development at eight historic village areas; and would add development in at least one area figuring in oral traditions. However, facility removal and ecological restoration would benefit up to five traditional gathering areas by enhancing conditions for plant resources; and would remove modern development from three historic village areas. In general, actions in Yosemite Valley would have long-term, minor, adverse impacts to the Valleywide ethnographic landscape.

In El Portal, proposed actions are designed to maximize administrative, park operations, and residential development. The precise nature and intensity of adverse impacts to ethnographic resources in El Portal, Foresta, McCauley Ranch, South Landing, and other out-of-Valley areas are unknown. In El Portal, however, proposed actions would most likely have permanent, moderate to major, adverse impacts by destroying portions of historic villages and traditional gathering areas, and by adding concentrated residential use in some areas that are currently undeveloped. As in Yosemite Valley and other park areas, known burial areas would be protected from disturbance, and modern facilities in burial areas would be removed. The National Park Service would conduct an ethnographic resources inventory and evaluation for El Portal, as well as other out-of-Valley areas, and would continue consulting with culturally associated American Indian tribes to seek ways to avoid, minimize, and mitigate potential adverse impacts to ethnographic resources. These measures could include setting aside some areas for traditional

uses; designing new development to avoid the most sensitive areas; screening development from traditional use areas; and directing visitor and residential use away from sensitive areas.

Cumulative Impacts

Cumulative impacts on ethnographic resources would be the same as those described for Alternatives 2 and 3. Minor to moderate cumulative impacts would accrue from implementing this alternative, in conjunction with past, present, and reasonably future undertakings.

CULTURAL LANDSCAPE RESOURCES (INCLUDING INDIVIDUALLY SIGNIFICANT HISTORIC SITES AND STRUCTURES)

Yosemite Valley

Natural Systems and Features

Under Alternative 4, large portions of the natural landscape, which has influenced the physical development in Yosemite Valley, would be rehabilitated and restored to natural conditions. The major focus of this effort would be the long-term restoration of the Merced River corridor and the rehabilitation of eight meadows that are historically significant and contribute to the Valley-wide cultural landscape. California black oak woodlands would be rehabilitated and restored to natural conditions, and general environmental restoration would enhance the historic vegetative mosaic of coniferous forest, oak woodlands, and open meadows. These actions would collectively result in a long-term, beneficial impact on the cultural landscape of the Valley.

Historic Land Use Patterns

Historic land use patterns, which have concentrated visitor services and administration in the east Valley, would be dramatically altered. Construction of day-visitor parking, transit, and visitor facilities at Taft Toe would shift the major focus of arrival and orientation in Yosemite Valley from its historic location at Yosemite Village. This would result in a permanent, major impact in the spatial organization of the cultural landscape. The National Register Historic Districts and properties of Camp Curry, Yosemite Village, The Ahwahnee, and others would remain, and would largely continue to function as they did historically, with the exception of Yosemite Village, as noted above. While camping would remain in the Upper and Lower Pines Campgrounds and Camp 4 (Sunnyside Campground), relocating other Valley campgrounds currently situated along the Merced River would be a change in historic land use patterns, resulting in a permanent, minor, adverse impact.

Historic Circulation Systems

Proposed changes to circulation systems throughout Yosemite Valley would result in removal of one historic road segment, realignment of a portion of Northside Drive, and realignment and widening of a portion of Southside Drive. All three of these historic roads are contributing structures to the proposed Yosemite Valley Cultural Landscape Historic District. The historic road segment currently bisecting Upper and Lower River Campgrounds would be removed. A segment of Northside Drive at Yosemite Lodge would be realigned, and the segment between

Yosemite Lodge and El Captain crossover would be closed to motor vehicles. While this would significantly alter the way in which visitors experience this historic "loop" circulation pattern through the Valley, it would not result in any physical changes to this segment of Northside Drive itself. A portion of Southside Drive would be widened to accommodate two-way traffic, and the segment near the Yosemite Chapel would be realigned, changing the physical structure of this contributing element. Other changes in the circulation system consist of adding new multi-use paved trails, rehabilitating or realigning existing multi-use paved trails, and constructing day-visitor parking at Taft Toe near El Capitan crossover. Collectively, these changes would result in a long-term, moderate, adverse impact to historic circulation systems that contribute to the cultural landscape. Impacts resulting from removal or alteration of historic road segments would be mitigated by documentation, thus preserving a historical record (although the resource would be changed or would cease to exist). Impacts resulting from addition of new (and modification of existing) multi-use paved trails and addition of a traffic check station would be partly mitigated by the use of compatible design; thus, the intensity of these adverse impacts would be reduced from moderate to minor. Removing non-contributing roads from Ahwahnee and Stoneman Meadows would have a permanent, minor, and beneficial impact.

In general, changes to physical features and addition of new structures and facilities within the Valleywide cultural landscape would follow design guidelines consistent with the *Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation* (*Secretary's Standards* [USDOI 1983]). In this manner, the potential for impacts resulting from addition of non-historic facilities would be reduced.

Historic Structures

Restoration of the Merced River would result in the removal of Sugar Pine and Stoneman Bridges, both listed in the National Register of Historic Places. This would result in the loss of two individually significant historic structures, resulting in a permanent, major, adverse impact. Although the physical structures would be lost, these impacts would be mitigated through documentation and salvage of historic materials, thus reducing the intensity of adverse impacts from major to moderate. Documentation of Sugar Pine and Stoneman Bridges has been completed, thus preserving a historical record of the resources.

The individually significant Superintendent's House (Residence 1) and its associated garage would be removed. As in Alternative 1, this would result in the loss of the historic structure; therefore there would be no additional adverse impact. However, this action would result in immediate, rather than eventual loss. The structures and their setting have already been documented; thus, although the physical structures would be removed a historical record has been preserved. In addition, the National Park Service would salvage historic materials as stipulated in the Programmatic Agreement.

Other historic structures that are not individually significant but contribute to the Valleywide cultural landscape would be removed. These structures consist of Superintendent's and Housekeeping Bridges, the concessioner stable and its associated structures, three pedestrian bridges at Lower Yosemite Fall, and riprap, wing, and check dams along the Merced River and its tributaries. In addition, three pedestrian bridges at Lower Yosemite Fall would be

rehabilitated or rebuilt, and one would be relocated. These actions would result in the loss or change in contributing elements of the Valleywide landscape, resulting in a permanent, moderate, adverse impact. Although the physical structures would be lost or changed, these impacts would be mitigated through documentation, thus reducing the intensity of adverse impacts from moderate to minor.

Actions at Yosemite Lodge and Housekeeping Camp would not result in the loss of any historic structures, or landscape resources, as there are no historic structures or landscape resources in either of these developed areas. Therefore, no impacts would occur.

Historic Districts and Developed Areas

Yosemite Village: The historic design and spatial organization of the Yosemite Village area would be rehabilitated, resulting in the preservation of many of the historic structures, removal of non-contributing structures, redevelopment of non-contributing areas within the district, and restoration of some areas to natural conditions. This would result in a permanent, minor, beneficial impact to the design and spatial organization of the district. However, historic land uses would change significantly (e.g., removing primary visitor arrival and orientation, removing National Park Service stable and parkwide administration), although many of the land uses historically associated with the village, such as museum facilities and employee housing, would remain. In addition, the re-establishment of historic viewsheds from within the village and the protection of the California black oak woodland would enhance the historic character of the developed area, resulting in a permanent, minor, beneficial impact.

Natural resource restoration and redevelopment at Camp 6, Yosemite Village, and Ahwahnee Meadow would result in the removal of several historic structures that contribute to the cultural landscape. These buildings consist of the Concessioner Headquarters Building; the Village Garage and associated apartment and three shop buildings; the “Y” apartments; the Ahwahnee Row houses, cottages, converted cabins, laundry room, and garage. These actions would result in the loss of historic structures, resulting in a permanent, moderate adverse impact to the cultural landscape. The loss of the historic structures would be mitigated by HABS/HAER documentation, and salvage of historic materials as stipulated in the Programmatic Agreement. In this manner, a historical record would be preserved even though the structures themselves would cease to exist. The intensity of adverse impacts would thus be reduced from moderate to minor. In cases where historic structures would be lost, the National Park Service would first consider the possibility of relocation and adaptive reuse in another location within the park.

Actions at the National Park Service maintenance area would result in the loss of thirteen historic structures that contribute to the cultural landscape, resulting in a permanent, moderate adverse impact to the cultural landscape (the National Park Service Operations Building [Fort Yosemite] would be retained). The loss of these structures would be mitigated through documentation and salvage of historic materials, as stipulated in the Programmatic Agreement. Thus, although the structures themselves would cease to exist, a historical record would be preserved, reducing the intensity of adverse impacts from moderate to minor. In cases where historic structures would be lost, the National Park Service would first consider the possibility of relocation and adaptive reuse in another location within the park. The area would be redeveloped

for district operational needs, resulting in the addition of non-historic facilities adjacent to the Yosemite Village Historic District. The impact associated with this would be mitigated by using compatible design, thus reducing the intensity of impact from minor to negligible.

In the Yosemite Village Historic District, individually contributing structures would be retained, and some would be rehabilitated for adaptive reuse. The National Park Service Administration Building would be rehabilitated for a new use as a natural history museum. The Museum/Valley District Building would be rehabilitated for use solely as a cultural history museum. Rehabilitation of these structures would follow the *Secretary's Standards* (USDOI 1983), and thus would have negligible impacts on the historic structures and the district itself. The Visitor Center and auditoriums would be rehabilitated for use as part of the educational function in Yosemite Village (to house the Yosemite Museum collection, including the research library and archives, and provide space for theater productions and special programs). A new fire station would be constructed adjacent to the residential area. This would result in a permanent, minor, adverse impact to the historic district. This impact would be mitigated by designing the new facility to be compatible with the district in terms of scale, massing, materials, orientation, and design. Thus, the intensity of this adverse impact would be reduced to negligible.

Curry Village and the Camp Curry Historic District: Actions proposed for the Curry Village developed area and the Camp Curry Historic District would result in the loss of historic structures; construction of new facilities within the historic district; and construction of an employee housing area adjacent to the historic district. Collectively, these actions would result in permanent, major, adverse impacts, as described below.

The Curry Orchard parking area, 277 historic guest tent cabins, some historic comfort stations, the Tresidder Residence, Cabin 90A/B, and the Huff House would be removed, resulting in a permanent, major, adverse impact to the historic district. The intensity of this impact would be reduced through site design, by retaining to the extent possible, the general configuration of the remaining 150 tent cabins around the central core of the village, in keeping with the historic design and extent of Camp Curry. The intensity of this impact would also be reduced by documentation of historic structures as described in the Programmatic Agreement. In this manner, although the physical structures would be lost, a historical record would be preserved. The resultant intensity of these adverse impacts would therefore be moderate.

Other actions in the historic district would result in the rehabilitation and adaptive reuse of several individual historic structures. These structures consist of Mother Curry Bungalow, Stoneman Lodge, the 48 cabins-with-bath, Cottage 819, the Lounge, and the Registration Building. Rehabilitation would be accomplished in keeping with the *Secretary's Standards* (USDOI 1983); thus, there would be negligible impact on historic structures.

Construction of new lodging units, a cafeteria, and two new parking areas (one at the west end to serve the bungalows, and one at the east end to serve the tent cabins) would add non-historic facilities within the historic district, resulting in a permanent, major, adverse impact. This impact would be partly reduced through the use of compatible design; retention of original Camp Curry cluster arrangement; and use of compatible materials, thus potentially reducing the intensity of adverse impacts from major to moderate. Construction of employee housing facilities, a fire station, and the campground check station and recreational vehicle dump station would introduce

non-historic facilities adjacent to the historic district, potentially resulting in a moderate, adverse impact. This impact would be reduced through use of compatible design and appropriate screening, thus reducing the intensity of the impact from moderate to minor.

The Ahwahnee: Impacts under this alternative would be the same as Alternative 2. With mitigation, the resultant impacts would be negligible.

Historic Sites

Actions at Camp 4 (Sunnyside Campground) would result in the loss of five contributing campsites and the construction of five replacement campsites adjacent to the historic site, resulting in a permanent, minor, adverse impact. These impacts would be mitigated through documentation of resources to be removed, and design of the additional campsites to be compatible with the existing historic site in terms of scale, massing, materials, and orientation. These measures would reduce the intensity of adverse impacts from moderate to minor.

Historic Orchards

Lamon, Hutchings, and Curry Orchards would neither be removed nor cultivated. Eventually, as in Alternative 1, this would result in the loss of these resources. The loss of these resources would be mitigated through initiation of a genetic conservation program and documentation of the orchards; thus, a historical record and representative plants would be preserved, although the orchards would cease to exist.

Out-of-Valley Resources

El Portal

The following impact analysis is based on general land-use planning actions for El Portal, as described for Alternatives 2 and 3. The National Park Service would undertake site-specific design studies and environmental review to evaluate options for new housing and administrative facilities. The National Park Service would initiate further consultation with the State Historic Preservation Officer, the culturally associated American Indian tribes, and the public, as provided for in the Programmatic Agreement. A complete and detailed assessment of impacts to historic properties would be presented as part of that review.

As described for Alternatives 2 and 3, constructing single-family homes in Old El Portal would not impact any historic resources, nor would constructing housing and a day care center at Rancheria Flat (the three historic National Lead Company residences would be retained).

Similar to Alternatives 2 and 3, constructing single-family homes at Hillside West and studio apartments at Hillside East and West would not impact any historic resources. Structures built adjacent to El Portal Chapel (the old school) would be designed to be compatible with the historical setting. Constructing high-density housing and support facilities at Hennessey's Ranch would not impact any historic structures. Prior to design, the National Park Service would inventory and evaluate the importance of potential cultural landscape features at this location, remnants of Hennessey's farming operation. If any significant resources could not be avoided in site design, the National Park Service would undertake further environmental review and impact mitigation prior to construction.

Constructing employee and day-visitor parking in the Village Center area, as well as administrative facilities for the National Park Service and concessioner at Railroad Flat and a multi-use paved trail between Rancheria Flat and Village Center (through Hennessey's Ranch), would not impact any historic structures or cultural landscape resources (as described for Alternatives 2 and 3).

Similar to Alternatives 2 and 3, constructing apartments and other community and commercial facilities, as well as the magistrate's court, at El Portal Village Center, could impact historic resources (such as the El Portal Market, the Railroad residences, the old El Portal Store, and the El Portal Hotel). The precise nature of impacts on historic resources is unknown, pending the siting and design of the facilities, which would be the subject of future, tiered, site-specific environmental compliance. Every effort would be made to avoid or otherwise mitigate adverse impacts such as through sensitive, compatible design, and screening of modern development from historic structures. Should avoidance or adverse impacts prove impossible, documentation stipulated in the Programmatic Agreement would reduce the intensity of the adverse impacts.

As described for Alternatives 2 and 3, the historic El Portal Hotel would be adaptively rehabilitated or removed. Adaptive rehabilitation would be undertaken in accordance with the *Secretary's Standards* (USDOI 1983). Because removal of the individually significant structure would be a major adverse impact, the National Park Service would follow stipulations of the Programmatic Agreement reducing the intensity of this adverse impact from major to moderate.

Foresta and McCauley Ranch

At Foresta, there would be no impact on historic resources as a result of constructing single-family homes and rehabilitating the campground (there are no historic resources in the area). Access improvements through Foresta to McCauley Ranch, with possible replacement of the Crane Creek bridge, could (depending on location and design) adversely impact potential historic resources (the Foresta Road and the Crane Creek bridge) through loss or significant alteration. Under this alternative, constructing concessioner and National Park Service stables, as well as trails maintenance facilities at McCauley, would have unknown impacts on historic resources. Historic properties would be inventoried and evaluated for National Register eligibility, according to stipulations of the Programmatic Agreement. The National Park Service would avoid adverse impacts to the extent possible, and would mitigate any potential adverse impacts.

Merced River Gorge

Impacts would be the same as in Alternative 2. With mitigation, the resultant impacts would be permanent, moderate, and adverse.

Other Areas

Constructing day-visitor parking and support facilities at South Landing under this alternative would have unknown impacts on historic resources. The National Park Service would conduct resource inventories, evaluations for National Register significance, and consultations according to stipulations of the Programmatic Agreement. The National Park Service would avoid adverse impacts to any historic resources to the extent possible, and would mitigate any potential adverse impacts according to stipulations in the Programmatic Agreement.

Constructing new visitor centers at park entrance stations would have an unknown impact on historic resources. These areas would be inventoried for historic structures and landscape resources, according to stipulations of the Programmatic Agreement. The National Park Services would avoid adverse impacts to the extent possible, and would mitigate any potential adverse impacts according to the stipulations of the Programmatic Agreement.

At Badger Pass, establishing day-visitor parking and associated amenities would have no impacts on historic resources. The National Park Service has evaluated the ski lodge complex and found that it has been altered and lacks the integrity necessary for it to be considered eligible for the National Register of Historic Places (NPS 1987a).

Cultural Landscape Resources Conclusion

Proposed undertakings would have varied impacts on historic sites, structures, and cultural landscape resources. Major to minor, permanent, adverse impacts would result from the removal or modification of historic buildings and structures, or from the introduction of modern facilities and development either within historic districts, or within sight. Designing new facilities to be compatible with historic structures and carrying out standard mitigation measures (e.g., HABS/HAER documentation) under the Programmatic Agreement would reduce the intensity of adverse impacts.

Beneficial impacts would result from measures intended to restore native vegetation communities in patterns more in keeping with the cultural landscape and historic setting. The removal of non-contributing facilities and development from historic areas would also have beneficial impacts. The adaptive use of historic buildings would assist their long-term preservation, and would be carried out in accordance with the *Secretary's Standards* (USDOI 1983).

In Yosemite Valley, the new development at Taft Toe under this alternative would result in adverse impacts to many of the significant characteristics of the landscape (similar to Alternative 3), affecting such attributes as patterns of land use, circulation patterns, spatial organization, and response to natural features. In addition, this alternative would result in adverse impacts to individual features, such as Sugar Pine, Stoneman, Superintendent's, and Housekeeping Bridges, due to ecological restoration of the Merced River corridor. Beneficial impacts to the Valleywide cultural landscape would result from such actions as meadow restoration, removal of non-contributing structures, and ecological restoration of the riparian corridor along Yosemite Creek and the Merced River south of Yosemite Lodge. New development would be designed to be compatible with existing historic districts or settings to the greatest extent possible, and adverse impacts to individual features would be mitigated according to stipulations of the Programmatic Agreement. The impacts to the overall character of the Valleywide cultural landscape, with mitigation, would be reduced from major to moderate.

For some project areas, the impacts on historic properties are unknown until further site-specific historic resource studies are undertaken, and project designs are more fully developed. In these instances, the park would carry out any necessary inventories; evaluations of National Register significance; consultation with the State Historic Preservation Officer, culturally associated American Indian tribes and the public; and treatment/mitigation as stipulated in the Programmatic Agreement prior to any construction disturbance.

Cumulative Impacts

Cumulative impacts on historic sites, structures, and cultural landscape resources would be the same as under Alternatives 2 and 3. In Yosemite Valley, as well as in a regional context, implementation of this alternative would result in minor, cumulative, adverse impacts in conjunction with other past, present, and reasonably foreseeable future actions.

MUSEUM COLLECTION (INCLUDING ARCHIVES AND RESEARCH LIBRARY)

Impacts to the museum collection under this alternative would be the same as those for Alternative 3. Actions would result in long-term, major, beneficial impacts to the museum collection.

Museum Collection Conclusion

Housing the collection and archival materials in a central facility would have moderate to major, beneficial impacts on the materials, and would significantly improve the park's effectiveness in managing and protecting these resources. Access to the materials would be enhanced for researchers and others, with ample space to carry out research and other activities. With the proximity of exhibit space and repository facilities, impacts associated with transporting objects is also reduced. The park would be able to comply with the National Park Service *Museum Handbook* (NPS 1990a) and *Director's Order 28 – Cultural Resource Management Guideline* (NPS 1998l), as well as the *Draft Director's Order 24-Standards for National Park Service Museum Collections* (NPS 1999e).

Cumulative Impacts

Cumulative impacts on the museum collection would be the same as Alternative 3. Implementation of this alternative would have minor, cumulative, beneficial impacts on the museum collection in conjunction with other past, present, and reasonably foreseeable future actions.

SECTION 106 SUMMARY

As described for Alternatives 2 and 3, under regulations of the Advisory Council on Historic Preservation (36 CFR 800.9) addressing the criteria of effect and adverse effect, undertakings proposed under this alternative would have the potential to adversely affect significant historic properties. Ethnographic resources would be disturbed or destroyed by construction occurring in traditional plant-gathering areas, historic village sites, and/or places holding special sacred and spiritual significance to American Indians. Historic sites, structures, districts, and cultural landscape features would also be adversely affected by undertakings entailing substantial facility alteration or removal, or the introduction of modern non-contributing development within or in proximity to historic districts and sensitive landscape areas. To mitigate adverse effects, the park would carry out HABS/HAER documentation, salvage historic materials, develop cooperative agreement provisions for traditional plant gathering, or other suitable mitigation in accordance with the Programmatic Agreement.

Many archeological resources having varied potential to yield prehistoric and historic information would be affected by ground-disturbing activities. To avoid adverse effects to archeological resources, the park would carry out data recovery to retrieve important information, in accordance with the Programmatic Agreement.

No effects to the park's museum collection and archives would result from housing materials in a central facility with adequate environmental and security controls. The rehabilitation and adaptive use of historic buildings, restoration of vegetation contributing to historic settings and the cultural landscape, and the removal of non-contributing structures and landscape elements would also have no adverse effect on historic properties. Rehabilitation would be carried out in accordance with the *Secretary's Standards* (USDOI 1983).

For project areas lacking sufficient cultural resource data or design information to adequately assess effects, the park would carry out inventories, evaluate identified resources for National Register significance, and recommend avoidance or appropriate treatment/standard mitigation measures prior to construction disturbance.

Merced Wild and Scenic River

This assessment is based on the *Merced Wild and Scenic River Comprehensive Management Plan/FEIS (Merced River Plan)*, and its management elements. The applicable Merced Wild and Scenic River segments are 2 (Yosemite Valley), 3A and 3B (Impoundment and Gorge), 4 (El Portal), and 7 (Wawona). See Vol. IA, Chapter 3, Affected Environment, for further discussion on the management elements of the *Merced River Plan*.

Alternatives have been assessed within a river segment with regard to: (1) impacts on the Outstandingly Remarkable Values, which reflect the values for which the river was designated by Congress; (2) compatibility with classifications; (3) compatibility with the Wild and Scenic Rivers Act Section 7 determination process; (4) consistency with the River Protection Overlay; and (5) consistency with management zoning. The *Merced River Plan*, which established the River Protection Overlay, management zoning, Wild and Scenic Rivers Act Section 7 determination process, and the Visitor Experience and Resource Protection framework (within the wild and scenic river boundaries), is discussed as a cumulative project.

Consistency of the *Final Yosemite Valley Plan/SEIS* alternatives with the Wild and Scenic River boundaries are analyzed indirectly through the analysis of *Final Yosemite Valley Plan/SEIS* consistency with the *Merced River Plan* management zoning.

YOSEMITE VALLEY (SEGMENT 2)

Outstandingly Remarkable Values Impacts

Outstandingly Remarkable Values for this segment are scenic, geologic processes/conditions, recreation, biological, cultural, and hydrologic processes. A description of the Outstandingly Remarkable Values are found in Vol. II, Appendix B. Potential impacts of this alternative to these Outstandingly Remarkable Values are shown in table 4-101 below.

Actions to implement the River Protection Overlay would have beneficial impacts to the scenic, recreation, biological, cultural, and hydrologic processes Outstandingly Remarkable Values. The

River Protection Overlay prescription would be an important parameter in implementing the actions listed in table 4-101.

The campground-related actions would have an overall beneficial effect on the scenic Outstandingly Remarkable Values due to restoration of areas visible from the river. These actions would not adversely impact the recreation Outstandingly Remarkable Values because camping opportunities would be retained. The campground-related actions would have an overall beneficial impact on the biological and hydrologic processes Outstandingly Remarkable Values because of restoration of riparian areas, and campsites would be removed from highly valued resources and close proximity to the river.

The Housekeeping Camp-related actions would have a long-term, beneficial effect on the scenic Outstandingly Remarkable Values due to restoration of areas visible from the river. Removal of Housekeeping Camp units could have an adverse effect on cultural Outstandingly Remarkable Values due to potential disturbance of river-related archeological resources. The actions at Housekeeping Camp would have a beneficial impact to the biological and hydrologic processes Outstandingly Remarkable Values because or restoration of riparian areas and because Housekeeping Camp lodging units would be removed from highly valued resources and from close proximity to the river. These actions would not adversely impact the recreation Outstandingly Remarkable Values because Housekeeping units would be retained.

Actions at Yosemite Lodge would have beneficial and adverse impacts on the Outstandingly Remarkable Values. The removal of Yosemite Lodge units and the restoration of the former cabins area and the area between Yosemite Lodge and the Merced River would have a beneficial impact on the biological and hydrologic processes Outstandingly Remarkable Values. The relocation of Northside Drive and construction of parking would have a minor, adverse impact on the hydrologic processes Outstandingly Remarkable Values because they would be placed in the 100-year floodplain and would interfere with the 100-year flood event; they would also have an indirect beneficial impact because lodging units (which impede flood flow more than roads and parking lots) can be constructed outside of the boundary. As described in the Water Resources section of this chapter, impacts to hydrologic processes would be minimal, because flood flow in this area is low velocity, and is not appreciably affected by parking areas or roads. The construction of lodging units would result in minor, adverse radiating impacts on the meadow and riparian communities inside the boundary.

At Curry Village, cultural Outstandingly Remarkable Values could be adversely affected due to potential disturbance of river-related archeological resources during Curry Village redevelopment. There would be no impact to the hydrologic processes Outstandingly Remarkable Values, because Curry Village is located outside of the floodplain. There would be minor, adverse radiating impacts on river-related vegetation due to trampling.

Table 4-101 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
Actions to Implement River Protection Overlay					
• Remove Sugar Pine, Housekeeping, Superintendent's, Stoneman Bridges, and Yosemite Creek (pedestrian) bridge	Scenic	Potentially improves view of waterfalls, cliffs, and forest/meadow interface from the river by encouraging restoration	Long-term	NA	Minor, beneficial
• Remove campsites, and campground infrastructure from River Protection Overlay at Upper Pines, Lower Pines, North Pines, Upper River, Lower River, and Backpacker's campgrounds	Biological	Condition of river-related habitats (e.g., riparian areas and meadows) would be monitored and visitor use managed; restoration of damaged habitat is encouraged	Long-term	NA	Moderate, beneficial
• Remove Housekeeping Units from River Protection Overlay • Remove parking from River Protection Overlay at Camp 6	Cultural	River Protection Overlay specifically accommodates preservation and protection of significant archeological sites, ethnographic resources, historic structures, and landscape features	Long-term	NA	Minor, beneficial
• Remove former Superintendent's House (Residence 1) from River Protection Overlay • Remove picnic area at Swinging Bridge • Restore areas where development is removed from the River Protection Overlay • Restore River Protection Overlay near Yosemite Lodge	Hydrologic processes	Contributes to restoration of natural flood regime; limits unnatural erosion; stabilizes banks (where applicable); allows for the main channel to link with backwater areas, tributaries, and groundwater systems; and allows river to meander more freely (where applicable) by limiting and potentially removing facilities	Long-term	NA	Major, beneficial
Campgrounds					
• Upper and Lower River, North Pines, and a portion of Lower Pines Campgrounds would be removed and restored	Scenic	Removal of facilities (i.e., construction equipment) would be visible from river	Short-term	None	Minor, adverse
• Former Group Campground and Backpackers Campground (currently abandoned) restored	Scenic	Some new walk-in and drive-in sites would be visible from the river	Long-term	None	Minor, adverse
	Scenic	Restoration of these areas to natural conditions enhances scenic interface of river, meadow, and forest	Long-term	NA	Moderate, beneficial

Table 4-101 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
• New walk-in sites at Upper Pines, Camp 4 (Sunnyside Camp), Tenaya Creek, South Camp, and Backpackers/South Camp • New drive-in sites at Upper Pines • Yellow Pine retained as volunteer group campground	Biological	Restoration of riparian, meadow, wetland, and river-related vegetation would occur where campgrounds are removed; visitor use of river originating from campgrounds would decrease, resulting in less trampling of riparian habitat	Long-term	NA	Moderate, beneficial
	Biological	Removal of facilities (restrooms, lateral sewer lines, etc.) would result in disturbance to vegetation communities	Short-term	Revegetation, trenching guidelines	Negligible, adverse
	Biological	River-related vegetation at new campgrounds would be degraded; vegetative cover at existing campground (Yellow Pine) would continue to be degraded; impacts associated with visitor use/travel would radiate from the new camp sites	Long-term	Fencing to protect sensitive areas, campsite definition, path definition	Minor, adverse
	Cultural	Construction of new campground facilities could result in damage to river-related archeological resources	Long-term	Archeological excavation	Minor, adverse
	Cultural	Construction of campground facilities could damage traditional use areas	Long-term	Consultation	Minor, adverse
	Cultural	Removal of Upper and Lower River Campgrounds and restoration to natural conditions would result in improved conditions for traditional gathering	Long-term	NA	Minor, beneficial
	Hydrologic Processes	Removal and restoration of campgrounds would allow the river to meander more freely; removal of facilities would contribute to restoration of the flood regime	Long-term	NA	Major, beneficial
	Hydrologic Processes	Concentration of visitors at the new campsites would have radiating impacts on the riverbanks due to trampling, resulting in bank destabilization and unnatural erosion	Long-term	Fencing to protect sensitive areas, campsite definition, path definition	Minor, adverse
	Hydrologic Processes	Some new walk-in sites and pathways at Upper Pine would be in floodplain; Yellow Pine Campground would be in floodplain	Long-term	Pathways and campsites designed to minimally affect flood flow	Minor, adverse

Table 4-101 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
Lodging					
• Remove 212 Housekeeping Camp units and restore area	Scenic	Construction and deconstruction at Yosemite Lodge, Curry Village, and Housekeeping Camp would be visible from the river	Short-term	None	Minor, adverse
• Redevelop Yosemite Lodge area • Remove Maple, Juniper, Laurel, Hemlock, and Alder units at Yosemite Lodge from the 100-year floodplain	Scenic	Restored area at Housekeeping Camp and near Yosemite Lodge would be visible from the river, providing enhanced views of interface of river, meadow, and forest	Long-term	NA	Minor, beneficial
• Area where Yosemite Lodge cabins were removed is restored to natural conditions • Redevelop Curry Village area, including new lodging, housing, and parking areas	Biological	Removal of Housekeeping Camp from the River Protection Overlay would allow restoration of riparian vegetation; visitor use of river originating from Housekeeping Camp would decrease, resulting in less trampling of riparian habitat.	Long-term	NA	Moderate, beneficial
	Biological	Retention of Housekeeping Camp units would result in continued radiating impacts to sensitive riparian areas and habitat fragmentation	Long-term	Fence sensitive areas; direct use to more resilient areas	Adverse impacts described in No Action Alternative continue
	Biological	There would be restoration of river-related vegetation at Yosemite Lodge	Long-term	NA	Moderate, beneficial
	Biological	Construction of lodging units would have radiating impacts (associated with visitor use) to the meadow and riparian communities nearby	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse
	Cultural	Construction and demolition activities at Housekeeping Camp, Yosemite Lodge, and Curry Village could result in damage to archeological resources	Long-term	Archeological excavation	Minor, adverse
	Hydrologic Processes	Removal of Yosemite Lodge units from the floodplain would contribute to the restoration of the natural flood regime	Long-term	NA	Major, beneficial
	Hydrologic Processes	Construction of lodging units would have radiating impacts (associated with visitor use) to the riverbanks nearby, including bank destabilization and unnatural erosion	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse

Table 4-101 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
	Hydrologic Processes	Small portion of Housekeeping Camp would continue to impede flood flows	Long-term	None	Adverse impacts described in No Action Alternative continue
Roads					
• Remove roads and restore at: - Stoneman Meadow - South Ahwahnee Meadow	Scenic	Retained roads, and the vehicles on them, are visible from riverbank and river; meadows are specifically identified in the scenic Outstandingly Remarkable Value, and roads through meadows impact the scenic quality of the meadows	Long-term	None	Adverse impacts described in No Action Alternative continue
• Close Northside Drive to motor vehicles from Yosemite Lodge to El Capitan crossover and convert to multi-use trail	Scenic	Removal of roads from Ahwahnee and Stoneman Meadows improve scenic views of the meadows	Long-term	NA	Major, beneficial
• Northside Drive rerouted south of Yosemite Lodge, closed to vehicles and converted to multi-use trail west of Yosemite Lodge	Scenic	Conversion of segment of Northside Drive to multi-use trail improves scenic views from the river due to removal of automobile traffic	Long-term	NA	Minor, beneficial
• Retain roads at: - Southside Drive in the Bridalveil Fall area - Sentinel Meadow - Cook's Meadow - El Capitan Meadow	Biological	Construction associated with road relocation and conversion to multi-use trails would result in disturbance to river-related vegetation communities	Short-term	Revegetation	Minor, adverse
	Biological	Restoration of riparian, meadow, wetland, and river-related vegetation will occur at Stoneman and South Ahwahnee Meadows. Visitor use of river originating from roads and turnouts would decrease, resulting in less loss of vegetative cover	Long-term	NA	Major, beneficial
	Biological	Where roads remain, loss of riparian vegetation and river-related habitats would continue; roads interfere with water movement	Long-term	None	Adverse impacts described in No Action Alternative continue
	Cultural	Removal of roads from meadows restores open character of meadows, an important feature of the cultural landscape	Long-term	NA	Moderate, beneficial
	Cultural	Road relocation and multi-use trail conversion could disrupt archeological resources	Long-term	Archeological excavation	Minor, adverse
	Hydrologic Processes	Removal of impediments to flood flow from Stoneman and south Ahwahnee Meadows would contribute to the restoration of the natural flood regime	Long-term	NA	Major, beneficial

Table 4-101 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
	Hydrologic Processes	Existing roads and infrastructure in meadows affect flood flow	Long-term	None	Adverse impacts described in No Action Alternative continue
	Hydrologic Processes	Rerouted Northside Drive would be in 100-year floodplain and would slightly impede flood flow	Long-term	None	Minor, adverse
El Portal Road Between Cascades Diversion Dam and Pohono Bridge Reconstructed					
[Note: see Segment 3A/3B for Outstandingly Remarkable Value impacts associated with removal of Cascades Diversion Dam]	Scenic	The road is visible from riverbank and river	Long-term	None	Adverse impacts described in No Action Alternative continue
	Scenic	Construction activities would be visible from the river	Short-term	None	Major, adverse
	Recreation	The El Portal Road provides critical visitor access for recreational opportunities, and diversity of recreational opportunities is maintained	Long-term	NA	Major, beneficial
	Recreation	During construction, approximately 1 mile of the river would be closed to recreational use	Short-term	None	Minor, adverse
	Biological	Retention of this road would continue loss of river-related vegetation	Long-term	None	Adverse impacts described in No Action Alternative continue
	Biological	Construction activities would result in a temporary loss of vegetation at staging areas	Short-term	Revegetation of staging areas	Minor, adverse
	Biological	Bank stabilization of road could result in permanent loss of river-related vegetation	Long-term	Sustainable design that allows riparian vegetation to become largely re-established	Minor, adverse

Table 4-101 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
	Cultural	Reconstruction would result in loss of historic features associated with the El Portal Road, and would potentially result in damage to archeological resources	Long-term	Documentation of features and archeological excavation; pursue designs that maintain road's historic character	Minor, adverse
	Hydrologic Processes	Bank stabilization materials that support portions of this road segment are currently in the river channel and interfere with the free-flowing condition of the river; these materials would remain in the river channel after the road is reconstructed	Long-term	Pursue designs that minimize impacts to the free-flowing condition of the river	Major, adverse
	Hydrologic Processes	Construction activities would result in temporary impediments to river and/or flood flow	Short-term	Construction occurs during low flow; banks are stabilized	Minor, adverse
Bridges					
• Remove the following bridges: - Housekeeping - Sugar Pine - Stoneman	Biological	Where bridges are retained, loss of riparian vegetation and river-related habitats would continue	Long-term	None	Adverse impacts described in No Action Alternative continue
- Superintendent's - pedestrian/bicycle bridge north of and parallel to the current Yosemite Creek Bridge	Biological	At Sugar Pine, Stoneman, Superintendent's, and Housekeeping Bridges, river-related environments and habitats would be restored	Long-term	NA	Major, beneficial
• Widen or reconstruct Swinging Bridge	Biological	At the pedestrian/bicycle bridge north of and parallel to the current Yosemite Creek Bridge, river-related environments and habitats would be restored	Long-term	NA	Minor, beneficial
• Retain the following bridges: - Ahwahnee - El Capitan - Clark's - Happy Isles (vehicle)	Biological	Displacement of riparian vegetation would occur during construction, but riparian vegetation would be restored.	Long-term	NA	Negligible, beneficial
- Tenaya Creek - Pohono - Sentinel - Happy Isles (footbridge)	Cultural	Removal of Sugar Pine, Stoneman, Superintendent's and Housekeeping Bridges would result in loss of important historic structures and change in historic circulation patterns	Long-term	Structures would be documented	Moderate, adverse

Table 4-101 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
• Construct new vehicle bridge at: - Yosemite Creek (south of existing bridge)	Cultural	Removal of Sugar Pine Bridge may result in damage to archeological resources	Long-term	Archeological documentation	Minor, adverse
• Convert Yosemite Creek vehicle bridge to a multi-use path bridge [Note: see Water Resources section of this chapter for additional information on bridges and the difference impact of each bridge.]	Hydrologic Processes	At Ahwahnee Bridge, the river is prevented from meandering; scouring and unnatural channeling continues; flood flow is impeded	Long-term	None	Adverse impacts described in No Action Alternative continue
	Hydrologic Processes	At Sentinel, Clark's, Happy Isles (vehicle), El Capitan, Yosemite Creek (vehicle), and Tenaya Creek Bridges, the river is prevented from meandering; scouring and unnatural channeling continues; flood flow is impeded	Long-term	None	Adverse impacts described in No Action Alternative continue
	Hydrologic Processes	Reconstruction of Swinging Bridge would improve the hydrologic function of the river by decreasing the footprint in the river of the bridge abutments and pilings	Long-term	NA	Minor, beneficial
	Hydrologic Processes	At Pohono Bridge, the river is prevented from meandering; scouring and unnatural channeling continues; flood flow is impeded	Long-term	None	Adverse impacts described in No Action Alternative continue
	Hydrologic Processes	Removal of Housekeeping, Sugar Pine, Stoneman, and Superintendent's Bridges, and conversion of Yosemite Creek vehicle bridge to a multi-use trail bridge contributes to the restoration of the natural flood regime; reduces scouring; and allows the river to more freely meander	Long-term	NA	Major, beneficial
	Hydrologic Processes	A new bridge across Yosemite Creek could impact the creek bank and could impede flood flow	Long-term	Design would minimize hydrologic impacts	Minor, adverse
	Hydrologic Processes	During bridge removal or construction, river flows would be affected	Short-term	None	Minor, adverse

Table 4-101 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
Stock Use and Facilities					
• Concessioner stable removed • Private stock use continues; guided trail rides eliminated	Biological	Stock use spreads non-native invasive plant species and contributes to water quality degradation, which impacts riparian vegetation and river-related environments – these impacts would be reduced	Long-term	NA	Minor, beneficial
	Cultural	Removal of stable would result in a loss of historic structure	Long-term	Structures would be documented	Minor, adverse
	Hydrologic Processes	Stable facilities would be removed, contributing to the restoration of the natural flood regime	Long-term	NA	Moderate, beneficial
Historic Superintendent's House (Residence 1) is Removed, Part of the Area is Restored and Part is Converted to a Picnic Area					
	Scenic	New picnic area would be visible from the riverbanks	Long-term	None	Minor, adverse
	Biological	Concentration of visitors at the new picnic area would have radiating impacts due to trampling of river-related vegetation	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse
	Biological	Removal of buildings and restoration of site would benefit adjacent riparian vegetation and meadow	Long-term	NA	Minor, beneficial
	Cultural	Removal would result in the loss of an important river-related historic structure	Long-term	Structures would be documented	Moderate, adverse
	Hydrologic Processes	Removal of buildings would contribute to restoration of flood regime	Long-term	NA	Major, beneficial
	Hydrologic Processes	Concentration of visitors at the new picnic area would have radiating impacts on the riverbanks due to trampling, resulting in bank destabilization and unnatural erosion	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse

Table 4-101 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
Picnic Areas (East Yosemite Valley)					
(See Historic Superintendent's House (Residence 1) for impacts of a new picnic facility at that location.)	Scenic	Sentinel Picnic Area is visible from the river	Long-term	None	Adverse impacts described in No Action Alternative continue
• Retain Sentinel Picnic Area • Remove Swinging Bridge Picnic Area • Construct new picnic area at Curry Village	Biological	Degradation of riparian vegetation and river-related habitats would continue at Sentinel Picnic Area; construction of new picnic areas at Curry Village may result in loss of upland vegetation and radiating impacts (social trails, etc.)	Long-term	None	Minor, adverse
	Biological	Removal and restoration of Swinging Bridge picnic area would benefit river-related environments and habitats	Long-term	NA	Moderate, beneficial
	Hydrologic processes	Removal and restoration of Swinging Bridge picnic area would stabilize the river bank and restore hydrologic processes by allowing restoration of riparian vegetation	Long-term	NA	Moderate, beneficial
	Hydrologic Processes	Density of visitors at the new picnic area would have radiating impacts on the riverbanks due to trampling, resulting in bank destabilization and unnatural erosion	Long-term	Fence sensitive areas; direct use to more resilient areas	Negligible, adverse
Camp 6 No Longer Used for Parking, Area Restored					
	Scenic	Parking at Camp 6 is no longer visible from river	Long-term	NA	Moderate, beneficial
	Biological	Riparian and river-related vegetation environments and habitats are restored	Long-term	NA	Major, beneficial
	Hydrologic Processes	Parking facility is removed from floodplain; removal contributes to restoration of natural flood regime	Long-term	NA	Major, beneficial
Yosemite Village					
• Redevelop substantial portion of Yosemite Village	Scenic	Construction activities at Yosemite Village would be visible from the river	Short-term	None	Minor, adverse
	Biological	As a center of visitor activity, there would be radiating impacts to river-related habitats from visitor use	Long-term	Fence sensitive areas; direct use to more resilient areas	Adverse impacts described in No Action Alternative continue

Table 4-101 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
	Cultural	Redevelopment of Yosemite Village could disturb river-related archeological resources	Long-term	Archeological excavation	Minor, adverse
	Hydrologic Processes	A small area in Yosemite Village (former location of Concessioner Headquarters) would be redeveloped in the 100-year floodplain, and would slightly impede flood flow	Long-term	None	Minor, adverse
	Hydrologic Processes	Density of visitors in the Yosemite Village area would have radiating impacts on the riverbanks due to trampling, resulting in bank destabilization and unnatural erosion	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse
Parking (East Yosemite Valley)					
• Retain administrative parking at Sentinel Bridge • Parking for Lodge guests constructed in previously disturbed area in floodplain	Scenic	Sentinel Bridge parking area is visible from the riverbank	Long-term	None	Adverse Impacts described in No Action Alternative continue
	Biological	Parking at Sentinel Bridge would continue to affect riparian area and fragment habitat	Long-term	None	Adverse Impacts described in No Action Alternative continue
	Cultural	New parking at Yosemite Lodge would disturb traditional gathering areas	Long-term	Consultation	Minor, adverse
	Hydrologic Processes	Parking at Sentinel Bridge is in floodplain and would imperceptibly alter flood flow	Long-term	None	Adverse Impacts described in No Action Alternative continue
	Hydrologic Processes	Some new parking at Yosemite Lodge would be in 100-year floodplain and would alter flood flow (see Water Resources section of this chapter for more information)	Long-term	None	Minor, adverse

Table 4-101 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
Trails					
• Construct/realign trails: - along Southside Drive between Swinging Bridge and El Capitan crossover - along Merced River between Ahwahnee Bridge and bicycle path to Mirror Lake - from The Ahwahnee to bicycle path to Mirror Lake - between Ahwahnee Bridge and Upper Pines Campground - in former Upper and Lower River Campgrounds area	Biological	Loss of vegetative cover and habitat fragmentation associated with new/realigned trails	Long-term	None	Minor adverse
	Biological	Construction of new bicycle path will result in loss of river-related vegetation; increase in habitat fragmentation will be slight given the proximity of Southside Drive	Long-term	None	Minor adverse
	Cultural	Grading for multi-use trail would disturb archeological deposits	Long-term	Archeological excavation	Minor, adverse
	Hydrologic Processes	Segments of the new multi-use paved trail would be within the floodplain near Sentinel Creek, although impact to flood flow would be imperceptible	Long-term	None	Negligible, adverse
West Yosemite Valley Parking					
• Construct parking facility and support facilities (e.g., visitor center) for day visitors at Taft Toe (550 spaces)	Biological	Construction of parking facility would permanently displace river-related vegetation	Long-term	Facility design	Moderate, adverse
	Biological	Density of visitors in the Taft Toe area would have radiating impacts on river-related vegetation due to trampling	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse
	Cultural	Construction of parking facility would damage or destroy archeological deposits and historic American Indian village and gathering area	Long-term	Archeological excavation	Moderate, adverse
	Hydrologic Processes	Density of visitors in the Taft Toe area would have radiating impacts on the riverbanks due to trampling, resulting in bank destabilization and unnatural erosion	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse

Table 4-101 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
West Yosemite Valley Development (West of Yellow Pine)					
(see also River Protection Overlay Trails, Traveler Information and Traffic Management System, and El Portal Road)	Biological	Redevelopment of Cathedral Beach picnic area could disturb riparian vegetation	Long-term	Revegetate	Minor, adverse
• Parking at Bridalveil Fall, Southside Drive in the Bridalveil Fall area, Northside Drive through El Capitan Meadow, and other smaller areas discontinued	Biological	Loss or degradation of river-related vegetative cover increases at some designated trails, social trails, roads (i.e., radiating impacts)	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse
• Cathedral and El Capitan Picnic Areas redeveloped; new picnic area constructed at base of El Capitan in the vicinity of the North American Wall	Cultural	Constructing picnic area at North American Wall could disturb river-related archeological deposits and historic American Indian village	Long-term	Archeological excavation	Minor, adverse
Traveler Information and Traffic Management System Developed					
• Multi-lane traffic check station constructed on Southside Drive near El Capitan crossover.	Biological	Construction of traffic check station would result in loss of river-related vegetation	Long-term	None	Minor adverse
	Cultural	Construction of traffic check station would damage archeological deposits and gathering areas	Long-term	Archeological excavation	Moderate adverse

NA = Not Applicable

The road-related actions would have an overall beneficial effect on scenic Outstandingly Remarkable Values due to the removal of roads from South Ahwahnee and Stoneman Meadows, and improvements to scenic views from the river due to the conversion of a segment of Northside Drive to a multi-use trail. The road-related actions (the rerouting of Northside Drive in the Yosemite Lodge area is covered above) would have an overall beneficial impact on the biological and hydrologic processes Outstandingly Remarkable Values because some roads would be removed from highly valued resources, and their removal would contribute to the restoration of the natural flood regime. These actions also beneficially impact the cultural Outstandingly Remarkable Value because they contribute to the restoration of the cultural landscape.

Reconstruction of the El Portal Road between Pohono Bridge and Cascades Diversion Dam, and removal of Cascades Diversion Dam (see discussion of dam removal in Segment 3A/3B), would have both beneficial and adverse impacts on the Outstandingly Remarkable Values. The existing road has localized, adverse impacts on the biological Outstandingly Remarkable Value because it displaces river-related vegetation, and to the hydrologic processes Outstandingly Remarkable Values because riprap that supports the road is partially in the river channel. However, since this road segment provides a critical visitor access link, its reconstruction would also be beneficial to the recreation Outstandingly Remarkable Value by maintaining access to Yosemite Valley. [Note: these two actions span river Segments 2, 3A, and 3B.]

Removal of bridges would have both beneficial and adverse impacts on the Outstandingly Remarkable Values. These actions would have beneficial impacts to the biological Outstandingly Remarkable Value because the riverbank can be restored, and substantial beneficial impacts on the hydrologic processes Outstandingly Remarkable Value, because the free-flowing condition of the river would be improved, and the river would have increased ability to meander. These actions would have adverse impacts on the cultural Outstandingly Remarkable Value because they result in the loss of important historic structures, and change historic circulation patterns.

The removal of parking at Camp 6 would have beneficial impacts on the scenic Outstandingly Remarkable Values by eliminating a facility visible from the river; beneficial impact on the hydrologic processes Outstandingly Remarkable Value by eliminating a facility from an area that floods relatively frequently (more frequently than the 100-year flood event); and a beneficial impact on the biological Outstandingly Remarkable Value by permitting restoration of river-related (e.g., riparian and wetland) vegetation communities.

Redevelopment of visitor services and National Park Service operations in the Yosemite Village area, largely outside of the Merced Wild and Scenic River boundary but in close proximity, would have both beneficial and adverse impacts on the Outstandingly Remarkable Values. Radiating impacts from the density of visitors in the area would have a minor, adverse impact on the biological and hydrologic processes Outstandingly Remarkable Values through trampling of river-related habitats.

A major development would be introduced in west Yosemite Valley with the construction of a parking facility and visitor center at Taft Toe. As a result of the construction of the parking facility, adverse effects on the hydrologic processes and biological Outstandingly Remarkable Values would increase in this area, largely due to the displacement and degradation of riparian vegetation, and radiating impacts associated with visitor use.

Yosemite Valley (Segment 2) Conclusion

For the actions of this alternative, a long-term, moderate, beneficial impact is described for the Outstandingly Remarkable Values, largely due to the removal of facilities that impede flood flow and inhibit the natural meandering of the river; the restoration of substantial areas of high-value resources in the River Protection Overlay and wild and scenic river corridor; the improvement of the scenic interface of river, rock, meadow, and forest; and the maintenance of the diversity of river-related recreational opportunities. The beneficial impact of this alternative is somewhat offset by the adverse impact on the cultural Outstandingly Remarkable Value resulting from the removal of historic structures, as well as the adverse impacts on biological, cultural, and hydrologic processes Outstandingly Remarkable Values associated with the development of the parking facility at Taft Toe.

Segment-wide, this alternative would be a long-term, moderate, beneficial impact on the scenic Outstandingly Remarkable Value because of the removal of many facilities visible from the river or riverbank, and improvement of the scenic interface of river, rock, meadow, and forest via restoration, campground removal, and road removal/relocation. However, for facilities that are to remain or be redeveloped, some adverse scenic impacts would continue, although to a lesser degree than under the No Action Alternative.

Segment-wide, there are no impacts to the geologic processes/conditions Outstandingly Remarkable Value, because of the absence of actions affecting the V-shaped valley, and moraines of Yosemite Valley. Impacts related to the meandering river are discussed in the Water Resources section of this chapter.

Segment-wide, there would be a long-term, moderate beneficial impact on the recreation Outstandingly Remarkable Value, because the diversity of river-related recreational opportunities would be maintained.

Segment-wide, there would be a long-term, moderate, beneficial impact on the biological Outstandingly Remarkable Value, because of the reduction of facilities in general, and the restoration of riparian areas and meadows in particular. Although construction of several new facilities (e.g., parking facility, roads, bicycle paths and picnic areas) would pose some adverse, localized impacts on the biological Outstandingly Remarkable Value, these impacts would be outweighed by the substantial restoration actions that would take place throughout this segment.

Segment-wide, there would be a long-term, minor to moderate, adverse impact on the cultural Outstandingly Remarkable Value because of the removal of river-related historic structures, and potential disturbance of river-related archeological resources. The historic structures that would be removed, particularly bridges, would adversely affect the hydrologic processes Outstandingly Remarkable Value, and their removal would have major, long-term, beneficial impacts on the hydrologic processes Outstandingly Remarkable Value, and contribute substantially to the restoration of the free-flowing condition of the river.

Segment-wide, there would be a long-term, moderate, beneficial impact on the hydrologic processes Outstandingly Remarkable Value because of the removal of structures that impede flood flow or inhibit the natural meandering of the river, and the restoration of riparian areas in the wild and scenic river corridor. Removal of structures would contribute substantially to the

restoration of the free-flowing condition of the river, and would further the policy established by Congress in the Wild and Scenic Rivers Act to preserve designated rivers in their free-flowing condition. New facilities within the floodplain would have minimal, adverse impacts on the flood regime.

The National Park Service would exert its best efforts to design and reconstruct the El Portal Road between Cascades Diversion Dam and Pohono Bridge with few, if any, additional impacts on the free-flowing condition of the river. If it proves infeasible to design and construct the road in a manner that would avoid direct and adverse impacts to the values for which the river was designated, the National Park Service would report to Congress in accordance with Section 7 of the Wild and Scenic Rivers Act. In either case, further site-specific environmental compliance, including compliance with Section 7 of the Wild and Scenic Rivers Act, would be undertaken for this project.

Cumulative Impacts

Impacts to the Outstandingly Remarkable Values would occur as a result of other past and reasonably foreseeable future actions (see Vol. II, Appendix H for the list of cumulative projects considered in this analysis).

Past Actions

The Merced Wild and Scenic River Comprehensive Management Plan (NPS) established the River Protection Overlay, management zoning, and the Visitor Experience and Resource Protection framework inside the wild and scenic river boundaries. The River Protection Overlay is implemented through this plan, and its beneficial impacts to the Outstandingly Remarkable Values have been assessed as part of the impacts of this alternative. This project also establishes management zoning, which does not directly impact the Outstandingly Remarkable Values. The Visitor Experience and Resource Protection process was designed to protect resources and the visitor experience, and would have a beneficial impact by focusing on protection of Outstandingly Remarkable Values. The Visitor Experience and Resource Protection framework would have a long-term, moderate beneficial effect on Outstandingly Remarkable Values in this segment.

In 1991, the U.S. Forest Service and the Bureau of Land Management developed a joint South Fork and Merced Wild and Scenic River Implementation Plan (USFS and BLM) for the segments of the main stem and South Fork of the Merced River that are under their jurisdiction. The plan is a general management plan with many prescriptive goals and few actions. The *South Fork and Merced Wild and Scenic River Implementation Plan* does not affect the Outstandingly Remarkable Values of this segment.

Reasonably Foreseeable Future Actions

The National Park Service proposes to reconstruct the trail from Happy Isles to Vernal Falls (NPS). This project would have a beneficial impact on the recreation Outstandingly Remarkable Value due to the provision of an improved trail between Happy Isles and Vernal Falls, which contributes to a spectrum of river-related recreational activities. The net effect of this project would be a long-term, minor, beneficial impact on Outstandingly Remarkable Values.

The Eagle Creek Ecological Restoration project (NPS) would restore the confluence of Eagle Creek with the Merced River and remove riprap at the confluence and along the creek. This project would have a long-term, moderate, beneficial impact on the hydrologic processes and biological Outstandingly Remarkable Values.

The past and reasonably foreseeable future projects would have a long-term, moderate, beneficial effect on Outstandingly Remarkable Values due to the establishment of the *Merced River Plan* Visitor Experience and Resource Protection framework; improved river-related recreation opportunities from Happy Isles to Vernal Falls; and restored riparian habitat and hydrologic processes at the Eagle Creek and Merced River confluence.

For the actions of this alternative, a long-term, moderate, beneficial impact is described for the Outstandingly Remarkable Values, largely due to the removal of facilities that impede flood flow and inhibit the natural meandering of the river; the restoration of substantial areas of high-value resources in the River Protection Overlay and wild and scenic river corridor; the improvement of the scenic interface of river, rock, meadow, and forest; and the maintenance of the diversity of river-related recreational opportunities. The beneficial impact of this alternative is somewhat offset by the adverse impact on the cultural Outstandingly Remarkable Value resulting from the removal of historic structures, as well as the adverse impacts on biological, cultural, and hydrologic processes Outstandingly Remarkable Values associated with the development of the parking facility at Taft Toe. The cumulative projects would have a long-term, moderate, beneficial effect on Outstandingly Remarkable Values due to the establishment of the *Merced River Plan* Visitor Experience and Resource Protection framework; improved river-related recreation opportunities from Happy Isles to Vernal Falls; and restored riparian habitat and hydrologic processes at the Eagle Creek and Merced River confluence. When the impacts of all of the past and reasonably foreseeable future actions described above are considered in combination with the expected impacts on the Outstandingly Remarkable Values from this alternative, long-term, moderate, beneficial effects to the Outstandingly Remarkable Values of this segment would likely result.

Consistency with the Merced River Plan

Similar to Alternative 2, the actions of this alternative in this segment of the Merced Wild and Scenic River would comply with the *Merced River Plan* and are consistent with its management elements. The collective actions are consistent with the classification of this segment because accessibility by road or trail would be essentially unchanged and the amount of development in the watershed and on the shorelines would not substantially change, although development on the shorelines would be reduced through removal of facilities in the River Protection Overlay. The individual actions that are considered to be water resources projects, such as removal of bridges, would be subject to the Section 7 determination process. The River Protection Overlay would be implemented and individual actions would be compatible with the River Protection Overlay prescription, with many facilities being removed from the River Protection Overlay. The individual actions would be consistent with the respective management zones established in the *Merced River Plan*. Some actions, such as the removal of infrastructure from the former Rivers Campgrounds, remove existing facilities or uses that do not conform with the corresponding management zone prescription.

Outstandingly Remarkable Values Impacts

Outstandingly Remarkable Values identified for the recreational impoundment segment of the river are geologic processes/conditions and biological. Outstandingly Remarkable Values identified for the scenic gorge segment of the river are scenic, geologic processes/conditions, recreation, biological, cultural, and hydrologic processes.

The impacts of this alternative to the Outstandingly Remarkable Values for this segment would be the same as under Alternative 2 (see Alternative 2, table 4-40, for details).

Impoundment (Segment 3A) and Gorge (Segment 3B) Conclusion

The impacts of this alternative on the Outstandingly Remarkable Values for this segment would be the same as under Alternative 2. This alternative would have a long-term, moderate to major, beneficial impact on Outstandingly Remarkable Values, largely because the removal of Cascades Diversion Dam and implementation of the River Protection Overlay would substantially improve the free-flowing condition of the river; enhance riparian habitat and rainbow trout movement; and improve views of waterfalls and cliffs. This beneficial impact is somewhat offset by adverse impacts on cultural Outstandingly Remarkable Values associated with the increased risk of damage to historic engineering projects resulting from Cascades Diversion Dam removal, and the removal of Cascades Houses (see Alternative 2 for more details).

Cumulative Impacts

Cumulative impacts under this alternative would be the same as under Alternative 2. For the actions of this alternative, a long-term, moderate to major, beneficial impact is described for these Outstandingly Remarkable Values, largely because the removal of Cascades Diversion Dam and implementation of the River Protection Overlay would substantially improve the free-flowing condition of the river; enhance riparian habitat and rainbow trout movement; and improve views of waterfalls and cliffs. The cumulative projects would have a long-term, minor, adverse impact, largely through introduction of stabilization materials and loss of riparian vegetation. When the impacts of all of the past and present actions described above are considered in combination with the anticipated impacts on the Outstandingly Remarkable Values from this alternative, long-term, moderate, beneficial effects on the Outstandingly Remarkable Values of these segments would likely result (see Alternative 2 for more details).

Consistency with the Merced River Plan

The consistency analysis for this alternative would be the same as under Alternative 2. Similar to Alternative 2, the actions of this alternative in this segment of the Merced Wild and Scenic River comply with the *Merced River Plan* and are consistent with its management elements. The collective actions are consistent with the classification of this segment, because accessibility by road or trail is essentially unchanged, and the amount of development in the watershed and on the shoreline does not substantially change. The removal of the Cascades Diversion Dam is consistent with the recreational classification of the impoundment segment, and would allow this

small segment of river to be classified as scenic. The individual actions that are considered to be water resources projects, such as removal of the Cascades Diversion Dam, would be subject to the Section 7 determination process. The River Protection Overlay is being implemented, and individual actions are compatible with the River Protection Overlay prescription, including the removal of the Cascades Diversion Dam. The individual actions are consistent with the respective management zones established in the *Merced River Plan*.

EL PORTAL (SEGMENT 4)

Outstandingly Remarkable Values identified for this recreational segment of the river are geologic processes/conditions, recreation, biological, cultural, and hydrologic processes.

Outstandingly Remarkable Values Impacts

The impacts of this alternative to the Outstandingly Remarkable Values for this segment would be the same as under Alternative 2 (see Alternative 2, table 4-41, for more details).

El Portal (Segment 4) Conclusion

The impacts of this alternative to the Outstandingly Remarkable Values for this segment would be the same as under Alternative 2. For the actions of this alternative, a long-term, minor, beneficial impact is described for the Outstandingly Remarkable Values of this segment, largely because implementation of the River Protection Overlay would limit development on the riverbank, and contribute to the restoration of sensitive riparian vegetation communities (e.g., at Hennessey's Ranch). In addition, the recreation Outstandingly Remarkable Value would be beneficially affected by improved hiking opportunities along the river. The beneficial impact on Outstandingly Remarkable Values for this segment has been offset by the adverse impacts on the cultural Outstandingly Remarkable Value due to possible loss of historic structures, and possible disturbance of archeological sites (standard cultural resource mitigation measures lessen the magnitude of the cultural resources impacts) (see Alternative 2 for more details).

Cumulative Impacts

Cumulative impacts under this alternative would be the same as under Alternative 2. For the actions of this alternative, a long-term, minor, beneficial impact is described for the Outstandingly Remarkable Values of this segment, largely because implementation of the River Protection Overlay would limit development on the riverbank, and contribute to the restoration of sensitive riparian vegetation communities (e.g., at Hennessey's Ranch). In addition, the recreation Outstandingly Remarkable Value would be beneficially affected by improved hiking opportunities along the river. The past and reasonably foreseeable future projects would have a long-term, minor, adverse effect on Outstandingly Remarkable Values because of adverse impacts on biological and cultural Outstandingly Remarkable Values resulting from the Yosemite View Parcel Land Exchange (NPS), largely due to motel construction in close proximity to the river. The adverse impacts resulting from the loss of riparian vegetation associated with the Yosemite View Parcel Land Exchange would outweigh the potential beneficial impact of this alternative resulting from the enhancement/restoration of existing (albeit degraded) riparian habitat in the River Protection Overlay. Consequently, when the impacts of all of the past and

reasonably foreseeable future actions described above are considered in combination with the expected impacts on the Outstandingly Remarkable Values from this alternative, long-term, negligible, adverse effects on the Outstandingly Remarkable Values of this segment would likely result (see Alternative 2 for more details).

Consistency with the Merced River Plan

The consistency analysis for this alternative would be the same as under Alternative 2. Similar to Alternative 2, the actions of this alternative in this segment of the Merced Wild and Scenic River comply with the *Merced River Plan*, and are consistent with its management elements. The collective actions are consistent with the classification of this segment because accessibility by road or trail is essentially unchanged, and the amount of development in the watershed and on the shorelines does not substantially change. The individual actions that are considered to be water resources projects, such as construction of pedestrian bridges, would be subject to the Section 7 determination process. The River Protection Overlay is being implemented and individual actions are compatible with the River Protection Overlay prescription, including the removal of the Cascades Diversion Dam. The individual actions are consistent with the respective management zones established in the *Merced River Plan*.

WAWONA (SEGMENT 7)

Outstandingly Remarkable Values identified for this scenic segment of the river are scenic, recreation, biological, and cultural.

Outstandingly Remarkable Values Impacts

The impacts of this alternative on the Outstandingly Remarkable Values for this segment would be the same as under Alternative 3 (see Alternative 3, table 4-72, for more detail).

Wawona (Segment 7) Conclusion

The impacts of this alternative on the Outstandingly Remarkable Values for this segment would be the same as under Alternative 3. For the actions of this alternative, long-term, minor, beneficial impacts are described for the Outstandingly Remarkable Values of this segment, due to the continuation of trends to restore riparian areas, pursuant to the River Protection Overlay, and the beneficial effects on the biological and scenic Outstandingly Remarkable Values that would result (see Alternative 3 for more detail).

Cumulative Impacts

Cumulative impacts under this alternative would be the same as under Alternative 3. For the actions of this alternative, long-term, minor, beneficial impacts are described for the Outstandingly Remarkable Values of this segment due to the continuation of trends to restore riparian areas, pursuant to the River Protection Overlay, and the beneficial effects on the biological and scenic Outstandingly Remarkable Values that would result. The past and reasonably foreseeable future projects would have a long-term, minor, beneficial impact on the Outstandingly Remarkable Values of this segment due to the implementation of the *Merced River Plan* Visitor Experience and Resource Protection framework; the reduction of development on

the riverbank and restoration of habitat associated with the South Fork Merced River Bridge Replacement (NPS), and the relocation of campsites outside the River Protection Overlay and maintenance of a diversity of river-related recreational activities associated with the Wawona Campground Rehabilitation. When the impacts of all of the past and reasonably foreseeable future actions described above are considered in combination with the expected impacts on the Outstandingly Remarkable Values from this alternative, a long-term, minor, beneficial impact on the Outstandingly Remarkable Values would result (see Alternative 3 for more details).

Consistency with the Merced River Plan

Similar to Alternative 2, the actions of this alternative in this segment of the Merced Wild and Scenic River would comply with the *Merced River Plan* and be consistent with its management elements. The collective actions would be consistent with the classification of this segment because accessibility by road or trail would be essentially unchanged and the amount of development in the watershed and on the shorelines would not substantially change. The individual actions that are considered to be water resources projects would be subject to the Section 7 determination process. The River Protection Overlay would be implemented and individual actions would be compatible with the River Protection Overlay prescription. The individual actions would be consistent with the respective management zones established in the *Merced River Plan*. Some actions, such as the removal of infrastructure from the former Rivers Campgrounds, remove existing facilities or uses that do not conform with the corresponding management zone prescription.

Visitor Experience

Visitor experience is also directly affected by actions influencing natural resources such as, air quality, scenic resources, and cultural resources. Though impacts to these resources are not repeated in the analysis of visitor experience, enhancement or degradation of these resources also enhances or degrades the quality of the visitor experience.

ACCESS

Access to Yosemite Valley

Access into Yosemite Valley directly by private automobile to parking at Taft Toe would be available only to about 28% of day visitors on a typcially busy day (using 1998 visitation levels). Overnight visitors would continue to have the option of driving into the Valley or traveling on existing tour buses or other modes of travel. Day visitors who could not park in the Valley would ride shuttle buses to the Valley from parking areas at Badger Pass, South Landing, and El Portal, or they could ride tour buses or regional transit. These changes would likely have major adverse impacts to the experience of the majority of day visitors, who would have a reduced ability to make spontaneous stops en route to the Valley, resulting in fewer opportunities for spontaneity, extra travel time, and the inconvenience of moving personal items to and from bus stops.

Alternative 4 would provide transportation facilities and services designed to accommodate peak visitation levels on most summer days. Assuming that future visitation is unchanged from 1998, day-visitor demand would be expected to exceed the capacity of the parking areas on 7 days

during the peak season. On these days, some visitors would not be able to find parking in the Valley or at the out-of-Valley parking areas. These visitors would have the option of visiting another part of the park; traveling on regional transit and other alternative transportation modes; or visiting the Valley at a different time of day or on another day. Adequate infrastructure would be in place to accommodate visitor parking in or out of the Valley with a shuttle, in-Valley shuttles, regional transit, and commercial tour buses, as described under Alternatives 2 and 3.

Access to the Valley by private vehicles would be managed through a traveler information and traffic management system. Impacts would be the same as those described under Alternative 2. Overall, the average visitor would experience moderate, adverse impacts (compared to Alternative 1) on the time required to travel to the Valley.

As described for Alternatives 2 and 3, reconstructing the segment of El Portal Road between Pohono Bridge and the intersection with Big Oak Flat Road (the major access to the Valley) would cause short-term, minor, adverse impacts such as traffic delays for many visitors during construction. Short-term, adverse impacts associated with constructing Valley access routes and implementing the traveler information and traffic management system would include detours, having to learn new routes, and having to learn new procedures as they were phased in. Compared to Alternative 1, these impacts would be of negligible intensity.

Circulation within Yosemite Valley

Access by private vehicle to most Valley destinations would be eliminated, as described for Alternatives 2 and 3. Once their vehicles were parked in a day-visitor lot or lodging area, visitors would be encouraged to leave them parked until they left the Valley. Parking would not be provided except at campsites and lodging sites, and under this alternative (as in Alternative 3), at the Taft Toe day-visitor parking facility. Turnouts along Valley roads would be available for short stops only. Compared to Alternative 1, the location of a 550-space day-visitor parking area and visitor/transit center at Taft Toe under this alternative would provide a major, beneficial impact for orientation and trip planning for all day visitors, similar to Alternative 3. However, most day visitors would still need to board shuttle buses to reach desired destinations in the east Valley. The requirement for most day visitors to ride shuttle buses would result in a moderate, adverse impact to day visitors.

Changes in access would affect visitors' ability or willingness to undertake some recreational activities, as described for Alternatives 2 and 3. These changes would affect a majority of day visitors using regional transit, tour buses, and out-of-Valley shuttle buses to access the Valley. Changes to circulation within the Valley would be similar to those described under Alternatives 2 and 3, except under this alternative, there would only be 550 parking spaces at Taft Toe. Access to the mid- and west Valley would be increased for visitors arriving by shuttle or other forms of transit due to extended shuttle bus service to these areas, resulting in a major, beneficial impact, compared to Alternative 1.

Traffic Congestion, Parking, and Crowding

Traffic would be reduced throughout the Valley below present levels at all times of the year (unless seasonal displacement appreciably increases traffic during present slow seasons).

The reduction in private vehicle traffic would result in an overall reduction in vehicle miles of travel in the Valley of 57% from the No Action Alternative. This reduction in traffic would have a long-term, major, beneficial impact on the experience for all visitors because there would be greater opportunities for quiet and contemplative recreational experiences. The overall reduction in traffic would result in improved traffic flow and reduced congestion throughout the Valley, including the mid Valley, where Northside Drive would be closed and Southside Drive would be converted to two-way operation.

Under this alternative, 550 parking spaces would be provided for day visitors in the Valley and approximately 1,590 spaces would be provided in out-of-Valley locations (Badger Pass, South Landing, and El Portal). When the Valley area is full, day visitors would have the option of parking in out-of-Valley lots and riding a shuttle to Taft Toe. The traveler information and traffic management system would inform visitors of the parking status prior to their arrival. Overnight visitors would continue to have the option to drive to the Valley. As described for Alternatives 2 and 3, frequent shuttle service would provide access to Valley attractions.

As described for Alternatives 2 and 3, the appearance of crowding in the Valley would be reduced during peak visitation times for all visitors by eliminating roadside parking, substantially reducing traffic volumes, improving traffic flow, and reducing the visual impact of parked vehicles. The Visitor Experience and Resources Protection program would protect the diversity of visitor experiences as in Alternatives 2 and 3. Both would result in major, beneficial impacts.

Traffic congestion could increase west of El Capitan crossover due to possible unauthorized, long-term parking at the remaining turnouts, and the potential for increased pass-through traffic. As described for Alternatives 2 and 3, these would all have a moderate, adverse impact on perceptions of congestion.

Some of the existing automobile traffic would be replaced with buses, having impacts similar to Alternatives 2 and 3. Notably, the movement of visitors in buses could cause some visitors to feel crowded. Most visitors would travel in larger groups because of the emphasis on bus travel. The overall impact of bus traffic and grouping passengers in buses is expected to have a moderate, adverse impact on the visitor experience, as compared to Alternative 1.

Reliability of the Yosemite Valley Transportation System

Similar to Alternative 3, this alternative would help relieve visitor anxiety and reduce the time wasted searching for available parking within the Valley as compared to Alternative 1. This alternative would include a traveler information and traffic management system designed to manage parking areas, and visitors would have convenient and frequent access to expanded shuttle service. The overall impact to visitors would be major and beneficial, from the perspective of their being able to rely on the transportation system.

Access for Visitors with Disabilities

Access and the resulting impacts for visitors with disabilities would be the same as described for Alternatives 2 and 3. Notably, as fully accessible shuttle buses were placed in operation, visitors with disabilities would use the shuttles rather than private vehicles. Some visitors with disabilities would experience a moderate, beneficial impact from the improved accessibility of shuttle

services. However, without their private vehicles, other visitors with disabilities would have greater difficulty in moving about the Valley, creating a moderate, adverse impact. Visitors with mobility impairments would not have easy access to locations not directly served by the shuttle bus system. The prescribed universal programmatic accessibility study plan and its implementation would ultimately result in a major, beneficial impact. New accessible trails at popular destination areas would provide access to areas that are not now easily accessible, resulting in moderate, beneficial impacts.

ORIENTATION AND INTERPRETATION

Sense of Arrival

As described for Alternatives 2 and 3, visitor centers and orientation facilities near each principal park entrance would improve the sense of arrival at the park for visitors. As described for Alternative 3, for day visitors parking at Taft Toe, the sense of arrival into the Valley would be indicated by combining parking and access to a visitor/transit center, with increased convenience for orientation and trip planning. However, under this alternative, those visitors parking at out-of-Valley locations would find the arrival experience segmented by having to park, then take a shuttle to the Valley; the first sight of the principal Valley features would still provide a sense of arrival. Their sense of arrival would be similar to what is offered today and to what would occur under Alternative 2: visitors could see significant views en route to the parking facility, but the views would be only marginally interpreted. Impacts of the proposed arrival sequence would affect most visitors, and would be beneficial but negligible in intensity, compared to Alternative 1.

Wayfinding

Improvements to signs and circulation would improve wayfinding for visitors, the same as in Alternatives 2 and 3. Notably, improved and consistent signing at shuttle bus stops would help orient many visitors. Day visitors would not need to navigate the Valley's existing confusing network of roads, and overnight visitors would be directed to their accommodations by improved signs and printed orientation materials. Moderate, beneficial impacts would result for most Yosemite Valley visitors.

Visitor Centers

As described for Alternatives 2 and 3, visitors would have opportunities to find out about park programs, the availability of services and facilities, directions, permits, reservations, trip-planning services, interpretive themes and a stewardship ethic, and regulations at park entrances as they arrive. Under this alternative (as in Alternative 3), the new Taft Toe Visitor/Transit Center would assist visitors in Valley orientation and trip planning, and in the interpretation of Valley themes, resulting in a major, beneficial impact to the majority of park visitors, compared to Alternative 1.

Overnight visitors would also find orientation exhibits at their lodging or campground. Impacts would be beneficial but moderate in intensity (the same as under Alternatives 2 and 3).

Exhibits and Programs

Improvements to exhibits and programs, the Nature Center at Happy Isles, museum collections, and trailside exhibits would be as described under Alternative 3. Museum collections, now split in many locations, would be reorganized and made more accessible to the public. A natural history museum would be developed in the existing NPS Administration Building, and the cultural history museum in the existing Museum/Valley District Building would be expanded. These and other improvements would have a moderate, beneficial impact on the large group of museum-goers and a major, beneficial impact on the small group of researchers.

RECREATION

Auto Touring

Impacts on auto touring would be the same as under Alternative 2, except as in Alternative 3, Taft Toe would be the easternmost limit for auto touring by day visitors in the Valley. Visitors would no longer be able to park at most features and facilities for extended periods while exploring. These actions would result in moderate, adverse impacts to a large number of visitors, and major, adverse impacts would occur to the majority of visitors unable to drive their car into the east Valley.

Potential reduced traffic east of Taft Toe could contribute to a sense of more relaxed touring; this could be offset by an increase in the number of buses, resulting in a negligible, beneficial impact. Signs would need to be placed at turnouts throughout the Valley identifying appropriate use (e.g., shuttle bus, Valley Floor Tour, short-term parking); introducing these urban-type elements into the touring experience would have an adverse impact that is negligible in intensity, but would affect most visitors.

Bus Touring

Impacts of sightseeing by shuttle bus, as well as impacts to Valley Floor Tours offered by the concessioner, would be the same as described in Alternative 3 (commercial bus passengers would have to transfer to other touring modes east of Taft Toe), resulting in a major, adverse impact, compared to Alternative 1. Notably, Valley Floor Tours offered by the concessioner would lose the use of two segments of Northside Drive including mid-Valley, and thus access to certain views; however, turnouts would be planned where possible to provide views similar to key Northside Drive views, resulting in a negligible, adverse impact to these users.

Walking and Hiking

More Valley trails away from roads would be available, particularly through the former Upper and Lower River Campgrounds and between Yosemite Lodge and El Capitan crossover on the north side of the river; the experience of trail users would be improved as a result of reduced noise, odors, and glare from passing vehicles. Trails not adjacent to roads, increased use, dispersal and displacement of trail users, new one-way hiking opportunities, and conflicts with other users would be the same as described in Alternative 2. Generally, the same trail segments as described in Alternative 3 would be realigned, potentially affecting a large group of park visitors.

The elimination of private stock use in Yosemite Valley under this alternative would result in a beneficial, moderate impact for the large user-group of hikers and walkers. An impact of this alternative that would be neither adverse nor beneficial would be the potential displacement of day hikers out of the Valley or onto wilderness trails. The following trail segments, among others, would be realigned, potentially affecting a large group of park visitors with negligible to minor, adverse impacts:

- Rerouting the trail walking and hiking segment north of the river at Ahwahnee/Sugar Pine Bridges would result in a slightly different path, loss of traditional views, and the loss of historic elements due to bridge removal.
- Rerouting the multi-use trail across Ahwahnee Bridge, rather than Stoneman Bridge, would lengthen the route between Curry Village and Yosemite Village, with a loss of traditional views and loss of historic elements.
- Removing Housekeeping Bridge would lengthen access to other Valley destinations for Housekeeping Camp guests and would result in the loss of traditional views and the loss of historic elements.
- Removing Superintendent's Bridge would reduce walking trail options in the Yosemite Village area, would move pedestrians wanting a loop trail to the heavily used Sentinel Bridge, and would result in loss of traditional views and loss of historic elements.

Bicycling

Bicycling impacts would be similar to those described for Alternatives 2 and 3 (reduced automobile traffic, but increased bus traffic, potential crowding along multi-use trails, new trails, and increased accident risk due to greater use). Notably, reduction in vehicle noise, smell, and presence would result in a major benefit to bicyclists. Moderate benefits would result from removal of motor vehicles from the area of the multi-use trail through the former Upper and Lower River Campgrounds.

Climbing

The reduction in opportunities for spontaneous access and other aspects of the climbing experience would be similar to Alternative 3. Although changes would not likely reduce climbing on El Capitan, they would adversely affect the experience, resulting in a moderate impact on a moderately sized user group.

Stock Use

Changes in stock trails and facilities, and impacts of those changes, would be essentially the same as under Alternative 2. Notably, compared to Alternative 1, the loss of a complete loop-trip opportunity would result in a moderate, adverse impact. The discontinuance of concession trail rides would be a major, adverse impact to a moderately large group, and the loss of overnight facilities would result in a moderate, adverse impact for a small user group.

Picnicking

The lack of private vehicle access to most picnic sites would result in impacts similar to those described for Alternatives 2 and 3. Similar to Alternative 3, sites at Cathedral Beach near Taft Toe would be expanded, filling a demand for picnicking near the day-visitor parking area and the picnic area at Swinging Bridge would be removed. The Cook's Meadow and North American Wall (at the base of El Capitan) Picnic Areas would provide new opportunities for picnicking in the east and west Valley. Under Alternative 4, new sites with grills and food storage lockers would be developed at Curry Orchard for Curry Village guests and other east Valley users. Together, these would have negligible and neutral impacts to picnickers, compared to Alternative 1. Many picnic areas would be accessible by shuttle bus, and thus be more accessible to those in the Valley without their private vehicles, resulting in a minor, beneficial impact.

River Uses

Changes in raft and kayak access, and resulting impacts, would be the same as under Alternatives 2 and 3. Notably, lack of private vehicle access to locations along the river would require the use of buses, which would result in moderate, adverse impacts to a moderately large group of visitors.

Swimming

Changes in swimming access and availability would be the same as under Alternative 3, resulting in an overall moderate but neutral impact. Swimming would be redirected toward areas able to withstand heavy use, and removal of Housekeeping Bridge would reduce swimming in the area across from Housekeeping Camp.

Fishing

Changes to fishing quality and access to sites would be the same as under Alternatives 2 and 3. Notably, protection of river banks would result in a moderate, beneficial impact for anglers. A moderate, adverse impact would result from decreased river access.

Winter Activities

Changes to winter activities (ice skating and skiing) would be the same as under Alternatives 2 and 3. Increased winter visitation and greater use of the ice rink could result in a negligible, adverse impact compared to that of Alternative 1. Relocation of the ice rink could result in a negligible, beneficial impact.

Photography

Impacts would be the same as described for Alternative 2, except less private vehicle use and an absence of roadside parking east of Taft Toe would result in greater opportunities for photographs without vehicles. This would result in an overall moderate, beneficial impact compared to Alternative 1.

RECREATIONAL ENVIRONMENT

This section covers impacts of Alternative 4 on the overall recreational environment for visitors, including night sky and wilderness experience. Impacts of vehicle-related noise, an important element of the recreational environment, are covered under the Transportation section, and impacts to scenic resources (as viewed by the visitor) are covered under Scenic Resources, and under Wilderness Experience below. Similar to Alternatives 2 and 3, improvements to natural resources under this alternative would provide a more natural appearance to the Valley, a major and beneficial impact for the visitor, relative to Alternative 1.

Night Sky

As described for Alternative 3, the addition of parking at Taft Toe would cause a demand for light in a currently unlit area. (However, the parking area would be smaller than in Alternative 3, resulting in slightly lower light levels.) This action would still have major, adverse impacts compared to Alternative 1.

Changes in the number of lodging units, the rehabilitation of obsolete architectural lighting, and the relocation of facilities would result in minor, beneficial impacts. Under this alternative, impacts at out-of-Valley parking facilities would be similar to those described in Alternative 2; in general such changes would have moderate to major, adverse impacts to these areas.

Wilderness Access and Wilderness Experience

Access to wilderness areas would be facilitated under this alternative, similar to Alternative 2. As described for Alternative 3, wilderness trailheads close to Taft Toe in mid-Valley would see a potential increase in use, while other trails may see less use.

Visual impacts perceived by wilderness visitors would be the same as for Alternatives 2 and 3, although the smaller parking area under this alternative could diminish the obtrusiveness of the Taft Toe facility.

Sound impacts would be minor and adverse, similar to those for Alternatives 2 and 3. Clustering of activities within the Valley would have both beneficial and adverse impacts due to decreased and increased noise levels. Improved access to trailheads would result in a moderate, beneficial impact and increased use of trails would result in a negligible, adverse impact.

VISITOR SERVICES

Camping

Campsite quantity would be appreciably below the present level (441 sites under Alternative 4, compared to 475 sites under Alternative 1, about a 7% decrease). Impacts would be similar to Alternative 3, minor and adverse. Alternative 4 would provide the lowest number of campsites of any alternative, with no new sites at Camp 4 (Sunnyside Campground).

Improvements in campground conditions due to more separation of user types, the redesign of campsites, and riverbank restoration would largely be the same as those for Alternatives 2 and 3. Centralized campground check-in and camper services would be the same as for Alternatives 2 and 3. Notably, campers would receive moderate, beneficial impacts as a result of segregating

camping areas by user type. Moderate, neutral impacts would result from relocating camping areas away from the river, and negligible, neutral impacts would result from relocating the amphitheater.

Lodging

Impacts resulting from reductions in lodging units, accessibility, and actions in individual lodging areas would generally be the same as under Alternative 3. This alternative would provide 982 lodging units, compared to 1,260 units under Alternative 1 (a 22% reduction); this would be a moderate, adverse impact on a large visitor group (25% of summer visitors stay in Valley lodging).

Substantial increases in economy units with private baths would address the high demand for this type of room. Replacing rustic units with economy units would also provide more comfortable and numerous off-season accommodations. Both actions would result in moderate, beneficial impacts for this large visitor group, compared to Alternative 1.

In Yosemite Valley, the ratio of accessible rooms would be greatly improved, giving visitors with disabilities greater access to the kinds of facilities they need, a moderate and beneficial impact on this small to moderately sized user group. New development would include lodging units, parking, and walkways that would incorporate universal design features to improve and provide accessibility to facilities.

Expanding the number of units at Yosemite Lodge (from 245 to 387, or a 58% increase) would place lodging closer to Camp 4 (Sunnyside Campground) and increase the developed character of the Lodge area. This would be a minor, adverse impact to Camp 4 (Sunnyside Campground) campers and Lodge guests, combined, a moderately large group of visitors.

A substantial reduction in the number of units at Housekeeping Camp (from 264 to 52, or 80%) would lead to a much more natural environment, with less overall density. This would have a moderate, beneficial impact to the moderately large group of visitors who choose to use this type of accommodation.

Relocating tent cabins at Curry Village would lead to a more natural environment, with greater privacy and less density. This action would have moderate, beneficial impacts for visitors staying in the remaining cabins, a moderately large group of visitors.

Food and Retail Services

Changes in food and retail services would be substantially the same as those described for Alternative 3. Notably, modifications to the cafeteria at Curry Village would result in a minor, beneficial impact. A negligible, adverse impact would result from discontinued food service in the Happy Isles area. Increases in food facilities and seating at Yosemite Village would result in a moderate, beneficial impact.

CONCLUSION

Alternative 4 would reduce spontaneity of travel to and through Yosemite Valley, similar to Alternatives 2 and 3. Access into Yosemite Valley would be somewhat more cumbersome than

today, with some visitors arriving by car, others by shuttle bus from out-of-Valley parking areas, and still others by commercial and transit buses. Parking in the Valley and at out-of-Valley parking lots would be adequate to meet the needs of day visitors on all but seven days in the summer. With the establishment of a traveler information and traffic management system, visitors would be informed of the status of parking areas at entrance stations and possibly at other sites en route to the park, resulting in a high degree of reliability in the availability of parking. Visitors would not need to search for parking in scattered locations. Once the Taft Toe lot was full, day visitors would be directed to parking at remote lots outside the Valley; these visitors would experience a moderate increase in the time required to travel to the Valley. With a fully developed parking and transit facility at Taft Toe, most visitors would arrive close to principal features and services. Few visitors would be able to walk to destinations in the Valley from Taft Toe. Shuttle services in the Valley would be greatly expanded.

On most days, visitors would find a more tranquil environment, with visitors distributed over a wider area, including the mid-Valley and west Valley. Automobile-based experiences in the Valley would be substantially reduced, while opportunities to experience the Valley without the influence of automobiles would expand. Visitors on foot, bicycle, or horseback would find more places virtually free of motor vehicle traffic, although visitor use of these areas could increase. Opportunities for orientation would be closer to where many visitors seek them, at park entrances and the principal day-visitor parking area, and greater opportunities for participating in interpretive programs in the Valley would be available. Recreation, including touring, would be oriented more toward the shuttle bus system, which would be extended to the west Valley and to out-of-Valley parking facilities, and also to pedestrian and bicycling activities. Opportunities for staying overnight in Yosemite Valley would decrease moderately for camping (to 441 sites, the fewest sites of any alternative) and decrease substantially for lodging (to 982 units, the same as under Alternative 3).

Visitors to Yosemite Valley are varied in their expectations and the individual experiences they seek. Also, the quality of the visitor experience is also dependent on the quality of natural resources, cultural resources, air quality, scenic resources, and other elements of the recreational environment (considered separately in this analysis). Therefore, no determination of a net impact on the visitor experience is attempted here.

CUMULATIVE IMPACTS

Access, Orientation and Interpretation, Recreation, and Recreational Environment

The cumulative impacts described under Alternative 2 for access, orientation and interpretation, recreational opportunities, and recreational environment, would be generally applicable to Alternative 4.

Visitor Services

As described for Alternatives 2 and 3, the January 1997 flood and subsequent cleanup actions resulted in the loss of 265 lodging units and 284 campsites within Yosemite Valley, displacing visitors to campgrounds or lodging elsewhere in the park or in neighboring communities. This alternative would intensify this impact by further reducing lodging units by 278 (the same as

under Alternative 3) and campsites by 34. Proposed new accommodations in the vicinity of the park and campsites outside Yosemite Valley, as described for Alternative 2, could partially alleviate the impact of the reductions. As in Alternative 2, the reductions in lodging in Alternative 4 would continue to adversely affect the many visitors who want to stay in Yosemite Valley. However, the impacts would remain adverse and moderate.

While additional campsites could be provided at the Yosemite Creek and Tamarack Campgrounds and in the region, as described for Alternatives 2 and 3, the use of new regional sites by Yosemite day visitors would not likely be great; thus, the impacts of this alternative on campground users would likely remain adverse and minor.

Transportation

Alternative 4 would provide a 550-space parking facility in the Taft Toe area and about 1,590 spaces in out-of-Valley parking at Badger Pass, South Landing, and El Portal. Similar to Alternatives 2 and 3, this alternative would include a traveler information and traffic management system that would manage access to the Valley. Overnight visitors would continue to have the option of driving to the Valley. Day visitors would travel in private vehicles only to the Taft Toe parking area. When this area was full, day visitors would be directed to out-of-Valley lots and would be able to ride shuttle buses to the transit center at Taft Toe. Few visitors who parked at Taft Toe lot would walk to destinations in the Valley. The Valley shuttle bus system would be expanded, and most visitors would ride shuttle buses to Valley destinations.

Conditions on State Highways Outside Yosemite National Park

The impacts of this alternative on state highways outside the park would be the same as those described under Alternative 2.

Visitor Access to the Valley

Reconstructing the segment of El Portal Road between Pohono Bridge and the intersection with Big Oak Flat Road would have the same impacts as those described under Alternative 2.

Travel Time

The average time that visitors would spend traveling from entrance stations to the Valley Visitor Center in the peak-season under Alternative 4 would be approximately 63 minutes. This would constitute an increase in Valley access travel time of 21 minutes, as compared to Alternative 1. The resulting short- and long-term impact to travel time would be moderate and adverse to peak-season daily visitors. Table 4-102 presents average travel time to the Valley Visitor Center by corridor; travel times are weighted by access mode and include waiting time at the transit terminal and shuttle bus stops.

Table 4-102 Average Travel Time From Entrance Stations to Valley Visitor Center	
Corridor	**Average Weighted Travel Time (min)**
North (Highway 120)	64
West (Highway 140)	49
South (Highway 41)	75
Total	**63**
Difference from Alternative 1	**+ 21**

Modes of Access

Under Alternative 4 approximately 54% of Valley visitors (72% of day visitors) on typically busy days would access the Valley by transit. The resulting 42% increase in transit access share would constitute a major short- and long-term impact on mode share.

VISITOR CIRCULATION WITHIN THE VALLEY

Traffic Volume and Vehicle Miles Traveled

The Valley roadway network for Alternative 4 would be the same as described for Alternative 3. The main difference between the two alternatives is that the number of parking spaces provided at Taft Toe would be reduced from 1,622 vehicles under Alternative 3 to 550 vehicles under Alternative 4; out-of-Valley shuttle buses would bring many day visitors into the Valley under this alternative. As with the other action alternatives, additional shuttle bus service would encourage travel by alternative travel modes. Overnight guests would be discouraged from driving private vehicles when in the Valley. Providing designated parking, improved signage, and private vehicle management would minimize private vehicle circulation in the Valley. A traveler information and traffic management system would be implemented to assure that vehicles in the east Valley did not exceed the parking supply or capacity of roads. As a result, visitors would not need to circulate in search of parking spaces.

The highest reduction of traffic volume would occur under Alternative 4. This alternative would provide the fewest overnight accommodations; would provide a reduced number of day-visitor parking spaces in the Valley; and would eliminate vehicle trips by day visitors in the east Valley. The day-visitor parking lot would be located at Taft Toe, which would substantially reduce the amount of private vehicle travel within the Valley compared Alternatives 1 and 2. There would be a major long-term beneficial impact with this alternative because daily vehicle miles traveled in the Valley would be reduced by 57% on typically busy days, compared to Alternative 1 (see table 4-103). Bus trips entering the east Valley at Yosemite Chapel would increase by 254 per day.

Table 4-103 Daily Inbound Vehicle Trips and Total Vehicle Miles Traveled in the Valley in Summer on Typically Busy Days		
	Inbound Vehicle Trips Passing Yosemite Chapel	**Vehicle Miles Traveled**
Private Vehicle	1,967	24,941
Bus	331	4,469
Total	**2,298**	**29,410**
Percentage Change from Alternative 1		**-57%**

Modes of Travel

Under Alternative 4, visitors would be allowed to circulate by private automobile west of Taft Toe. However, as with Alternatives 2 and 3, the share of trips within the Valley by transit would be expected to increase substantially. With the exception of west Valley circulation, the only visitor trips made by private vehicle within the Valley would be by overnight visitors either entering or departing the Valley. The resulting impact to Valley visitors is expected to be major in the long term.

Bus Volumes on Roads

Under Alternative 4, bus service would increase in the Valley and shuttle buses would travel from remote parking areas to the transit center at Taft Toe. The planned bus service would result in 4,469 daily bus vehicle miles traveled on Valley roads (see table 4-104) a major increase over Alternative 1.

Table 4-104 Daily Bus Trips/Vehicle Miles Traveled in the Valley During the Peak Season		
	Round Trips Passing the Chapel	**Bus Miles Traveled**
Out-of-Valley Shuttle	229	1,099
Valley Shuttle	385	3,215
Commercial Tours	62	155
Total	**676**	**4,469**

Level of Service

The Valley road system in Alternative 4 would be modified as described in Alternative 3. Less parking would be provided in Alternative 4 than in Alternative 3 for day visitors near Taft Toe, resulting in less vehicle travel on Valley roads west of El Capitan crossover. As presented in table 4-105, the intersections of Sentinel Drive with Northside Drive and Southside Drive would improve to level of service A during both inbound and outbound peak hours. The level of service on El Portal Road would improve to level of service C during both inbound and outbound peak hours, resulting in a major improvement from level of service E. Traffic operations on Northside Drive also would improve to level of service A in both peak hours compared to level of service E in the outbound peak hours under Alternative 1, a major improvement.

Table 4-105 Level of Service Summary (Inbound/Outbound)					
Intersections					
	Southside Drive/ Sentinel Road	**Northside Drive/ Sentinel Road**	**Northside Drive/ Camp 6-Village Access**	**Southside Drive/ Northside Drive**	
Alternative 1	C/B	C/E	A/B	B/A	
Alternative 4	A/A	A/A	not an intersection	not an intersection	
Roadway Segments					
	Pohono Bridge	**El Capitan Bridge**	**El Portal Road (between Pohono Bridge and Big Oak Flat Road intersection)**	**Southside Drive**	**Northside Drive**
Alternative 1	E/E	B/B	E/E	D/C	D/E
Alternative 4	D/C	C/B	C/C	C/C	A/A

The actions under Alternative 4 would create a long-term, major, beneficial impact by improving traffic flow.

CONCLUSION

Under Alternative 4 the average travel time to access the Valley would increase by 29 minutes compared to Alternative 1, which would represent a moderate, long-term, adverse impact to visitors. When the Taft Toe parking area was full, day visitors would be directed to one of three out-of-Valley parking areas and then use shuttle buses to access the Valley. Alternative 4 would be the most effective in reducing vehicle traffic in the Valley. There would be a major decrease in traffic volumes and a major improvement in traffic flow compared to Alternative 1. Traffic volumes on roads would be reduced by 57%. Bus trips entering the east Valley at the Yosemite Chapel would increase by 254 trips per day. Because most buses traveling into the Valley would stop at Taft Toe, the bus vehicle miles traveled for this Alternative would be 4,469 miles per day, still a major increase over Alternative 1. The reduction in traffic congestion at major intersections and roadway segments under Alternative 4 would be the same as under Alternative 3, except there would be a greater improvement in the level of service on El Portal Road and conditions would improve on Pohono Bridge. Overall, there would be a major, long-term, beneficial impact to traffic operations by reducing traffic and improving traffic flow.

CUMULATIVE IMPACTS

The cumulative impacts of Alternative 4 would be the same as those described for Alternative 2.

Noise

VEHICLE NOISE

Alternative 4 would change the traffic access to the Valley by implementing out-of-Valley parking in combination with 550 day-visitor parking spaces in the Valley at Taft Toe. The traffic circulation changes and traffic management measures in this alternative would be similar to those in Alternative 3, with the addition of noise impacts at out-of-Valley parking facilities in El Portal, South Landing, and Badger Pass.

Sound Levels

The impacts of this alternative on sound levels associated with vehicles would be similar to those described for Alternative 3 as shown in tables 4-106 and 4-107.

Table 4-106
Equivalent Constant Sound Levels from Traffic Along Northside Drive

Time of Day	Distance from Centerline of Roadway	Alternative 1 (dBA)	Alternative 4 (dBA)
Inbound Peak Hour	50 feet	61	60
	100 feet	57	57
	200 feet	54	54
	400 feet	51	50
Outbound Peak Hour	50 feet	65	60
	100 feet	62	57
	200 feet	59	54
	400 feet	55	50

Note:These numbers are based on measurements taken between Yosemite Village and Yosemite Lodge on a typically busy day.
dBA = decibel

Table 4-107
Equivalent Constant Sound Levels from Traffic Along Southside Drive

Time of Day	Distance from Centerline of Roadway	Alternative 1 (dBA)	Alternative 4 (dBA)
Inbound Peak Hour	50 feet	64	65
	100 feet	61	62
	200 feet	57	59
	400 feet	54	55
Outbound Peak Hour	50 feet	63	65
	100 feet	59	62
	200 feet	55	59
	400 feet	52	55

Note:These numbers are based on measurements taken near Yosemite Chapel on a typically busy day.
dBA = decibel

Sound Events

Yosemite Valley

Alternative 4 would have sound impacts similar to Alternative 3, except west of El Capitan crossover, where the introduction of out-of-Valley shuttle buses would increase the sound associated with buses. There would be minor differences from Alternative 3 in the operation of shuttle buses east of El Capitan crossover, but these differences would not change the impact intensity, duration, or type of impact in any location from those of Alternative 3.

West of El Capitan crossover, the noticeable sound events from buses on Northside Drive and Southside Drive would increase from 15 per hour to 35 per hour. The resulting sound impacts would be long-term, major, and adverse.

Out-of-Valley Areas

Very noticeable sound events would increase at the out-of-Valley parking areas as a result of shuttle bus service to and from Yosemite Valley. The number of added sound events during the

peak travel hours on typically busy days would be 10 at El Portal, 10 at Badger Pass, and 20 at South Landing. The impacts from the changes in sound events would be long-term, moderate, and adverse at El Portal and Badger Pass. The impact would be long-term, major, and adverse at South Landing.

Vehicle Noise Conclusion

This alternative would result in sound level reductions throughout most portions of the Valley east of El Capitan crossover. This would result in noticeably lower sound levels along Northside Drive between the Yosemite Lodge and Yosemite Village, a long-term, minor, beneficial impact. Long-term, major, beneficial impacts would occur along sections of Northside Drive that would be closed to vehicle traffic. The introduction of out-of-Valley shuttles would result in an increase in the number of very noticeable sound events west of El Capitan crossover and at out-of-Valley parking areas. The impact would be long-term, major, and adverse in the Valley west of El Capitan crossover. Increases in bus-related sound events would result in long-term, moderate to major, adverse impacts at the out-of-Valley parking areas, with major, adverse impacts occurring at South Landing. Similar to Alternatives 2 and 3, this alternative would result in long-term, major sound reduction benefits along Northside Drive between Yosemite Lodge and El Capitan crossover and between Stoneman Bridge and Yosemite Village.

Cumulative Impacts

The existing shuttle buses are currently being replaced with advanced technology buses that could reduce the intensity of sound events along the shuttle routes. Possible increase in regional transit service by the Yosemite Area Regional Transit System (inter-agency) would possibly cause a larger number of sound events along the same routes. These two actions would have cumulative impacts on sound levels in the Valley similar to those described in Alternative 1 (long-term, beneficial). Alternative 4 would not change the vehicle types or operating characteristics of either the new shuttle buses of the YARTS buses.

NONVEHICLE NOISE

Yosemite Valley

Housing

Housing-related noise impacts would be similar to Alternative 2 (long-term, moderate, beneficial).

National Park Service and Primary Concessioner Operations

The impact of most National Park Service and concession operations would be similar to Alternative 2 (long-term, moderate, beneficial), with the exception of transit operations, which are discussed below.

Transit Center and Day-Visitor Parking

Noise of transit centers and day use parking areas would be similar to Alternative 3, except that the size of the Taft Toe Visitor/Transit Center would be smaller (with less vehicle parking). This

would result in a slight increase in ambient noise levels (compared to the No Action Alternative). However, impacts would be similar to those of Alternative 3 (long-term, moderate, adverse).

Lodging

The impact of lodging-related noise would be similar to Alternative 2 (long-term, moderate, beneficial).

Campgrounds

Campground-related noise would be similar to Alternative 2, except that noise increases at Camp 4 (Sunnyside Campground) would not occur because campground size would remain the same as in Alternative 1. As in Alternative 2, the overall result would be long-term, minor benefits through noise reductions in campgrounds.

Picnic Areas

Noise related to picnic areas would be eliminated at Swinging Bridge Picnic Area. Picnic area–related noise, including sounds associated with social interaction (conversation, laughing, and play), would be introduced at the new picnic areas near El Capitan and Curry Orchard. In sum, a long-term, negligible, adverse impact would be experienced by visitors.

Trails

Impacts of trail-related noise would be the same as under Alternative 2 (long-term, minor, adverse).

Construction Impacts

Construction-related noise impacts would be similar to under Alternative 2, except that activities related to developing transit facilities would be located at Taft Toe. Types of construction noise would be the same. Overall, peak nonvehicle-related noises during construction and deconstruction, would have short-term, major, adverse impacts, affecting both visitors and residents.

Out-of-Valley Areas

El Portal

HOUSING

The types and general locations of housing-related noise would be similar to under Alternative 2, but because of an additional 204 employee beds in El Portal, nonvehicle impacts to ambient noise levels would be greater than under the No Action Alternative, and the highest of the action alternatives. In new housing areas and in amenity sites, such as at Village Center, impacts would be long-term, moderate, and adverse. In existing housing areas, impacts would be long-term, minor, and adverse, affecting primarily residents.

NATIONAL PARK SERVICE AND PRIMARY CONCESSIONER OPERATIONS

Most operations-related noise impacts in El Portal would be similar to Alternative 2 (long-term, moderate, adverse).

OUT-OF-VALLEY PARKING

Noise impacts of the day-visitor parking area would be similar to Alternative 2 (long-term, moderate, adverse).

TRAILS

Trails-related noise impacts would be similar to Alternative 2 (long-term, negligible, adverse).

Wawona

Housing-related noise impacts would be the same as under Alternative 1.

Foresta

Housing- and operations-related noise impacts would be the same as under Alternative 2 (long-term, minor, adverse).

Badger Pass

Out-of-Valley parking – related impacts would be the same as under Alternative 2 (long-term, moderate, adverse).

South Landing

Out-of-Valley parking – related impacts would result in an increase in noise associated with the out-of-Valley parking facility, due to maintenance and visitor activities at the facility. Visitor conversation would represent the most typical nonvehicle noise in this area (60 dB; FICN 1992), and would typically be half as loud as associated vehicle activity. Nonvehicle noise would cause a long-term, moderate, and adverse impact that would be experienced by transit riders. Maintenance activities and associated noise that would be present under Alternative 1 would be displaced, reducing noise levels.

Hazel Green and Henness Ridge

No additional transit or administrative facilities are proposed in these areas. Impacts would be the same as in Alternative 1.

Construction Impacts for Out-of-Valley Locations

Construction-related noises in El Portal and other out-of-Valley locations would include the same types of noises, and with similar effects as described above for Yosemite Valley. During construction, short-term, major, adverse impacts would be experienced by residents and visitors.

Nonvehicle Noise Conclusion

Alternative 4 would be similar to Alternative 1, in that the effects of nonvehicle noise on the human environment would be concentrated primarily around development areas. As in

Alternative 2, Alternative 4 would reduce housing units in Yosemite Valley and result in reductions in ambient noise levels, a moderate benefit. Likewise, increases in housing numbers in El Portal and Foresta would result in minor, adverse impacts. New trails would put typical trail-related noises into new areas, but these impacts would be minor. Reductions in campsite and lodging numbers would result in long-term, moderate and minor, beneficial effects. National Park Service and concession operations in Yosemite Valley would be reduced, but with light maintenance for transit being in the Valley, and with new impacts at Taft Toe, benefits would be minor. Overall, the nonvehicle noises would be reduced in Yosemite Valley, but benefits would be long-term and minor, due to the introduction of adverse impacts into new areas. The greatest increases in noises would be in El Portal, South Landing, and seasonally, Badger Pass, where adverse impacts would be long-term and moderate.

Cumulative Impacts

The projects that would have cumulative impacts would be the same as described in Alternative 2. When considering the overall minor, beneficial impacts of Alternative 4, in combination with the more dominant noises associated with other projects and sources, including vehicles, cumulative impacts of nonvehicle noise in Alternative 4 would remain long-term, minor, and beneficial.

Social and Economic Environments

The social and economic environments, for purposes of this discussion, include characteristics of the affected communities in the region, visitor populations and trends, revenues and expenditures affecting regional economies in connection with employment, visitor expenditures, construction spending, and concessioners and cooperators. Impacts of Alternative 4 on these social and economic environments are discussed below.

LOCAL COMMUNITIES

Potential effects of Alternative 4 on the communities of Yosemite Valley, El Portal, Foresta, Wawona, and Yosemite West are discussed in this section. Factors with the potential to affect the social and economic environments of each of these communities include population, housing location, types and condition of housing, distance of employee commutes from outlying areas, community services, amenities, and infrastructure.

Yosemite Valley

Under this alternative, 588 beds would be removed from Yosemite Valley, as under Alternative 2. Therefore, impacts to the Yosemite Valley social environment would be largely the same as described under Alternative 2.

The proposed relocation of employees from Yosemite Valley to El Portal, including National Park Service and Yosemite Concession Services headquarters and associated employees, would reduce the resident population by almost half, and alter the demographics of the community. Most of the non-management employees moved to El Portal would be year-round employees. Most or all of the employees remaining in Yosemite Valley would be in seasonal positions.

Impacts on social and community services would be as described under Alternative 2, including beneficial impacts to quality of housing and improvements to security, and adverse impacts to the community from increases in commute time, a change in locale of housing, and potential change in school locations.

El Portal

Under this alternative, 588 employees, mostly primary concessioner employees, would be relocated from Yosemite Valley into new housing in El Portal. An additional 259 bed spaces would be constructed to meet the future and currently unmet demand for employee housing. Therefore, an additional 80 El Portal residents currently living at the Trailer Village, Arch Rock, or Cascades, would be relocated into new housing facilities in El Portal. The total net increase in El Portal's residential employee population is projected to be 847 (588 plus 259).

The park's current primary concessioner, Yosemite Concession Services, provided the primary source of employee demographic information. No similar information was available from the other park concessioners or the National Park Service. Nearly 95% of the new housing in El Portal would be occupied by primary concessioner employees; therefore, Yosemite Concession Services employee demographic information has been used to project the demographics for all future park employees who would be housed in El Portal under this alternative.

Based on current demographics of the park employee population, it is estimated that approximately 20% of the permanent employee population would be married. In addition, Yosemite Concession Services staff estimate that approximately 15% of employee spouses are not employed within the park. Therefore under this alternative, an additional 25 spouses are expected to relocate to El Portal ($847 \times 20\% \times 15\% = 26$). Of these 25 spouses, approximately 18 would be relocated from the Valley, and 7 would be married to new employees.

It is estimated that under this alternative, 62 managerial personnel currently living in managerial housing would be relocated from the Valley to El Portal, while 28 would remain in Yosemite Valley. Yosemite Concession Services current managerial population is approximately 210 employees. While a proportion of these staff live outside the park, many managerial staff currently live in non-managerial housing accommodations within the Valley. Yosemite Concession Services managerial staff have an estimated 80 children. Approximately 55 children are expected to be relocated. Of the 259 future new employees, 31 are projected to be managerial staff. Based on current employee demographics, these staff would bring an additional 12 children to El Portal.

Including relocated employees, new employees, spouses, and children, the total increase in El Portal's residential population under this alternative is projected to be 939 ($847 + 25 + 55 + 12$). Approximately 10% of the employees housed in El Portal would be seasonal employees. Therefore, the population in winter would be approximately 845 ($939 \times 90\%$).

The National Park Service estimates that the current summer population of El Portal (from the park boundary to the confluence of the South Fork of the Merced River) is approximately 3,000, and the current winter population is approximately 760. Under this alternative, changes in employee housing would result in about a 31% increase in El Portal's summer population, and a

111% increase in the winter population. Both would cause long-term, major, adverse impacts on El Portal's population, although it is expected that this projected future growth would occur gradually.

This alternative also would increase the number of residents and jobs in the El Portal area and commuters to Yosemite Valley along Highway 140. These impacts and those related to out-of-Valley parking would be the same as described under Alternative 2.

Wawona

The Wawona social environment would not be affected by actions in this alternative and impacts would be the same as described for Alternative 1. The number of employees living in Wawona would not change, and employee travel along the South Entrance Road would not be impacted.

Foresta

This alternative proposes reconstruction of the 14 National Park Service houses that were lost in the A-Rock Fire, and placement of the National Park Service and concessioner stables at McCauley Ranch, for this reason impacts would be long-term minor adverse or the same as described for Alternative 3.

Cascades and Arch Rock

Impacts to the Cascades and Arch Rock communities are expected to be the same as described under Alternative 2, resulting in a long-term, minor, adverse impact.

Yosemite West

This alternative would have long-term minor adverse impacts on the social environment in Yosemite West. The same as described in Alternative 2.

Services and Infrastructure

Schools and Child Care

Impacts to local services and infrastructure under this alternative are expected to be the same as those described under Alternative 2, with the exceptions noted below.

Approximately 55 children of concession employees would be relocated from Yosemite Valley to El Portal. In addition, 12 children are expected to be added to the local population from future growth in managerial staff at the park. This is not expected to change the duration, intensity, or type of impact on local schools and child care facilities. These additional students would not increase demand or impact school bus operations.

Law Enforcement

Relocation of concession employees is expected to increase law enforcement requirements in El Portal. Based on the population shift from Yosemite Valley and future employee growth, it is estimated that approximately 62 arrests could occur in El Portal that would otherwise have been expected to occur within the Valley. Also, the addition of 259 new employees would be expected

to add approximately 27 additional arrests a year. This would have a long-term, moderate, adverse impact to law enforcement services. However, these projections do not consider the beneficial effects that improvements to employee living conditions and the quality of concession employees (attracted by the improved housing) may have in reducing future law enforcement incidents and arrests necessary in El Portal and throughout the park.

The proposed out-of-Valley parking lot in El Portal would be the same as that proposed under Alternative 2, and its impacts on county law enforcement are projected to be the same as described under Alternative 2. Mariposa County law enforcement's role in the future would be the same as described under Alternative 2.

Other Services

Although there could be a minor increase in the fire incidence rate, the impact to fire protection services provided by Mariposa County to the El Portal area would be the same as described under Alternative 2.

Under this alternative, the Yosemite Valley Medical Clinic would remain in the Valley, and the impacts to the National Park Service Emergency Medical Services staff and county ambulance services would be the same as described under Alternative 3.

Effects on public services under this alternative, including utilities, waste collection, and community facilities, would be the same as those described under Alternative 2.

Local Communities Conclusion

Impacts to Yosemite Valley would be as described under Alternative 2. Impacts to El Portal would be as described under Alternative 2, except as described below.

Changes in the employee population residing in El Portal would result in about a 31% increase in El Portal's summer population and a 111% increase in the winter population. Both would cause long-term, major, adverse impacts on El Portal's social environment, although it is expected that this projected future growth would be gradual. Resulting impacts on the El Portal community would depend on expansion of community services and infrastructure to meet the community needs. Impacts on county ambulance services would be the same as described for Alternative 3. Impacts on the social environment of Foresta would be the same as Alternative 3. Impacts on the social environment of Yosemite West would be the same as Alternative 2. There would be no impacts to the social environment of Wawona under this alternative.

CUMULATIVE IMPACTS

The potential cumulative impacts resulting from actions in this alternative are the same as those described under Alternative 2.

VISITOR POPULATION

Day Visitors

Under this alternative, it is projected that on the busiest days in the summer, up to 13,077 day visitors could be accommodated by the proposed parking and transit facilities. This level of

visitation exceeds the 1998 summer season daily visitation, which averaged 10,950 visitors. As discussed in Appendix J, 1998 visitation has been used as the baseline condition for the impact analysis. In addition, for purposes of the analysis, it has also been assumed that future Yosemite visitor demand would not change. This is a conservative assumption that recognizes the uncertainties of future visitation. As a result, under this alternative, no change in future day visitation is projected. Considerable additional day visitor capacity would exist, and future day visitation growth could be accommodated if future visitor demand increases.

Currently, park visitation peaks on weekends during the summer. As a result, it may be possible that during the busiest peak days, the proposed parking and transit facilities would be unable to accommodate all the visitors that otherwise may have entered the park under Alternative 1. In this case, some visitors may be displaced from accessing the parking during typically busy days. However, the adverse impact could be mitigated by existing and future traveler information and traffic management systems. These systems could forewarn potential visitors when day-visitor parking is approaching capacity, and encourage and direct visitors to visit during nonpeak periods. In this case, no net reduction in total visitation would occur since peak-period visitation would theoretically be shifted to less busy days (i.e., weekdays).

Overnight Visitors

Lodging

The lodging changes proposed under this alternative would be the same as those under Alternative 3. As a result, the impacts on park visitors lodging overnight in the valley would be the same as described under Alternative 3: long term, minor, and adverse.

Camping

Under this alternative, 34 campsites would be eliminated, leaving a total of 441 campsites within Yosemite Valley, approximately a 9% decrease from the current 475 Valley campsites. Based on pre-flood visitor demand for Valley campsites, it is estimated that the lost campsites would have an average occupancy rate of nearly 95% for operations between mid-April and mid-October. Accordingly, approximately 5,800 overnight campsite stays would be lost, displacing 23,200 visitors from camping overnight within the Valley annually (assuming an average of four overnight visitors per campsite). This would represent a long-term, major, adverse impact.

Table 4-108 summarizes the overnight visitation changes expected under this alternative. A minor net decrease in overnight park visitation is projected, despite a major net reduction in the park's overnight accommodations of 312 units (based on a net lodging capacity decrease of 279 units and camping capacity decrease of 34 sites). The combined impact of the proposed lodging and campsite changes is estimated to be a net increase in 15,800 room-nights annually. This represents a gain of 24,600 overnight visitor stays within Yosemite Valley annually, which equates to a 1.3% increase from 1998 overnight visitation. This represents a long-term, minor beneficial impact on overnight park visitation.

Table 4-108 Estimated Potential Overnight Visitation Impacts			
Lodging	**Change in Capacity**	**Projected Change in Room-Nights**	**Projected Change in Visitor Overnight Stays**
Yosemite Lodge	142	47,400	151,200
Curry Village	(208)	200	600
Housekeeping	(212)	(26,000)	(104,000)
Camping	(34)	(5,800)	(23,200)
Total	**(312)**	**15,800**	**24,600**

Note: These are conservative future estimates of overnight visitation demand because they are based on the pre-flood demand for in-park lodging. As a result, they do not assume any visitor demand increases from factors such as reduced vehicle congestion, natural resources restoration, improved lodging facilities, or population growth.
Note: Apparent inconsistencies in the table are a result of replacing seasonal units with year-round units.

Minority and Low-Income Visitors/Environmental Justice

Impacts on minority and low-income populations would be as described under Alternative 2.

Visitor Population Conclusion

Under this alternative, Yosemite Valley's lodging and camping capacity is proposed to decrease by 312 lodging units and camping sites. Due to the increase in the Valley's nonpeak lodging capacity, an annual net increase of 15,800 visitor overnight stays is projected. This is equivalent to a 1.3% increase to 1998 overnight visitation, which represents a long-term, minor, beneficial impact. Due to the limitations of available data and the potential influence of other factors, impacts to day visitors are indeterminable. Furthermore, low-income and minority visitors are not expected to be disproportionately affected by any visitor impacts.

REGIONAL ECONOMIES

Visitor Spending

No changes in Yosemite visitor spending behavior are projected, since this alternative proposes no changes that would alter the type of goods and services available to visitors. Furthermore, no change in the character of the park visitor population is expected. Therefore, visitor spending patterns and estimates based primarily on the 1998 Yosemite Area Transportation System (inter-agency) survey have been used to estimate future visitor spending behavior.

The primary effects on visitor spending within the region would be related to changes in park visitor population projected under this alternative. As discussed in the previous sections, the decrease in overnight visitation within the park is the only quantifiable impact on park visitation associated with this alternative. It is projected that approximately 24,600 overnight visitor stays would be added under this alternative.

It is possible that these additional park overnighters could be attracted away from lodging in the region outside the park. If these vacated rooms are not occupied by new visitors or day visitors, relocation of these overnight guests from lodging outside the park into the Valley would have no net economic effect on the region's economy, because no new spending would be attracted into the area. However, given the high demand for lodging in the region (especially during the peak season), it is expected that some day visitors would likely choose to stay overnight in the region. As a result, the net economic impact on the regional economy from the additional overnight stays

would be the net increase in daily visitor spending of $35.76 per capita ($61.30 – $25.54, the difference between overnight visitor spending and day-visitor spending) multiplied by the increased overnight visitation (24,600), which would equate to approximately $0.9 million in visitor spending. This represents a long-term, negligible, beneficial impact to Yosemite visitor spending.

This is a conservative estimate of the beneficial spending impact on the county economy. The additional lodging capacity proposed under this alternative would still be lower than the Valley's pre-flood levels; therefore, it might be expected that increasing the Valley lodging capacity would bring back overnight visitors to the park who otherwise would remain displaced by the 1997 flood. The analysis has conservatively assumed that the additional overnight visitors would be gained from current day visitors; therefore, no net change in park visitation is expected. However, if new park visitors were instead attracted to stay overnight in the park, there would be an even greater growth in visitor spending.

There would also be potential for future growth in day visitation under this alternative. It is estimated that an additional 66,000 day visitors per month could be accommodated during weekdays in July and August in the Valley. In addition to visitor spending growth based on increased park visitation, the region could also increase visitor spending by encouraging more of the existing park visitors to stay longer or to stay overnight in the region. Increased length of stay would increase visitor spending, which would have a beneficial impact on the region's economy.

The proposed changes to the Valley's overnight lodging facilities is projected to increase the future overall overnight visitation within the Valley. This would have a long-term, negligible, beneficial impact on Yosemite visitor spending by increasing the number of visitors (and hence visitor spending) that can be accommodated overnight in the Valley each year.

Table 4-109 presents the estimated visitor spending impacts of lodging facility changes proposed under this alternative. Estimated impacts of this alternative on Yosemite visitor spending would not exceed 1% in any of the five counties within the Yosemite region. This represents a long-term, negligible, beneficial impact. Overall, Yosemite visitor spending within the five-county Yosemite region is expected to increase by about 0.4%, representing a long-term, negligible, beneficial impact on Yosemite visitor spending.

Table 4-109
Estimated Visitor Spending Impacts

County	Estimated Total Yosemite Visitor Spending ($millions/yr)	Estimated Impact on Spending ($millions/yr)	Impact on Spending as a Percentage of Total Yosemite Visitor Spending
Madera	$38.1	$0.04	0.1%
Mariposa	$143.4	$0.75	0.5%
Merced	$4.8	$0.01	0.3%
Mono	$30.8	$0.03	0.1%
Tuolumne	$22.2	$0.06	0.3%
All	**$239.3**	$0.9	**0.4%**

Note: All monetary figures are in 1998 constant dollars.

Table 4-110 shows the county-specific output and employment impacts of the changes in Yosemite visitor spending expected under this alternative. The expected change in overnight

capacity and associated visitor spending under this alternative would cause total regional output to increase by approximately $1.4 million dollars annually. Much of this change would be driven by an approximately $1.1 million increase in the annual output of Mariposa County. The portion of this spending increase expected to occur in the county's lodging sector would result in a increase of approximately $43,000, or 0.9%, in the county's recent average annual hotel occupancy tax revenues, a long-term, negligible, beneficial impact.

Table 4-110 further indicates that impacts to employment in Madera, Merced, Mono, and Tuolumne Counties would be negligible. Mariposa County would experience an increase of about 22 jobs, an approximate 0.3% increase in recent countywide employment. This represents a long-term, negligible, beneficial impact to Mariposa County.

Table 4-110
Estimated Total (Direct and Secondary) Visitor Spending Impacts

County	Estimated Impact on Spending ($million/yr)	Estimated Spending-Associated Impact on Annual Output ($million/yr)	Estimated Spending-Associated Impact on Annual Employment (FTE)
Madera	$0.04	$0.07	1.5
Mariposa	$0.75	$1.13	22.1
Merced	$0.01	$0.02	0.4
Mono	$0.03	$0.04	0.9
Tuolumne	$0.06	$0.10	2.2
All	$0.9	$1.36	**27.2**

Note: All monetory figures are in 1998 constant dollars. Totals may not add up exactly due to rounding.
FTE= Full Time Equivalents

Construction Spending and Employment

Construction proposed under this alternative would total $441.7 million in 2000 dollars. In 1998 dollars, this cost corresponds to approximately $416 million. The development cost estimate includes approximately $21.4 million for a bus fleet in 1998 dollars. This spending is expected to occur outside the affected region. In addition, a considerable portion of the other construction spending will also occur outside of the affected region. As a result, it is estimated that the total expected construction spending within the five-county affected region would be approximately $255.7 million. Table 4-111 presents the expected average annual construction spending within the five-county affected region by five-year phase. The table also shows the total regional output and employment impacts expected to result from those expenditures.

During the first five-year phase of project implementation, project construction spending would generate an estimated $32.2 million of additional output per year in the five-county region's construction sector. This is equivalent to a 4.5% increase over recent regional construction-sector output, and represents a short-term, moderate, beneficial impact. During the same period, project construction spending would increase total annual industrial output (direct and secondary) in the region by approximately $46 million in 1998 dollars (including construction- and nonconstruction sector output). This is equivalent to a 0.36% increase over recent regional industrial output, and represents a short-term, negligible, beneficial impact.

Table 4-111 also shows that during the first five-year phase of project implementation, project construction spending would generate an estimated 373 full time equivalent jobs in the region's

construction sector. This is equivalent to an almost 4.1% increase in recent regional construction-sector employment and represents a short-term, moderate, beneficial impact. During the same period, project construction spending would cause the region's total employment (direct and secondary) to increase by an estimated 573 jobs (including construction- and nonconstruction-sector jobs). This translates to a 0.35% increase in total employment in the region, and represents a short-term, negligible, beneficial impact.

Table 4-111
Estimated Average Annual Construction Spending and Associated Output/Employment Impacts

Period (Years)	Average Annual Construction Spending ($million/yr)	Direct Construction Sector Output Impacts ($million/yr)	Total Construction Spending-Associated Output Impacts[1] ($million/yr)	Direct Construction Sector Employment Impacts (FTE)	Total Construction Spending-Associated Employment Impacts[2] (FTE)
1-5	32.2	32.2	46.0	373	573
6-10	15.7	15.7	22.5	182	307
11-15	3.3	3.3	4.6	38	63
Total	**255.7**	**255.7**	**365.4**		

Note: All monetary figures are in 1998 constant dollars. Totals may not add up exactly due to rounding.
1. Impacts include both direct and indirect spending-related impacts. Cost estimates exclude estimated engineering/planning costs.
2. Total impacts include both direct and indirect spending-related impacts. Employment impacts expressed in terms of Full Time Equivalents (FTE).

Estimated average annual construction spending for this alternative, and associated output and employment impacts within Mariposa County, are shown in table 4-112. During the first five-year phase of project implementation, project construction spending would generate an estimated $7.7 million of output per year in Mariposa County's construction sector. This is equivalent to an increase of approximately 20% over recent output in that sector, and represents a short-term, major, beneficial impact. During the same period, project construction spending would cause total annual industrial output (direct and secondary) in the county to increase by approximately $10.1 million in 1998 dollars. This is equivalent to a 2.0% increase in the county's total industrial output, and represents a short-term, minor, beneficial impact.

Table 4-112 also shows that during the first five-year phase of project implementation, project construction spending would generate an estimated 84 full-time-equivalent jobs in Mariposa County's construction sector. This is equivalent to an almost 18% increase in recent employment in that sector, and represents a short-term, major, beneficial impact. During the same period, project construction spending in the county would cause the county's total employment (direct and secondary) to increase by an estimated 128 jobs. This translates to about a 1.6% increase in total employment in the county, and represents a short-term, minor, beneficial impact.

Output and employment generated would decrease by over 50% during the second five-year construction phase, and 90% during the final five-year construction phase, when compared to the first five-year construction phase. All regional output and employment impacts would end after 15 years.

Table 4-112 Estimated Average Annual Construction Spending/Associated Output and Potential Employment Impacts (Mariposa County)					
Period (Years)	Average Annual Construction Spending[1] ($million/yr)	Direct Construction Sector Output Impacts ($million/yr)	Total Construction Spending-Associated Output Impacts[1] ($million/yr)	Direct Construction Sector Employment Impacts (FTE)	Total Construction Spending-Associated Employment Impacts[2] (FTE)
1 - 5	7.0	7.0	10.1	84	128
6 - 10	3.4	3.4	4.9	41	63
11 - 15	0.7	0.7	1.0	9	13
Total	**55.7**	**55.7**	**80.1**		

Note: All monetary figures are in 1998 constant dollars. Totals may not add up exactly due to rounding.
1. Impacts include both direct and indirect spending-related impacts. Cost estimates exclude estimated engineering/planning costs.
2. Total impacts include both direct and indirect spending-related impacts. Employment impacts expressed in terms of Full-Time-Equivalents (FTE).

Following implementation of projects proposed under Alternative 4, it is anticipated that approximately $17.0 million (1998 dollars) a year would be permanently spent within the affected region to operate and maintain the park's new in-Valley visitor transit shuttle system, to meet the staffing requirements of expanded park visitor facilities and employee housing, and to pay for additional operations and maintenance expenses incurred by the concessioner on project-associated new visitor and employee housing facilities. Table 4-113 indicates that this spending would generate about $25.8 million of output per year and 412 jobs within the affected region. This represents a long-term, negligible, beneficial impact on the region's economy.

Table 4-113 Estimated Average Annual Park and In-Valley Transit System Operations Spending (1998 Dollars)				
County(s) (In Park)	Annual Park and Transit System Spending[1] ($ million/yr)	Total Operation Spending-Associated Output Impacts[2] ($million/yr)	Additional National Park Service Employees (FTE)	Total Operation Spending-Associated Employment Impacts[3] (FTE)
Mariposa	$7.1	$11.8	127	231
Yosemite Region	$17.0	$25.8	127	412

Note: All monetary figures are in 1998 constant dollars. Totals may not add up exactly due to rounding.
1. Spending in Mariposa County calculated as the sum of estimated increased project-associated National Park Service operating costs and estimated spending on in-Valley component of transit operations.
2. Includes direct and secondary output (includes new National Park Service employee spending).
3. Includes direct and secondary employment (includes new National Park Service employee spending).

The table also indicates that new park-operations–related spending is anticipated to generate $11.8 million in additional output per year within Mariposa County. This would represent a 2.3% increase over recent county output, a long-term, minor, beneficial impact to the county's economy. Furthermore, park-operations–related employment is expected to increase employment in Mariposa County by 231 jobs (including 127 National Park Service positions), a 2.8% increase over recent county employment levels. This represents a long-term, moderate, beneficial impact to the county's economy.

Other Revenues

Detailed analysis on the retail spending habits of National Park Service and Yosemite Concession Services employees is unavailable; therefore, the quantitative extent of retail trade resulting from

employees living in Yosemite Valley, Wawona, or at the El Portal Administrative Site is not known. However, it is known that many employees do rely on local stores for groceries and other items. It is not known where other trade occurs. Experience indicates that it is likely that employees living in the Valley or El Portal travel either south or west along Highways 140 or 41 to the communities of Mariposa, Oakhurst, Merced, or Fresno to purchase supplies they cannot obtain in the park. Although it is not possible to quantitatively assess how this alternative would affect retail and sales revenues in Mariposa County, some qualitative assessments can be made.

No changes to employees' income are expected to be associated with relocations (except for the additional income from the housing incentives), and no changes in employee spending behavior are expected. However, Mariposa County's economy may experience long-term, minor benefits if: (1) relocated employees shift some of their spending to Mariposa and Merced from Oakhurst and Fresno, (2) there is net growth in the park employee population, and (3) employee spending increases as a result of increased income from housing incentives.

Under this alternative, approximately 966 park employees (including relocated park employees, new employees, and family members) would be relocated from the Valley to El Portal. Although retail facilities in El Portal are limited, most of the relocated employees would continue to work within the Valley and would likely purchase goods there. Employees relocated to El Portal would also be approximately 30 minutes closer to Mariposa and Merced and approximately the same distance from Oakhurst and Fresno. As a result, relocated employees would have comparable access to spending opportunities and may be expected to shift some of their spending to Mariposa. While the magnitude of any such changes in employee spending cannot be estimated, the impacts to Mariposa and Madera Counties are expected to be long-term, negligible, and beneficial.

Under this alternative, additional housing for 254 new park employees would likely increase spending incrementally. In addition, housing for 24 new employees not currently living in the Valley would be developed at Wawona. Spending by these additional park employees, for the most part, would represent new spending income for Mariposa County (although because many would be seasonal employees, the spending benefits to the county would be limited). The primary direct benefit to the county's economy would be from additional sales tax revenues from this employee spending.

The potential financial impacts on Mariposa's economy from the proposed housing changes at Wawona would be negligible. The local spending and tax impacts (such as local sales and real estate taxes) would have a negligible beneficial impact on Mariposa's economy and the tax impacts associated with the relocated housing are expected to be negligible.

Spending by these additional park employees would mostly represent new spending income for Mariposa County (although many would be seasonal employees, so the spending benefits to the county would be limited). The primary direct benefit to the county's economy would be from additional sales tax revenues from this employee spending.

Mariposa County currently assesses a 1.25% tax on all retail and restaurant sales within the county (including the majority of concessioner sales within Yosemite National Park). The average concessioner employee's wages are low, and it is estimated that the annual earnings of the

new additional employees would be approximately $3.7 million. Of these wages, only a small proportion would be available for purchasing taxable goods and services. For example, if 10% of total gross income was spent on purchasing goods within Mariposa County, the sales tax revenues would be approximately $4,600, which would have a long-term, negligible, beneficial impact on the county's economy.

The primary concessioner would be expected to pay a total of $500,000 in housing incentives annually for employees relocating out of the Valley to El Portal. This additional spending also would have a long-term, negligible, beneficial impact on the county's economy.

Overall, the future change in local sales tax revenues is projected to be negligible, because no significant change in local spending by park employees is expected as a result of this alternative.

Mariposa County does not individually tax employees of the park's primary concessioner for possessory interest. Instead, the county assesses Yosemite Concession Services operations annually to determine its possessory tax payment owed to the county. If Yosemite Concession Services' financial situation is impacted adversely by this alternative, then its possessory tax payments to the county are expected to decrease. However, the magnitude of Yosemite Concession Services current possessory tax payments to the county is proprietary information, and the county would not project the magnitude of the likely change to its revenues under this alternative. It is possible, though, that long-term, major, adverse impacts to the county's tax revenues could occur if Yosemite Concession Services operations are significantly affected.

No change in housing demand from park employees currently living in privately owned housing is expected as a result of this alternative. The new employee housing in El Portal and Wawona is planned to primarily accommodate permanent hourly workers who otherwise would be housed in the tent cabins within the Valley. These employees are not likely to be able to afford unsubsidized housing. Any increase in private housing demand would be associated with the small population of middle and upper management Yosemite Concession Services employees. It is expected that only the 90 managerial concessioner employees currently living in the Valley would be able to consider purchasing a home locally. Relocation of Yosemite Concession Services headquarters would reduce the commute time for any concession office staff living in privately owned housing in Mariposa.

Even if a number of concession employees purchase private homes as a result of the proposed employee housing changes, there would only be a net increase in the county's real estate tax revenues if house prices had risen since the property was purchased previously. According to local real estate agents, after a period of appreciation in local home values during the early and mid-1980s, local house prices have not changed much over the last 10 years. As a result, the net tax revenue impact to the county from any house sales would be long-term, negligible, and beneficial.

Regional Economies Conclusion

Economic impacts of this alternative on the affected environment would result primarily from project construction spending. During the first five years of development, $32.2 million in annual spending would expand the regional economy by approximately $46 million of output. This would represent a short-term, negligible, beneficial impact. In Mariposa County, however, the

estimated $10.1 million project-related increase in annual output during the project's first five years of implementation would have a short-term, minor, beneficial impact on the county's overall economy. In addition, during the first five years of development, it is estimated that approximately 573 total jobs would be generated in the affected region. This represents a short-term, negligible, beneficial impact on regional employment. In Mariposa County, however, the estimated 128 jobs generated directly and secondarily by project spending would have a short-term, minor, beneficial impact on that county's employment.

Impacts on employment would occur as new jobs are created from construction spending and visitor spending. Assuming the unemployed labor force in the Yosemite region would fill the majority of these new jobs, unemployment rates would drop significantly under this alternative. This would represent a short-term, major, beneficial impact on the region's economy. Housing impacts would be negligible, based on the assumption that new jobs would be filled by existing residents of the Yosemite region.

Redevelopment of the park's lodging and campsite facilities also would impact the regional economy by changing visitor spending in the region. Completion of these visitor facility changes is expected to occur 10 years after the start of project construction. During this 10-year period, park overnight lodging capacity would not be allowed to fall below current levels. Once full build-out is completed, it is estimated that annual visitor spending would increase by about $1.4 million in 1998 dollars. The economic impacts on the surrounding county economies would be long-term, negligible, and beneficial. Mariposa County, however, would experience a long-term, minor, beneficial impact to its annual output and employment base.

Regardless of regional efforts to attract Yosemite day visitors following implementation of Alternative 4, it is expected that the negligible, beneficial impacts to the regional economy associated with Yosemite visitors would be more than offset by increased regional output and employment from expanded National Park Service operations and the park's new visitor transit system.

The overall economic impacts of the changes from visitor spending and operational spending to the regional economy would be long-term, negligible, and beneficial. This impact would result primarily from the long-term, negligible, beneficial impact associated with the employment effects from the increased park operations.

For Mariposa County, the overall economic impacts of the changes from visitor spending and operational spending change would be long-term, minor, and beneficial. This overall impact would result from the combined effect of the moderate, beneficial impact to the county from increased park operations, and the minor, beneficial impact from expected overnight park visitor spending increases.

Cumulative Impacts

Although none of the projects identified in Appendix H would be expected to attract additional visitors to the park, these projects would be expected to change the lodging patterns of the visitor population. As described under Alternative 1, the new lodging units identified in Appendix H would be expected to accommodate approximately 525,500 overnight stays per year, and these

stays would be filled by park visitors who would otherwise have been day visitors. Combined with the net increase of 24,600 stays described above, the cumulative impact would be an increase of approximately 550,100 overnight stays per year.

Visitor Spending

In addition to the increase in overnight visitation to the Valley under this alternative there would also be an increase in lodging capacity in the region from the projects identified in Appendix H. As described under Alternative 1, the projects in Appendix H would generate approximately $18.8 million in direct annual visitor spending in the region. Thus, the total annual change in visitor spending would be approximately $19.7 million under this alternative.[2] This represents a long-term, moderate, beneficial impact on the regional economy.

Secondary impacts generated by $19.7 million in additional visitor spending would be estimated at $10.5 million. At full build-out, therefore, the total estimated spending-associated impact on annual output under this alternative would be approximately $30.2 million, a long-term, moderate, beneficial impact on the regional economy. If new visitors are attracted to the region by the increase in lodging capacity, visitor spending would be higher, and the impact would be greater.

Construction Spending

Local construction spending from the projects identified in the cumulative impact scenario is estimated to average $255.0 million annually. Under this alternative, an additional $17.0 million per year in local construction spending would occur on average from the proposed renovation of campsites, and the development and relocation of housing, parking, and other structures. Total construction spending on the projects under this alternative and outlined in Appendix H, therefore, would be approximately $282.2 million per year.

Additional construction spending would generate secondary output impacts as a result of local spending on material inputs and wage spending by project labor. For annual construction spending of $282.2 million, secondary impacts would be estimated at approximately $121.1 million. The total change in annual output (direct and secondary) would therefore be $403.3 million; a short-term, major, beneficial impact on overall industrial output in the region. Of this increase, approximately 87% is associated with housing construction in Merced County.

New park-operations-related spending is expected to generate an additional $25.8 million in output per year in the Yosemite region.

Employment

The equivalent of up to 641 jobs would be created from the increase in visitor spending in the region.[3] In addition, the equivalent of approximately 2,900 to 9,100 full-time jobs would be

[2] Assuming the proposed changes in Alternative 4 would cause overnight visitor spending to increase by $0.9 million when all lodging and camping construction/removal is complete.

[3] Assuming the proposed action in Alternative 4 would cause the number of jobs created by visitor spending to decrease by 27 Full Time Equivalents when all lodging and camping construction/removal is complete.

supported each year from construction spending under this alternative and projects described in Appendix H, depending on the phase of construction. An additional 412 jobs would be generated by new park-operations–related spending. Much of the general labor and raw materials would probably come from local sources. Unemployed labor (i.e., the available workforce) in the surrounding region (22,180) would considerably outnumber the projected number of new jobs created from construction and visitor spending. A labor shortage is not anticipated because of the large number of unemployed workers in the region. However, employment needs could also be met by residents of counties outside the affected region, such as Fresno, particularly for the large construction projects in Merced County, such as the proposed housing development and University of California campus development. In such a case, the economic benefits identified would instead be gained outside the region.

As discussed under Alternative 1, several other projects would create temporary and full-time employment opportunities within the region in the reasonably foreseeable future. Because the local workforce is expected to fill the new employment opportunities, no significant influx of workers is expected. Therefore, no new housing is projected to be needed to accommodate employment impacts from this alternative, or from projects described in Appendix H.

Overall, impacts on employment would occur as new jobs are created from visitor spending, construction spending, and operations spending. Assuming the unemployed labor force in the Yosemite region would fill the majority of these new jobs, unemployment rates would drop under this alternative. This would represent a short-term, major, beneficial impact on the region's economy. Under the assumption that new jobs would be filled by existing residents of the Yosemite region, there would be no impacts on housing in the region.

CONCESSIONERS AND COOPERATORS

Yosemite Concession Services

The changes to park facilities and operations proposed under this alternative would affect both Yosemite Concession Services operations and its finances. The National Park Service planning staff used detailed information provided by the current concessioner to analyze existing concession operations and the proposed alternatives to estimate future operational and financial impacts on concession operations within the park. The impact analysis assumes that there would be no change in park visitation and visitor spending behavior, to make conservative projections of the concessioner's future operational and financial conditions.

- It is expected that the majority of in-Valley housing would be for seasonal employees. The reduced number of housing units that would remain in Yosemite Valley would have an adverse impact on future concession operations because there would be insufficient housing for a full shift of employees to be based in the Valley. In-Valley employee housing should be sufficient to provide housing for approximately 72% of employees necessary to staff concession operations for one shift. As a result, the concessioner's ability to meet visitor service needs under circumstances such as road closures or other commuting difficulties (such as fire or flood conditions preventing employees from commuting in and

out of the Valley) would be reduced. This would represent a long-term, minor, and adverse impact on the concessioner's future operations.

- It is expected that future out-of-Valley employee housing would be occupied predominantly by year-round employees. These employees also would be required to commute into the Valley using an employee transit system. However, from a visitor service perspective, year-round employees should ideally remain close to the work site for maximum guest service benefit and operational needs. As a result, the concessioner's ability to meet visitor service demand would be reduced, because its best and most reliable employees would be housed in El Portal.
- It is expected that several adverse impacts could remain after proposed employee housing changes were implemented under this alternative. The concessioner's ability to recruit qualified and experienced management may continue to be constrained by the limited availability of housing for management personnel. Because a major proportion of the employee housing would be relocated to El Portal, one of the concessioner's greatest recruiting attractions would be reduced: namely, enabling employees to live, work, and recreate in Yosemite Valley. However, future housing designs would attempt to accommodate future employee housing needs. Furthermore, the quality of all new replacement housing would be improved compared to the current housing facilities. The combined impact of these factors would be expected to have a long-term, minor, adverse impact on the concessioner operations.
- Relocation of the National Park Service and concessioner stables to McCauley Ranch would eliminate the commercial horseback riding service to visitors beginning trips in the Valley. Under this alternative, packhorses would be moved by trailer in and out of the Valley daily to continue support service for the high country camps. This would represent a long-term, minor, adverse impact on the concessioner's future operations.
- Relocation of the Village Garage to El Portal would adversely affect the concessioner's towing service. Disabled vehicles would need to be towed to El Portal and, as a result, would increase the response time for its towing service. Additional heavy-duty tow trucks would have to be purchased, operated and maintained to provide roadside assistance to buses and other large vehicles (e.g., shuttle bus and recreational vehicles) over longer distances. This would represent a long-term, minor, adverse impact on the concessioner's future operations.

Three types of financial impacts are expected under this alternative: (1) changes to the concessioner's gross revenue (sales receipts) and profitability, (2) employee housing and relocation-related cost increases including furniture, fixtures, and equipment (FF&E) expenses, and (3) annual repair and maintenance cost on new facilities. The magnitude of these impacts would depend on whether the impacts occur during the remainder of the current concessioner's contract (i.e., until 2008) or under a subsequent contract. The estimated financial impacts discussed below are expressed in terms of stabilized annual revenues and costs. These impacts are also generally represented as net impacts compared to the concessioner's 1998 financial conditions.

Gross revenue impacts reflect changes to the concessioner's sales resulting from the proposed change to visitor services. The furniture, fixtures, and equipment impact represents the initial cost of outfitting the proposed new facilities to make them operational and the subsequent replacements of the new fixtures and facilities as they wear out (typically after seven years of use).[4] Maintenance and employee housing cost impacts represent the additional expenditures necessary to operate under the new configuration of facilities. The profit impact clearly shows the financial impacts on the concessioner's business because it includes changes in both annual revenues and costs.

The impact analysis of the concessioner includes an evaluation of whether concessioner profits would be adequate to allow the concession operator to earn a reasonable return relative to its investment and operating risk. To evaluate the *Final Yosemite Valley Plan/SEIS* alternatives' impact on the concessioner, the analysis began by evaluating the concession's current capacity to earn a profit and then considered how each aspect of the *Final Yosemite Valley Plan/SEIS* alternatives would impact that capacity.

The concessioner's profit capacity may be understood as consisting of two components—its present profit plus the amount of its federal contribution. In other words, the concessioner's financial contribution to the federal government represents the amount of money it is able to pay after earning a reasonable return. It is important to note that this judgment is based on the fact that the current Yosemite concessioner obtained the concession contract in a fair market competition in which it presumably is retaining reasonable profits that are neither insufficient nor excessive. If the changes in concession operations induced by the *Yosemite Valley Plan* do not erode all of the concessioner's ability to make financial payments to the government, a reasonable profit would remain available to the concessioner. On the other hand, if the *Yosemite Valley Plan* eliminates the concessioner's ability to make any federal contribution, the concessioner may still earn a reasonable return as long as its profits are not also eroded. However, if the concessioner was unable to make any payments to the federal government and was also unable to earn a reasonable profit, that situation could not be sustained. The concessioner would choose to discontinue operations.

The total profit impact on the next concessioner's operations associated with the proposed alternative is projected to be an annual decrease in its profits of $8.2 million. This projection is based on the combined profit impacts associated with: (1) changes to the concessioner's gross revenue (sales receipts) and profitability, (2) employee housing and relocation-related cost increases including furniture, fixtures, and equipment, and (3) annual repair and maintenance costs on new facilities.

The changes to visitor services proposed under this alternative are projected to generate additional net operating profits of $2.6 million annually. These profits would be obtained from annual revenue increases of approximately $3.9 million. The profit gains would primarily result

[4]The series of periodic future investments in furniture, fixtures, and equipment can be viewed as equivalent to an annual average investment. In this way, the annual impact of the furniture, fixtures, and equipment expense increase can be represented in the concessioner's resulting profit performance. Indeed, if the furniture, fixtures, and equipment purchases are financed with debt, as might be expected, the debt service would be an annual cost

from increasing the highly profitable Yosemite Lodge accommodations and the additional commercial visitor services to be located at the Taft Toe Visitor/Transit Center.

Future employee housing and relocation cost increases are projected to be approximately $5.0 million per year. These consist primarily of increases in the annual costs for furniture, fixtures, and equipment replacement ($1.5 million), heat and utilities ($800,000), employee transportation ($400,000), insurance ($500,000), and wage increases to encourage employees to relocate out of the Valley ($500,000). Additional housing-related staff needs are estimated to cost less than $200,000. Other associated costs total approximately $1.1 million. It is estimated that the future average annual cost for repair and maintenance would be approximately $5.8 million. Therefore, the impact on the next concessioner's resulting total profit is projected to be an annual loss of $8.2 million ($2.6 million – $5.0 million – $5.8 million = –$8.2 million).

In summary, based on the analysis of proposed changes under this alternative, future concession operations would be expected to experience a $8.2 million decrease in annual profits. This loss could be offset by reducing the current or any future concessioner's federal contribution from its current level of $9.9 million annually to cover the concessioner's projected profit reduction. In this case, it is estimated that the current or any future concessioner would be able to contribute approximately $1.7 million to the federal government annually. This would represent a long-term, negligible, adverse impact on concession operations.

Table 4-114 shows the projected financial impacts to Yosemite Concession Services under Alternative 4.

The projected revenue impact would represent a 4.5% increase in the concessioner's 1998 revenues, which would be a long-term, moderate, beneficial impact. If the concessioner's governmental contribution were used to offset the projected profit losses from its operations, then this alternative would have a long-term, negligible, adverse impact on the concession operations. However, the annual financial return to the federal government from the concession operations would be reduced from $9.9 million to $1.7 million, a reduction of 83%, which would represent a long-term, major, adverse impact to the federal government.

Table 4-114
Projected Annual Financial Impacts ($ Million)[1]

Impact	Alt. 1	Alt. 4	Net Change
Revenue	$0	$3.9	$3.9
Profit from Operations	$0	$(8.2)	$(8.2)
Concessioner's Government Contribution	$9.9	$9.9	$0
Net Profit Impact & Govt. Contribution	**$9.9**	**$1.7**	**$(8.2)**

1. In 1998 Constant Dollars Projected Annual Financial Impacts ($ Million)

Yosemite Medical Clinic

Under this alternative, Yosemite Medical Clinic would remain in its current location. Also under Alternative 4, it is projected that approximately 15,800 room nights would be gained with a corresponding increase of 24,600 overnight stays within the Valley annually. While this represents an approximate 2.0% increase in park overnight stays, it corresponds to only a 0.8% increase in park visitation (compared to 1998 visitation levels). This would represent a long-term, negligible, beneficial impact to the Clinic.

Although relocation to El Portal might encourage some employees to seek medical attention at other clinics outside the park, the majority of these employees would continue to work in the Valley and may continue to seek medical attention at the Valley Medical Clinic. However, the net effect and future magnitude of these impacts on the concession's future sales cannot be quantified.

The Ansel Adams Gallery

Under this alternative, The Ansel Adams Gallery would remain in its current location. Proposed modifications for the Yosemite Village Area include expansion of fast food facilities at the Village Grill and Degnan's, removal of public parking throughout the Yosemite Village area, and the transformation of the Yosemite Village area as an interpretive hub. A new transit and visitor center would be located at Taft Toe. All day visitors would be required to use the Valley transit system to enter the east end of the Valley and some day visitors would be accessing the Valley by shuttle from remote parking areas.

While the new transit and visitor center is located mid-Valley and visitors may disperse from that point, the Yosemite Village area is expected to continue to be an important part of most park visitors' travel itinerary. It is expected these actions would have a long-term, minor, adverse impact on the Ansel Adams Gallery since potential customers will not be initially directed to the Yosemite Village area. The adverse impact could be decreased if future signage and visitor orientation programs increased public awareness of the Gallery's location, operations, and history.

While the proposed natural resources restoration actions may improve the Valley's visual appearance and enhance overall visitor experience, these changes would not be expected to affect the Gallery's business. However, removal of nearby parking may reduce the Gallery's annual sales because many visitors may be reluctant to make purchases if they must use the shuttle buses to return to their cars or overnight accommodations. In addition, any changes to the park's annual visitation may also be expected to have a corresponding effect on sales by altering the Gallery's customer base. However, the net effect and future magnitude of these impacts on the concessioner's future sales cannot be quantified.

Yosemite Association

Employee housing is the primary issue affecting the Yosemite Association's future operations. The Association currently experiences a shortage of employee housing, and any increase in future employees would increase the problem. This alternative proposes that some housing would be available for Yosemite Association employees; if this occurred it would have a long-term, moderate, beneficial impact on the Association's ability to recruit and retain staff.

The proposed changes to the Valley Visitor Center are expected to produce mainly long-term, moderate, beneficial impacts to the Yosemite Association. Under this alternative, the visitor center would be relocated to the site of the Yosemite Village Store. The existing Yosemite Village Store building would either be rehabilitated or replaced. The new visitor center would also serve as a transit center for park visitors.

As a result, visitor use at the new visitor center may be expected to increase compared to use of the existing visitor center, which is inconveniently located and has limited and poor display space.

Relocation of the visitor center to a larger and more readily accessible site would improve the Association's ability to provide effective information and orientation service as well as retail sales. It is estimated that annual sales at the new visitor center could double from its current revenues of $0.75 million. This would represent a long-term, major, beneficial impact to the Association. It is also expected that these revenue increases would exceed any decreases in sales that may be associated with any reduction in park visitation (e.g., from lodging reductions).

Under this alternative, the Yosemite Association's Valley office would be converted for use as a natural history museum. This would allow improvement of the existing cultural history museum within the existing museum building. The Yosemite Association expects these changes to have a long-term, moderate, beneficial impact on its finances because it would be able to enlarge and improve the existing Museum Store and open an additional store at the new national history museum.

Increases in Yosemite Association retail sales may require hiring additional retail employees. While the Yosemite Association cannot project the necessary staff increase, it does expect costs to be covered by the increased sales. This would be a long-term, minor, adverse impact. Also, staff increases would exacerbate the housing problems noted above, potentially causing a long-term, minor, adverse impact.

Yosemite Institute

Numerous impacts to the Yosemite Institute are expected due to proposed changes to overnight accommodations, administrative park operations, transportation, research library, archives, and museum.

Overnight Accommodations

The reduction in the number of Curry Village tent cabins and elimination of cabins without baths may affect the Yosemite Institute, which currently occupies approximately 80 units between September and June. Under this alternative, additional economy accommodations are proposed at Curry Village to add 112 units suitable for Yosemite Institute use throughout the winter. As a result, lodging capacity for Yosemite Institute participants is expected to be adequate.

It is expected that Yosemite Institute would be required to pay higher room rates to Yosemite Concession Services for rooms with bath. Based on Yosemite Concession Services current rate structure and depending on the availability of the remaining Curry Village tent cabins for Yosemite Institute's use in September and June, it is estimated that the Institute's average lodging costs would increase between 16% and 25%. This is equivalent to an average lodging cost increase of $1.80 to $2.70 per person per night. Based on an average annual total of 40,122 person-nights spent in Yosemite Concession Services accommodations by Yosemite Institute participants, Yosemite Institute's total lodging costs may be expected to increase between $72,000 to $108,000 (in 1999 dollars). This would represent a long-term, moderate, adverse impact on Yosemite Institute's program.

Transportation

Proposed transportation plans would have a long-term, negligible, adverse impact on Yosemite Institute's program, because most participants rely on commercial buses for their transportation needs, and all student visitors are overnight visitors. Yosemite Institute employees would welcome the opportunity to use public transportation to and from locations outside the Valley.

Administrative Park Operations

Under this alternative, Yosemite Institute's administrative offices would be relocated outside the Valley into government provided facilities in El Portal. The National Park Service would work with the Yosemite Institute and the primary concessioner to provide adequate facilities for the Institute's field operations that operate in the Valley during the off-season. The purpose of these facilities would be to provide an adequate staging area and base of operations so the Yosemite Institute could provide the essential support necessary for its field operations. Relocation of the Institute's administrative operations would represent a long-term, minor, adverse impact on Yosemite Institute's education programs.

In addition, under this Alternative, Yosemite Institute would be beneficially affected by the new educational opportunities provided by the natural resources restoration in the east end of the Valley, and the improved access to the west end of the Valley.

El Portal Chevron Station

Under this alternative, the overall number of visitors entering along Highway 140 is not expected to change. The majority of day visitors would continue to drive into the park or use the park transit system from the out-of-Valley parking sites. It is expected that there would be a moderate increase in visitors using transit or tour buses to access the Valley. Growth in bus traffic would increase the demand for diesel fuel, which would be expected to have a long-term, minor, beneficial impact on the station's revenues. Correspondingly, the use of transit buses by day visitors parking at the El Portal satellite parking facilities would reduce the number of visitor vehicles using the station. Visitor fuel sales may therefore be expected to decrease; this would have a long-term, minor, adverse impact on the station's annual revenues.

In addition, while the proposed increase in employees living in El Portal would generate a moderate increase in demand for automotive fuel, these gains would likely be offset by the reduction in the number of employees commuting daily into the Valley. Instead, these employees would be required to use the employee transit system. Overall, it is expected that this alternative would have a long-term, minor, adverse impact on the El Portal Chevron concession.

El Portal Market

Under this alternative, the El Portal Market would remain at its current location, and its facilities and operations would be unchanged through the term of the existing contract. The store's primary source of customers is from park visitor traffic along Highway 140. It is expected that the use of transit or tour buses by day visitors would reduce private vehicle traffic and thus potential customers.

Although past population increases have not resulted in increased sales at the market, it is possible that the increase in employee housing at El Portal would result in a minor increase in revenues. Therefore, overall this alternative is expected to have a long-term, negligible, adverse impact on El Portal Market's sales.

Concessioners and Cooperators Conclusion

Under this alternative, the proposed changes to park facilities are expected to have long-term, minor, adverse impacts on the primary concessioner operations (currently Yosemite Concession Services), mainly associated with locating new employee housing outside of the Valley. This action would require many employees to commute into the Valley using the employee transit system, reduce the number of staff available for work during road closures or other commuting difficulties, and may reduce the concessioner's ability to recruit future employees. In addition, relocation of the concessioner stable and primary garage services out of the Valley would require additional staff and equipment for these services.

The future primary concession operations would be expected to experience an $8.2 million decrease in annual profits. This loss could be offset by reducing the current or any future concessioner's federal contribution from its current level of $9.9 million annually to cover the concessioner's projected profit reduction. In this case, it is estimated that the current or any future concessioner would be able to realize a reasonable profit and contribute approximately $1.7 million to the federal government and Valley. In total, this would represent a long-term, negligible, adverse impact on concession operations.

The proposed changes to visitor interpretation facilities are expected to have a long-term, major, beneficial impact on the Yosemite Association by providing improved and increased retail sales opportunities. However, associated increases in employees and the limited employee housing for the Yosemite Association staff may have a long-term, moderate, adverse impact on the organization.

Long-term, moderate impacts to the Yosemite Institute are expected from the proposed changes to overnight accommodations and park facilities. Reductions in Curry Village tent cabins would have a long-term, moderate, adverse impact, because program participants would need to use other newly built but more expensive lodging facilities. Relocation of the program's administrative office out of the Valley is expected to have a long-term, moderate impact.

The proposed changes to visitor access and relocation of employee housing would have a long-term, minor, adverse impact on the El Portal Chevron station, and a negligible adverse impact on the El Portal Market.

The proposed changes in visitor parking and visitation are expected to beneficially affect the Ansel Adams Gallery sales; however, the net impact on the Gallery is undetermined. Changes in the park's visitation are expected to have a long-term, negligible, beneficial effect on Yosemite Medical Clinic's operations. The net effect on the clinic's future operations associated with relocation of employee housing and park safety improvements is undetermined.

Cumulative Impacts

Yosemite Concession Services

The cumulative impacts would be the same as described under Alternative 1. The primary concessioner would be expected to assume costs of future "repair and maintenance" on *existing* park facilities used for its operations, an estimated annual cost of $1.7 million. As a result, under this alternative, a total cumulative impact would result in no net loss to the concessioner. The $1.7 million projected federal contribution by the concessioner would be entirely offset by the $1.7 million repair and maintenance cost on existing park facilities used by the concessioner. This would represent a long-term, negligible, adverse impact on the concessioner because its net profits would be unaffected by the reduction in its future federal contribution.

Other Concessioners and Cooperators

The cumulative impacts would be the same as described under Alternative 1.

Park Operations

NATIONAL PARK SERVICE OPERATIONS

Superintendent's Office

This alternative would have no impact on the superintendent's office staff or its annual funding requirements.

Maintenance Operations

Buildings and Grounds

To provide the levels of service considered necessary, it is estimated that approximately 22 additional building and grounds personnel would be needed under this alternative. This would represent approximately $825,000 for additional salary and operations costs annually. Construction of new shuttle bus stops, buildings, housing units, out-of-Valley parking lots, and changes in building functions from administrative to public use would require custodial service and facility maintenance.

The rehabilitation of historic districts would require additional staffing and associated funding.

The traveler information and traffic management system, once implemented, could displace visitors to outlying districts or expand visitation to off-peak seasons. This would cause a long-term, minor, adverse impact on buildings and grounds operations in outlying districts, in that the levels of maintenance and custodial services required for peak season operations would extend throughout a longer period of the year.

Roads and Trails

To provide the levels of service considered necessary, it is estimated that approximately 29 additional roads and trails personnel would be needed. This would represent approximately $1,087,500 for additional salary and operations costs annually. A new parking lot and transit

center in the west Valley would require additional maintenance (equipment and staffing) for snow removal. Three new parking lots in out-of-Valley locations (two of which are located above the traditional snowline in the spring and fall seasons) would require maintenance equipment and staffing, primarily for snow removal. This would be a long-term commitment of fiscal resources.

An increase in trails in the Valley and El Portal would create new workloads on the trails and forestry operation. Snow removal in the winter and hazard tree removal and trail repairs throughout the year would continue for the life of the new trail system.

If the stable were to move to McCauley Ranch, it would increase the travel time for packers to get to Valley trailheads but would decrease travel times to destinations in the Tioga Road corridor. Additional staff would be required to provide more pack trips or longer work shifts, as a result of the additional travel time for pack trips leaving from Yosemite Valley trail heads.

The demand for trash pickup in the El Portal area and out-of-Valley parking areas would increase due to the relocation of administration functions, the increase in the number of housing units, and visitor-use areas.

Utilities

It is estimated that approximately six additional utilities personnel would be needed to provide appropriate levels of service. This would represent approximately $225,000 for additional salary and operations costs annually. Moving functions, constructing new buildings, and relocating utilities out of highly valued resource areas would require the installation of new service lines. New service connections and, in the case of the out-of-Valley parking areas and the Taft Toe parking and transit center, entirely new utility systems would require an increase in the annual maintenance and operational costs to provide for additional levels of service and to meet state and federal regulations for public utility systems.

Moving the National Park Service stable to McCauley Ranch would increase the travel time for the backcountry utilities operation to Valley trailheads but would decrease travel times to destinations in the Tioga Road corridor.

The overall impact to maintenance operations would be long-term, moderate, and adverse until funding is provided to meet the need. Once fully funded, the overall impact to maintenance operations would be long-term, negligible, and neutral.

Visitor and Resource Operations

Visitor and Resources Protection

It is estimated that approximately 31 additional visitor protection personnel would be needed to provide appropriate levels of service. This would represent approximately $1,162,500 in additional salary and operations costs annually. Regular patrols would have to be expanded to serve out-of-Valley parking areas. Removal of the court system and the detention facility and relocating them to El Portal, would require additional time for rangers to be away from their duty stations. During the summer months as many as eight rangers and two corrections officers would be in El Portal on a daily basis, dealing with law enforcement cases.

Relocating the base of operations for Search and Rescue from Yosemite Valley to El Portal would have the potential for long-term, minor, adverse impacts upon incident costs, in that activities in Yosemite Valley, where most complex rescues occur, would have more logistical costs than under Alternative 1. Coordination of Yosemite Valley search and rescue operations would be more difficult, while coordination of activities in other parts of the park would potentially improve.

Overall, Alternative 4 would have a long-term, moderate, adverse impact until operational funding is acquired to fully implement the actions. Once fully funded, impacts would be long-term, negligible, and neutral.

Interpretation

Greatly expanded interpretive and educational facilities and programs would require an increase in staffing for the Interpretation Division. The new museum and library with expanded public access would also require increased staffing. The Interpretation Division would have to operate additional visitor contact facilities and conduct additional interpretive programs. It is estimated that approximately 29 additional interpretive personnel would be needed to provide prescribed levels of service. This would represent approximately $1,087,500 in additional salary and operations costs annually. The overall impact of this alternative would be long-term, major, and adverse until operational needs are fully funded. Once funded, the impact to the Interpretation Division would be long-term, negligible, and neutral.

Resources Management

Restoration of impacted areas, continued monitoring of restoration efforts, mitigation measures to facilitate restoration resulting from changing visitor-use patterns, and expanded efforts working with American Indian programs would require an increase in staffing. Staffing and funding are also needed to implement the Visitor Experience and Resource Protection (VERP) program. It is estimated that approximately seven additional resources management personnel would be needed to provide prescribed levels of service. This would represent approximately $262,500 in additional salary and operating costs annually, and would have a long-term, moderate, adverse impact until operational needs are fully funded, the implementation of this alternative on the Resources Management Division would be long-term, negligible, and neutral.

Administration

Valley administrative operations would be shifted to El Portal. Administration support costs would be five positions at $187,000.

Concessions Management

Management and monitoring of new concession operations and facilities would require one additional staff at $37,500 annually. Additional costs are needed to increase the level of service necessary to manage revised and refined concession services.

Depending on the location chosen by the park's primary concessioner for its headquarters, coordination and communication would potentially be more difficult than under Alternative 1. However, the adverse impact of communication and coordination difficulties would likely be

moderate over the short term, becoming minor as both operations adjust to the new working environment.

Concessioners and Cooperators

Impacts on park concessioners are evaluated under the Social and Economic Environments section of this chapter.

Transit Operations

The annual recurring operations and maintenance cost of the bus fleet for this alternative is estimated to be $7,366,000. This cost would result in long-term, major, adverse impacts on this operation until fully funded. Once funded, the impacts would be long-term, negligible, and neutral.

Conclusion

This alternative would require that approximately 130 additional park personnel be added to current staffing levels in the Maintenance Operations, Protection Operations, Interpretation, Resources Management, and Administration divisions. This would require an additional $4,875,000 annually (or approximately $37,500 per person) in additional park funding for salary and operations costs above those discussed under Alternative 1. The cost for the additional park personnel would represent a long-term, moderate, adverse impact, until fully funded. Once funded, the impacts to park operations would be long-term, negligible, and neutral.

Cumulative Impacts

Cumulative impacts would result from other park planning projects and regional activities. There could be a moderate increase in the workloads of the Maintenance Operations, Interpretation, and Resources Management divisions as a result of the transit system developed by the Yosemite Area Regional Transit System (inter-agency) due to increased needs in facility maintenance, custodial services, visitor education, and resource monitoring. This would be a long-term, moderate, adverse impact because of these workload increases. There would be a long-term, minor, beneficial impact on Protection Operations as a result of YARTS due to the alleviation of traffic congestion. These effects, in combination with the moderate impacts of implementing in-park and in-Valley transit systems, would result in operational impacts that are long-term, major, and adverse compared to Alternative 1.

The redesign of the South Entrance and Mariposa Grove areas would increase the workload of the Protection Operations, Maintenance Operations, and Resources Management Divisions in the short term during initial planning and implementation. This would cause a short-term, minor, and adverse impact. This project would require a long-term commitment from and create an increased workload for the Interpretation Division. This project would have a major, adverse impact on the workload of the Interpretation Division. The Protection Operations and Maintenance Operations Divisions would achieve long-term moderate benefits when the project is completed due to decreased workloads for their operations. These effects, when considered in combination with the major impact of providing more interpretive services at improved visitor information centers, would result in long-term, moderate, and adverse operational impacts.

Fire Management planning and Wilderness Management planning would require an increase in the workloads of the Protection Operations and Resources Management Divisions. These would have short-term, major, adverse impacts on both divisions. The workload of fire management staff would increase over the long term as a result of this planning effort. This alternative would create the need for planning, design, and program refinement which would also have short-term, major, adverse impacts; cumulative impacts would remain major and adverse, but of a short-term duration.

Numerous proposed residential and commercial developments along each entrance corridor would have no long-term impacts on operations, assuming that a traveler information and traffic management system would be developed and that the park would not provide emergency services to those areas. Should the park be required to provide emergency services to these areas, impacts would be incurred unless cooperative agreements were adopted and financial support was available from the involved county governments. Moderate to major short-term, adverse impacts would be expected during times of construction. Considered in combination with the actions in this alternative, adverse effects upon Protection Operations would remain moderate to major and long term.

A research station for the University of California campus at Merced (UC Merced) would have long-term moderate to major benefits for the park as a whole, resulting from educational and research support and the creation of a viable recruitment pool for new employees.

Many other in-park actions such as major campground rehabilitation, development concept planning, and water treatment plant rehabilitation (including water and wastewater improvements at Tuolumne Meadows and White Wolf), would have short-term, major, adverse impacts on staff availability during times of construction or development. When considered in combination with the actions in this alternative, the cumulative effect of these activities on park operations would remain major and adverse, but of a short-term duration.

Energy Consumption

Under Alternative 4, housing beds would be relocated from Yosemite Valley to El Portal and Foresta, and additional beds would be added to El Portal to accommodate existing unmet needs and potential future growth as a result of operational changes associated with this alternative. No additional beds would be added to Wawona. Table 4-115 shows existing housing and estimated propane consumption for Alternative 1 and provides analogous data for Alternative 4.

Table 4-115
Changes in Housing and Propane Consumption

Location	Alternative 1		Alternative 4	
	No. of Beds	Propane (gal/yr)	No. of Beds	Propane (gal/yr)
Yosemite Valley	1,277	260,510	689	140,600
El Portal	290	59,160	1,174	239,500
Wawona	112	22,850	112	22,850
Foresta	4	820	14	2,860
Cascades and Arch Rock	12	3,450	0	0
Total	**1,695**	**345,790**	**1,989**	**405,810**

Under Alternative 4, there would be an increase of about 300% in propane consumption in El Portal, a small increase in Foresta, and a decrease of about 45% in the Valley. However, when combined, the overall propane consumption increase as a result of implementation of Alternative 4 would be 60,020 gallons per year, or 17%, which would represent a minor, long-term, adverse impact on propane consumption.

Table 4-116 lists estimated fuel consumption for visitor-related travel to and from the Valley due to the Alternative 4 transportation plans, and for additional out-of-Valley employee commuting due to the relocation of residences from the Valley to El Portal. By 2015, Alternative 4 would result in a 56% decrease in visitor-related gasoline consumption and a 155% increase in diesel (or alternative) fuel consumption. This increase would be associated with the new shuttle buses operating from out-of-Valley day-visitor parking areas, the expanded in-Valley shuttle service, and the increased number of employees commuting from El Portal to Yosemite Valley.

A 56% decrease in gasoline consumption by the year 2015 represents a savings of 1,380,800 gallons over Alternative 1, whereas the 155% increase in diesel (or alternative) fuel consumption represents an increase of 330,300 gallons over Alternative 1. Overall, Alternative 4 by the year 2015 would yield a combined savings of 1,150,500 gallons of fuel. This is a decrease from Alternative 1 in overall motor fuel consumption of approximately 42% and represents a moderate, long-term, beneficial impact. Similar energy savings are achieved for years 2005 and 2010 as well.

Table 4-116
Vehicle Fuel Consumption

Alternative	Total (Gal/Yr)		Total Fuel Consumption (Gal/Yr)
	Gasoline	Diesel or Alternative Fuel	
2000			
Alternative 1	2,905,800	230,200	3,136,000
Alternative 4	NA	NA	NA
2005			
Alternative 1	2,696,100	224,500	2,920,600
Alternative 4	1,195,300	569,300	1,764,600
2010			
Alternative 1	2,555,400	219,100	2,774,500
Alternative 4	1,132,900	556,500	1,689,400
2015			
Alternative 1	2,480,800	213,800	2,694,600
Alternative 4	1,100,000	544,100	1,544,100

CONCLUSION

Employee housing space-heating consumption would decrease in the Valley, but would increase at El Portal during the 2000-2015 time frame. Overall, there would be a minor increase in total housing units for Alternative 4 and an associated minor, long-term, adverse impact on home energy consumption.

The reduction in gasoline consumption in 2015 relative to Alternative 1 reflects the shift by park visitors from private vehicles to shuttle buses energy consumption, as well as a fleet turnover to vehicles with improved fuel economy over time. The increase in diesel (or alternative) fuel

consumption would be attributable to the deployment of shuttle buses for visitors. The combined motor fuel savings for Alternative 4 in the years 2005, 2010, and 2015 would represent a moderate, long-term, beneficial impact.

Cumulative Impacts

Other actions in the immediate area and greater San Joaquin Valley may have cumulative impacts. The cumulative impact on energy consumption under Alternative 4 would be associated with new housing and lodging developments outside the park. A moderate, long-term, adverse impact would result from these reasonably foreseeable projects in the region, as described for Alternative 2. Alternative 4, however, would represent a minimal contribution to the overall cumulative impact, since the net increase in employee housing for Alternative 4 would be only about 1% of new housing projected for the region.

Alternative 5

Yosemite Village and Out-of-Valley Parking

El Portal,
Henness Ridge,
and Foresta

Final Yosemite Valley Plan

Supplemental EIS

Photo on previous page by Howard Weaver

Opportunities for bicyclists to explore the Valley would be expanded under all the action alternatives, which propose new multi-use paved trails separated from roads.

ALTERNATIVE 5
YOSEMITE VILLAGE AND OUT-OF-VALLEY PARKING (EL PORTAL, HENNESS RIDGE, AND FORESTA)

The analysis of potential impacts from actions implemented under Alternative 5, Yosemite Village and out-of-Valley parking (El Portal, Henness Ridge, and Foresta), are presented in this section.

Water Resources

This section analyzes impacts on water resources: hydrology, including floodplain values, and water quality. Impacts to water resources are described by area (i.e., Yosemite Valley, El Portal, Wawona, and out-of-Valley parking locations) and are characterized as long-term alterations or restoration of hydrologic processes (e.g., water flow and flood regime) or water quality (e.g., turbidity, and non-point source pollution from vehicles or recreational use).

YOSEMITE VALLEY HYDROLOGY

Actions to implement the River Protection Overlay include the removal of development within 150 feet of the river. These actions would restore the river to more natural geomorphologic conditions through restoration of stream banks (i.e., stream bank stability) and the 100-year floodplain. The River Protection Overlay would allow natural processes to prevail in the river and floodplain and minimize the alterations of the floodplain due to existing and future facilities. Further, removal of development from the River Protection Overlay would potentially reduce visitor degradation of stream banks and the river channel by concentrating visitor use away from the river. Examples of these areas include Housekeeping Camp, certain meadow roads and turnouts, and campsites immediately adjacent to the river. Removal of facilities from the River Protection Overlay would allow natural floodplain alterations and lateral movement of the river channel (i.e., meandering), and increase opportunities for restoration of riparian vegetation, which would reduce unnatural erosion and deposition. Ultimately, the implementation of the River Protection Overlay would result in a regional, long-term, major, beneficial impact on hydrology and floodplain values.

At Camp 6, the River Protection Overlay would be restored, including oxbows and cut-off channels that once existed in the area. Changes to the existing river dynamics through restoration of oxbows and braided streams could, over time, become more locally pronounced and eventually contribute to restoration of natural stream flow conditions downstream of the Camp 6 area. Restoration actions at Camp 6 would result in localized, long-term, moderate, beneficial impacts on hydrology and the floodplain values.

The Camp 6 parking facility would be situated within a portion of the floodplain that could experience floodwater velocities up to 3 feet per second and floodwater depths exceeding 5 feet in

places, as was observed during the January 1997 flood. These facilities, although in an area of low relief and not likely to divert flood flow due to obstructions, could impede the river's ability to naturally migrate and change course during the extreme flood events. For example, an asphalt pavement surface could hinder the formation of natural flow channels or accelerate surface soil erosion once the asphalt surface and underlying base material is scoured and removed by high-velocity flood waters. A flat-surface parking facility could also reduce the area available to the river for sediment deposition and new bank slope formation. In addition, riverbank stability (soils compaction and vegetation loss) could be reduced due to the radiating impacts associated with the increased concentration of visitors. Overall, development of a parking facility and picnic area in the Camp 6 area could result in localized, long-term, moderate, adverse impacts on hydrology and floodplain values.

The construction of a picnic area at the location of the former Lower River Campground would have a long-term, minor, adverse impact on hydrology due to radiating impacts of increased visitor use to a sensitive stretch of riverbank.

The transit center at Yosemite Village would be constructed outside of the 100-year floodplain, but the concentration of visitors would have radiating impacts to the river and its hydrologic processes. This would be a long-term, minor, adverse impact.

At Yosemite Lodge, Northside Drive would be rerouted to the edge of the 100-year floodplain, and parking would be reconfigured, but would remain in the 100-year floodplain. This would result in a long-term, minor, adverse impact on hydrology because flood flow would be altered.

The removal of three structures at Ahwahnee Row that are located in the 100-year floodplain would have a long-term, localized, minor, beneficial impact on floodplain values by removing impediments on flood flow (particularly pooling in this area).

Restoration areas include the portions of Yosemite Lodge (including motel units that impede flood flow and the former cabins area), Upper and Lower River Campgrounds, and roads from Stoneman and Ahwahnee Meadows that are in the 100-year floodplains. Removal of these facilities and restoration would restore the hydrologic process of flooding, and would be a long-term, moderate, beneficial impact on hydrology.

The presence of a bridge as a fixed structure within a river course can cause alterations in river flow and result in localized morphologic changes to the beds and banks of the river. Morphologic changes attributable to bridge placement, and that are most readily observable, would include scour holes on the downstream side of the abutment, formation of deposition bars downstream of the scour holes, bank instability, unnatural erosion and deposition, changes in flow velocity, and localized channel widening. Removal of these fixed structures would provide for restoration of natural erosion and deposition processes; allow the river to meander and naturally alter course; and reduce flooding potential by removing flow impediments. The impacts of bridge removal would be noticeable as scour holes and downstream deposition bars caused by their in-river abutments diminish and the riverbank is reestablished by natural flow patterns. Bridge removal would continue to improve natural river flow dynamics along extended reaches of the river, and the impacts would be observable for years to come.

Sugar Pine Bridge constricts the river severely, largely because this bend of the river immediately downstream of the Tenaya Creek confluence has always been dynamic. The approach road that connects Ahwahnee Bridge to Sugar Pine Bridge eliminated the numerous small cutoff channels that existed prior to construction in 1929. The loss of the numerous small cutoff channels, combined with the constriction of the river by Sugar Pine Bridge, has forced the creation of a single large cutoff channel immediately adjacent and parallel to the approach road. Removal of Sugar Pine Bridge and the approach road and restoration of the riverbank (vegetation, bank slope, channel width) would be a localized, long-term, major, beneficial impact on the Merced River's hydrology, by reducing unnatural erosion and scouring, reducing unnatural deposition downstream of the bridge, and allowing the river to meander.

Ahwahnee Bridge moderately constricts flood flow, and has two center piers in the river channel that trap logs at high flows. The trapped logs threaten the structure, but are also important components of the hydrologic and biologic processes of the Merced River. Removal of Ahwahnee Bridge and restoration of the riverbank (vegetation, bank slope, and channel width) would be a localized, long-term, moderate, beneficial impact on the Merced River's hydrology by reducing scouring and unnatural erosion, and by allowing large, woody debris to remain in the river.

Removal of these two bridges would also be a localized, long-term, major, beneficial impact on floodplain values by removing impediments to flood flow, particularly large flood events such as the January 1997 flood event. Local, short-term, minor, adverse impacts to hydrology may occur during bridge removal due to construction activities in the main river channel.

The possible reconstruction of Swinging Bridge would have long-term, localized, minor, beneficial impacts to the Merced River's hydrology, because the bridge abutments would be removed from the river channel (although some piers would remain in the river). Local, short-term, minor, adverse impacts to hydrology may occur during reconstruction due to construction activities in the main channel.

At Yosemite Creek, the human built rock rubble pile blocking the western channel would be removed, as would the pedestrian bridge and its abutments immediately upstream of the Yosemite Creek Bridge (vehicle). Removal of these impediments would restore hydrologic processes such as annual spring runoff, particularly restoration of flow to the western channel of the braided stream network, and would be a long-term, minor, beneficial impact on hydrology. Local, short-term, negligible, adverse impacts to hydrology may occur during removal due to construction activities in the western channel during low water.

A new vehicle bridge would be constructed downstream of the existing Yosemite Creek Bridge. The abutments of the new bridge would be outside of normal high water and would minimally impact hydrologic processes. This would result in a long-term, minor, adverse impact on hydrology. Local, short-term, minor, adverse impacts to hydrology may occur during bridge construction due to construction activities in the main channel.

Cascades Diversion Dam was constructed in 1917 to impound water for the intake structure that diverted river flows to a downstream powerhouse. Use of the powerhouse to generate hydroelectric power was discontinued in 1985, as was the diversion of river flows. The dam is

located at a natural breakpoint in the channel gradients: upstream of the dam the gradient is .01 feet/feet; downstream of the dam the gradient is .06 feet/feet. The pool and backwater created by the dam extend upstream from the dam about 550 feet. The dam is in danger of failure: outside of spring snowmelt runoff and rain-on-snow winter floods, water flows under the dam instead of through the spillway or over the dam. Failure of the dam would result in unmitigated release of the sediment trapped behind the dam, and materials that comprise the dam. Removal of the dam would have a localized, long-term, major, beneficial impact on the Merced River's hydrology by preventing the adverse impacts of dam failure and by restoring the free-flowing condition of the river: sediment transport would be unimpeded; natural low-water and flood flow would be restored; and riparian vegetation currently displaced by the pool and backwater would be restored on the riverbanks.

Removal of Cascades Diversion Dam would also be a localized, long-term, major, beneficial impact on floodplain values by removing a substantial impediment to flood flow: both annual spring runoff, and large flood events such as the January 1997 flood event.

Reconstruction of the El Portal Road between the Cascades Diversion Dam and Pohono Bridge could have a beneficial impact on hydrology if the footprint of the existing bank stabilization in the river is reduced, or could have an adverse impact on hydrology if the footprint of the existing bank stabilization in the river is increased. Additional environmental compliance, including a Wild and Scenic River Act Section 7 determination, would be necessary before this segment of road can be reconstructed.

YOSEMITE VALLEY WATER QUALITY

Actions to implement the River Protection Overlay would remove sources of pollutants and reduce erosion and sedimentation by removing facilities and limiting activities associated with facility use and maintenance. These activities include construction and maintenance of visitor use facilities. Additionally, the possible realignment or relocation of roads, trails, and visitor facilities could reduce the introduction of refuse and bacteria by visitors. The removal of the concessioner stable and Swinging Bridge Picnic Area and restoration to natural conditions would reduce a source of nutrients, coliform, turbidity, and other water pollutants to the Merced River. Overall, actions to implement the River Protection Overlay would result in a regional, long-term, moderate, beneficial impact on water quality by removing development immediately adjacent to the Merced River.

The removal of parking spaces from Curry Orchard, Yosemite Falls, the concessioner stable, Stoneman Meadow, and roadside areas throughout the Yosemite Valley would substantially reduce the potential sources of non-point source pollution that are inherent in areas with heavy, concentrated vehicular use. Vehicles can release pollutants onto pavement, including asbestos, heavy metals, petroleum-based products, and other chemicals such as ethylene glycol. Some fraction of these chemicals can be carried by surface-water runoff to streams, and eventually the Merced River. A formalized parking facility would be established at Camp 6, and a transit facility at Yosemite Village; stormwater pollution controls would be incorporated into the facilities' design (possible treatment methods include sand filters, underground water collection and treatment tanks, or oil/water separators). Replacing the existing parking areas listed above with a

formalized parking facility at the Camp 6 area would reduce non-point source pollution from stormwater runoff from large paved surfaces, resulting in a regional, long-term, moderate, beneficial impact on water quality.

The construction of a gas station in Yosemite Village would be a new source of non-point source pollution. Impacts on water quality would be mitigated through stormwater pollution controls at the facility, and have a localized, long-term, minor, adverse impact on water quality.

The increased use of shuttle buses would reduce the number of vehicle miles traveled in the Valley, and allow the removal of some roads (e.g., roads through Stoneman and Ahwahnee Meadows). This would have a long-term, minor, beneficial impact on water quality by reducing non-point source pollution.

EL PORTAL HYDROLOGY

As a result of a U.S. Army Corps of Engineers study (1998), the flood protection levee (hereafter, "levee") in the Hennessey's Ranch area would need to be raised and extended in order to protect employee housing, the impacts of which would be two-fold.

First, the levee would limit and possibly redirect natural river flow through a localized reach of the river during a 100-year flood event, reducing channel width and increasing flows or eddies depending on floodwater velocity and height. The levee is above the normal high water line and would not affect the river flow during normal spring runoff periods. Increasing the length and height of the levee would be a localized, long-term, minor, adverse impact on the river's hydrology because this reach of river has low susceptibility to bank scour, erosion, and slope instability.

Secondly, any structure intended to prevent flooding has the potential to limit the natural formation and function of that river's floodplain. Most of the Merced River in El Portal confined within a bedrock gorge channel, and the floodplain is narrow due to the river gradient and resistant bedrock. Consequently, the majority of the floodplain is more resilient and less susceptible to adverse impacts of altered river flow. The area at Hennessey's Ranch is one of the few flat, alluvial floodplain sections adjacent to the Merced River at El Portal. The alluviated area was formed through years of river sediment deposition. After construction of the existing flood protection levee, this area was isolated from further sediment deposition because the levee height prevented inundation by large flood flow such as the January 1997 flood event, which was the largest flood event in the 80+ years of stream gauge data at the Pohono gauging station. When compared to the impact of the existing flood protection levee in the No Action Alternative, increasing the length and height of the levee would be a localized, long-term, minor, adverse impact on floodplain values because only flood flow greater than the January 1997 flood event would be affected.

Removal of housing from the River Protection Overlay at Hennessey's Ranch and restoration of the area would have long-term, minor, beneficial impacts on hydrology by restoring river-related communities and hydrologic processes.

Construction of new housing in the 100-year floodplain but outside of the River Protection Overlay would require the modification of the levee (discussed above), and would result in

radiating impacts to the riverbank due to increased employees living in the area. These radiating impacts would have a long-term, minor, adverse impact.

Two pedestrian bridges would be constructed in the vicinity of Hennessey's Ranch. The bridges and their abutments would be designed to not interfere with the free-flowing condition of the river, and the banks of this river reach are relatively stable and resilient. The two pedestrian bridges would have localized, long-term, minor, adverse impacts on the river's hydrology and floodplain values. Local, short-term, minor, adverse impacts on hydrology may occur during construction due to construction activities in the main channel.

EL PORTAL WATER QUALITY

Actions to implement the River Protection Overlay would reduce discharge of non-point source pollutants into the river by providing a buffer area where development is removed (e.g., at Hennessey's Ranch) and future development is constrained (e.g., at Village Center and Railroad Flat). Water quality could be adversely impacted by runoff associated with increased parking spaces for both visitors and employees, although this impact would be mitigated by non-point source pollution controls at large paved areas. The increase in employees living in El Portal would likely result in increased recreational use of the river and subsequent increase in fecal coliform and bacteria levels, resulting in a regional, long-term, minor, adverse impact on water quality. Wastewater from all new buildings (e.g., housing, park headquarters, etc.) would be connected to the existing sanitary sewage system and would meet all applicable water treatment requirements. The impacts of Alternative 5 on water quality in El Portal would be localized, long-term, minor, and adverse, due to increased non-point source pollution resulting from increased development.

WAWONA HYDROLOGY

Construction of employee housing in Wawona would be outside of the 100-year floodplain, approximately 1,000 feet away from the South Fork Merced River. Radiating impacts to the river due to increased numbers of employees accessing the river would reduce bank stability and result in localized, long-term, negligible, adverse impacts on hydrology and floodplain values.

WAWONA WATER QUALITY

Actions to implement the River Protection Overlay would reduce discharge of non-point source pollutants into the river by providing a buffer area where future development is constrained. Water quality could be adversely impacted at the new employee housing by runoff associated with increased parking spaces, although this impact would be mitigated by non-point source pollution controls at large paved areas. Wastewater from all new buildings would be connected to the existing sanitary sewage system and would meet all applicable water treatment requirements. The impacts of Alternative 5 on water quality in Wawona would be localized, long-term, minor, and adverse.

FORESTA HYDROLOGY AND WATER QUALITY

The project site at Foresta is approximately three-quarters of a mile from Crane Creek, but has no rivers, streams, or other hydrologic features, and surface runoff is the only pertinent

hydrologic process. A parking facility, Volunteers-in-Parks campground, 14 houses, and a new National Park Service stable at McCauley Ranch (depending on the outcome of the Wilderness Feasibility Study) would be constructed in the Foresta area. These actions would have a localized, long-term, negligible, adverse impact on hydrology resulting from reduced ground cover and potentially increased runoff. These actions would result in increased non-point source pollution, which would be mitigated through stormwater pollution controls at the parking facility, and have a localized, long-term, minor, adverse impact on water quality.

Henness Ridge Hydrology and Water Quality

Henness Ridge has no significant hydrologic features, and surface-water runoff is the only pertinent hydrologic process. The construction of a parking facility would have localized, long-term, minor, adverse impacts on hydrology resulting from reduced ground cover and potentially increased runoff. Construction of a parking facility would increase non-point source pollution, which would be mitigated through stormwater pollution controls, and would have a localized, long-term, minor, and adverse impact on water quality.

Big Oak Flat, Tioga Pass, and South Entrance Hydrology and Water Quality

The locations of these entrance stations have no major rivers, streams, or other hydrologic features. Surface-water runoff is the only pertinent hydrologic process. A visitor center and associated visitor service facilities would be constructed, resulting in reduced ground cover and potentially increased runoff. These actions would have a localized, long-term, negligible, adverse impact on surface water hydrology. These actions would have a localized, long-term, negligible, adverse impact on water quality resulting from increased non-point source pollution associated with development.

Conclusion

The collective actions of this alternative have regional, long-term, moderate, beneficial impacts on hydrology and water quality, largely due to the removal of facilities in Yosemite Valley from the River Protection Overlay and the 100-year floodplain and removal of the bulk fuel storage facility in El Portal. The beneficial impacts of removing two bridges, Cascades Diversion Dam, campsites, Housekeeping Camp units, etc., have been weighed against the adverse impacts on hydrology and water quality in El Portal due to increased development near the river.

Cumulative Impacts

This section assesses the impacts of past, present, and reasonably foreseeable future actions to water resources. The actions identified below have generally occurred within the watershed of the Merced River—both main stem and South Fork.

Past Actions

The water resources of the Merced River have been historically affected by a variety of actions within the floodplain since Euro-American settlement. In Yosemite Valley, the transportation network interferes with flooding and surface-water flow, and lodging, campgrounds, and other

structures have been constructed in and immediately adjacent to the river channel. In El Portal, a large portion of the riverbank has been artificially stabilized to protect primary roads and buildings immediately adjacent to the river. Because artificial stabilization of the riverbank began in the 1800s, the Merced River has been separated for decades from substantial portions of its floodplain. During spring runoff floods, this riprap serves to keep the channel from moving, and quickly conveys the water downstream. During winter floods, artificial bank stabilization prevents damage to dwellings and roads in the best-protected sections, but increases bank destruction where there is little or no artificial bank stabilization.

Present Actions

The El Portal Road Improvement Project (NPS) is currently under way from the park boundary to the Cascades Diversion Dam, and affects river-related communities of the Merced River immediately adjacent to the roadway. Natural resources are protected during construction by implementation of a compliance-monitoring program, erosion and sediment controls, hazardous materials controls, revegetation and reclamation, and excluding construction from sensitive habitats. Between El Portal and Yosemite Valley, riprap has been placed in some locations along the north bank of the Merced River to protect the reconstructed El Portal Road, altering the overall flow regime of the river.

Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions proposed in the region are separated below into four general categories: (1) projects expected to have a net beneficial impact; (2) projects expected to have both beneficial and adverse impacts; (3) projects expected to have a net adverse impact; and (4) projects that have no impact relative to the actions of this alternative.

Reasonably foreseeable future projects that could have a net beneficial impact on water resources of the Merced River include:

- The Merced River at Eagle Creek Ecological Restoration Project (NPS)
- Merced Wild and Scenic River Comprehensive Management Plan (NPS)
- Yosemite Wilderness Management Plan Update (NPS), which will address land management issues within the wilderness
- Fire Management Plan Update (NPS)
- Potential Land Use and Management on Lands Adjacent to Yosemite National Park (Sierra Nevada Framework for Conservation and Collaboration).
- Several transportation-related projects (e.g., Yosemite Area Regional Transportation System [YARTS]), which have the general goals of increasing transportation options and reducing reliance on automobiles in the area
- Replacement/Rehabilitation of Yosemite Valley Sewer Line (NPS)
- South Fork Merced River Bridges Replacement (NPS)
- Bridalveil Horse Camp Rehabilitation (NPS)
- Yosemite Creek Campground Restoration (NPS)

- Wawona Campground Rehabilitation (NPS)
- Merced River Canyon Trail Acquisition (BLM)

These projects would have net beneficial impacts on water resources through improved coordination of resource management activities and restoration, although there might be site-specific or short-term, adverse impacts.

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

- Mariposa Grove Roadway Improvement and Giant Sequoia Restoration (NPS), which would remove parking from the Lower Mariposa Grove of Giant Sequoias, restore the area, and realign the intersection at the South Entrance Station.
- Rogge – Ackerson Fire Reforestation (Tuolumne Co.), which would improve slope stability and reduce sedimentation by reforesting 5,000 acres; however, activities could also adversely impact water quality by burning, tilling, and herbicide application.
- A-Rock Reforestation (USFS, Stanislaus), which would improve slope stability and reduce sedimentation by reforesting 4,500 acres; however, activities could also adversely impact water quality by burning, tilling, and herbicide application.

These projects would have beneficial impacts on water resources by removal of facilities, restoration, and slope stabilization, and adverse impacts on water resources through increased non point source water pollution.

Reasonably foreseeable projects that could have a net adverse impact on water resources include:

- The Yosemite View Parcel Land Exchange, El Portal (NPS)
- Merced River Canyon Trail Acquisition (BLM)
- Yosemite Motels Expansion, El Portal (Mariposa Co.)

These projects would have adverse impacts on water resources through increased use and facility development, which could result in stream bank instability and increased non-point source water pollution.

Beneficial impacts on water resources of past, present, and reasonably foreseeable future projects on the Merced River watershed would be related to removal of facilities from the riverbanks and floodplain, restoration of previously developed areas and areas significantly impacted or altered by visitor use, removal of channel obstructions, and reduced human-related impacts. Adverse impacts of these projects on the Merced River watershed would be related to increased use and facility development, which could result in stream bank erosion, soil compaction, loss of vegetation, refuse accumulation, non-point source pollution generation, and degradation of stream characteristics and water quality in the Merced River. Overall, the past, present, and reasonably foreseeable future projects would have a long-term, minor, beneficial impact on water resources. The actions of this alternative would have a long-term, moderate, beneficial impact on water resources. The actions of this alternative, in combination with past, current, and reasonably foreseeable future projects would have a long-term, moderate, beneficial impact on water resources.

Floodplains

This evaluation identifies non-exempted[1] actions within the floodplain that could increase or decrease risk to human life and property by adding or removing housing and facilities from floodplains. The proposed removal and addition of non-exempted facilities from the floodplain are listed below by area and summarized in table 4-117; all impacts would be long-term unless otherwise noted (see plate E for Yosemite Valley flood extent). For related effects on floodplain values and hydrology, see the Water Resources section in this chapter.

Table 4-117
Non-Exempted Facilities in the Floodplain

Facility Location	Development Change in the Floodplain[1]	Impact Intensity/Type[2]
Yosemite Valley		
Cascades Diversion Dam	• Remove Cascades Diversion Dam	• Localized, Major, beneficial
Concessioner Stable Area	• Remove Stables and associated housing (49 employee beds) and redevelop as campgrounds	• Moderate, beneficial
Housekeeping Camp	• Remove 164 lodging units out of the floodplain. Retain 84 lodging units in the floodplain and 16 lodging units out of the floodplain.	• Moderate, beneficial
Yosemite Village	• Remove 3 Ahwahnee Row houses (3 employee beds) • Remove Concession Headquarters • Redevelop Concession Headquarters as parking/visitor services • Remove Indian Creek employee housing (14 employee beds) • Redevelop Indian Creek employee housing area as parking/visitor services	• Moderate, beneficial • Moderate, beneficial • Minor, adverse • Moderate, beneficial • Negligible, adverse
Yosemite Lodge Area	• Remove the Superintendent's House (Residence 1) and restore area • Remove 5 motel units • Relocate Wellness Center and nearby custodial cabins out of the floodplain • Develop new overnight parking	• Moderate, beneficial • Moderate, beneficial • Minor, beneficial • Negligible, adverse
El Portal		
Village Center	• Redevelop for necessary support facilities and commercial services • Adaptively reuse El Portal Hotel (remove 12 employee beds) and Yosemite Institute Office • Remove bulk fuel storage facility • Remove El Portal Motor Inn cabins (remove 24 employee beds)	• Negligible, adverse • Moderate, beneficial • Moderate, beneficial • Moderate, beneficial
Hennessey's Ranch	• Add 656 employee beds • Remove 68 employee beds at Trailer Village	• Moderate, adverse • Moderate, beneficial

1 Development may be in or surrounded by the floodplain
2 Impact intensity listed is after implementation of mitigation. All impacts would be long-term unless otherwise noted.

[1] Non-exempted facilities are those that are not exempt from National Park Service *Floodplain Management Guideline*. These include Class I and Class II Actions, such as administrative, residential, warehouse and maintenance buildings, overnight parking facilities, schools, hospitals, fuel storage facilities, and emergency services. Exempted facilities include campgrounds, picnic areas, day-visitor parking, etc.

Cascades Diversion Dam

Dam safety engineers have classified the Cascades Diversion Dam as a "high hazard potential structure" and assigned a Safety of Dams condition of "unsatisfactory." This classification requires immediate corrective action. The removal of the dam would be a long-term, localized, major, and beneficial impact to human health and safety.

Concessioner Stable Area

A moderate, beneficial impact would result from the removal of houses and tent cabins (49 employee beds) and the concessioner stable from the floodplain. This beneficial impact would be related to reduced risk to both human life and property during a flood event. Although the area would be redeveloped as campgrounds, this type of facility is exempt from National Park Service *Floodplain Management Guideline*. Campgrounds would be located outside the River Protection Overlay and designed to minimize flood flow.

Housekeeping Camp

The removal of 164 housekeeping units and retention of 84 units in the 100-year floodplain would result in a moderate, beneficial impact because overnight lodging within the 100-year floodplain would be reduced, decreasing flood-related risk to both human life and property. Compared to the No Action Alternative, the beneficial effect related to human life is limited, however, because the units are not in use during the winter flood season.

Yosemite Village

Removal of the Concession Headquarters, Indian Creek employee housing (14 employee beds), and removal of three Ahwahnee Row houses (three employee beds) from the floodplain would result in an overall moderate, beneficial impact because fewer people would be living and working within the floodplain and flood hazard related to human safety would be reduced. Redevelopment of this area would minimize placement of structures in the floodplain and include mitigation measures to protect people during flood events. With mitigation, in accordance with National Park Service *Floodplain Management Guideline*, risk to both human safety and property would be a minor, adverse impact.

Yosemite Lodge Area

Removal of the Superintendent's House (Residence 1) and five motel units from the floodplain would result in a moderate, beneficial impact because overnight lodging within the floodplain and the associated risk to human safety and property would be reduced. Relocation of the Wellness Center and nearby custodial cabins outside the floodplain would also result in a minor, beneficial impact because the number of facilities and people working within the floodplain would be reduced, resulting in a reduction in the flood hazard related to human safety and property. New overnight parking would be developed that incorporates design standards to minimize the effect on flood flow and allow for runoff, resulting in a negligible, adverse impact. Adverse effects in the Yosemite Lodge area would be further reduced by designs that minimize impacts on natural

flood processes and flood damage to structures, and by preparation of evacuation plans and routes (evacuation routes would be located outside the floodplain).

EL PORTAL

Village Center

Moderate, beneficial impacts at the Village Center would result from the adaptive reuse of El Portal Hotel (removal of 12 employee beds and relocation of Yosemite Institute Office), and the removal of the Motor Inn cabins (24 employee beds) because overnight occupation of the floodplain would be reduced. Removal of the bulk fuel storage facility would result in a moderate, beneficial impact on human safety because the number of people working within the floodplain would be reduced. Adaptive reuse of these facilities would include mitigation consistent with National Park Service *Floodplain Management Guideline* to reduce the risk of property damage due to flooding.

Parts of the Village Center area that would be redesigned to support commercial services and parking would be placed out of the floodplain where possible. For new structures constructed in the floodplain an evacuation and safety plan would be developed. With these mitigation measures in place, there would be a minor adverse impact.

Hennessey's Ranch

The construction of 656 new employee beds at Hennessey's Ranch would be a major, adverse impact on human safety because employee beds would be constructed within the 100-year floodplain. However, because mitigation would be incorporated into the design to protect employees and structures during flood events (e.g., raising and extending the levee, evacuation planning), the overall impact would be reduced to moderate and adverse.

WAWONA

There would be no impact to the South Fork Merced River floodplain because the employee housing considered for Wawona would be outside the floodplain.

CONCLUSION

Beneficial impacts in Yosemite Valley would include removal from the floodplain of 164 housekeeping lodge units, the kennel, concessioner stables and associated housing (49 employee beds), the Superintendent's House (Residence 1), five Yosemite Lodge motel units, the Wellness Center and nearby custodial cabins, and 14 employee beds at Indian Creek. The Concession Headquarters and Indian Creek employee housing would be redeveloped as parking/visitor services, and new overnight parking would be developed at Yosemite Lodge which would have a minor, adverse impact on the floodplain. Overall, the aggregate impact of these actions in combination with mitigation in Yosemite Valley would be moderate and beneficial, because the flood-related risk to human safety and property would be reduced.

Actions in El Portal would include removal from the floodplain of 36 employee beds (moderate, beneficial) and the bulk fuel facility (moderate, beneficial), removal or adaptive reuse of El Portal

Hotel (employee housing and Yosemite Institute Office; moderate, beneficial), 656 employee beds at Hennessey Ranch (moderate, adverse) and redevelopment of Village Center (minor, adverse). Beneficial impacts would be related to reduction in the flood-related hazard to human safety. Adverse effects to both human safety and property associated with new development or redevelopment/adaptive reuse within the floodplain would be minimized by mitigation (e.g., design and siting specifications, extending and raising existing levees, and a mandatory evacuation plan) resulting in a net minor, adverse impact.

The total net effect of Alternative 5 would be moderate and beneficial, because the number of people working and overnight lodging/housing within the floodplain would be reduced (reducing flood-related risks to human safety), and mitigation would be implemented to reduce adverse effects on human safety and property associated with development/redevelopment within the floodplain.

CUMULATIVE IMPACTS

The impacts of past, present, and reasonably foreseeable future actions to floodplain values discussed herein are based on analysis of past, present, and reasonably foreseeable future actions in the Merced River watershed from its source near the crest of the Sierra Nevada to Briceburg Bridge. The actions identified below include those projects that have the potential to affect the floodplain of the Merced River.

Past Actions

The Merced River has been historically affected by a variety of actions within the floodplain since Euro-American settlement. In El Portal, from the park boundary to Briceburg Bridge, a large portion of the riverbank has been artificially manipulated. Much of this manipulation is riprap used to stabilize the riverbanks by the California Department of Transportation to protect Highway 140. The National Park Service and Yosemite Motels also placed riprap in the Merced River channel to rebuild roads (e.g., Foresta Road) and protect buildings immediately adjacent to the river. Because stabilization of the riverbank began in the 1800s, the Merced River has been separated for decades from substantial portions of the floodplain in the Merced River Canyon. During spring runoff floods, this riprap serves to keep the channel from moving, and quickly conveys the water down to Lake McClure. During winter floods, bank stabilization prevents damage to dwellings and roads in the best-protected sections, but increases bank destruction where there is little or no bank stabilization.

Present Actions

No current actions are increasing or decreasing flood-related risk to human life. Between El Portal and Yosemite Valley, riprap has been placed in some locations along the north bank of the Merced River to protect the reconstructed El Portal Road. This riprap would have essentially no flood-related risk to life or property.

Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions that could have a potential cumulative beneficial or adverse effect on risk to human life and property during flood events are:

- El Portal, Trailer Village Closure (NPS)
- Yosemite Motels Expansion, El Portal (Mariposa County), (approximately 148 new hotel units)
- Yosemite View Parcel Land Exchange (NPS)

Cumulative effects of past, present, and reasonably foreseeable future actions would have both beneficial (e.g., implementation of the Trailer Village Closure Plan) and adverse (i.e., increased development of overnight lodging units and offices within the floodplain at El Portal) impacts on human life and property during flood events. In El Portal, approximately 59 employee trailers with 68 employee beds at Hennessey's Ranch (currently Trailer Village) would continue to be scheduled for removal from the 100-year floodplain. This action which occurs outside the scope of actions considered in the *Final Yosemite Valley Plan/SEIS*, is in accordance with the current provisions of the Trailer Village Closure Plan (NPS 1993b). Cumulative adverse impacts of these potential future projects on the floodplain hazard of the Merced River would be related to increased overnight use and facility development. In El Portal, potential overnight residents and hotel visitors would slowly increase from approximately 1,300 to about 1,600 beds because of the Yosemite Motel's expansion and the Yosemite View parcel land exchange. This represents an increase of approximately 25% in the number of people potentially affected during a flood.

Overall, the past, present, and reasonably foreseeable future actions listed above would have a long-term, moderate, and adverse effect on risk to human life and property due to the amount and type of new development planned within the floodplain. The total net effect of Alternative 5 would be moderate and beneficial, because overnight lodging/housing within the floodplain would be reduced (reducing flood-related risk to human safety), and mitigation would be implemented to reduce adverse effects on human safety and property associated with development/redevelopment within the floodplain. Effects associated with this alternative, in conjunction with other past, present, and reasonably foreseeable future cumulative actions, would be long-term, minor, and adverse, because potential flood-related impacts to human safety and property from cumulative actions outside the scope of the *Final Yosemite Valley Plan/SEIS* (e.g., increased overnight lodging within the floodplain in El Portal would increase flood-related risk to human safety and property) would outweigh the beneficial impacts of this alternative.

Wetlands

In this section, wetlands were evaluated in the following locations: Yosemite Valley, El Portal, Tioga Pass Entrance, South Entrance, and Foresta. The Henness Ridge, Wawona, and Big Oak Flat Entrance locations have no wetlands and are not discussed below. There are no actions proposed at Badger Pass, South Landing, or Hazel Green in this alternative.

SIZE

Yosemite Valley

Wetland impacts would take place in the wetland types in Yosemite Valley shown in table 4-118. Acres of impacts are estimated based on geographic information system analysis of meadow and riparian vegetation types from the Yosemite Valley vegetation map (NPS 1994e).

There would be a net gain of 104 acres of wetlands in the Valley. In Yosemite Valley, about 131 acres of wetlands would be restored, 12 acres of new development in wetlands would take place, and 15 acres of redevelopment in potential wetlands would take place under Alternative 5. Overall, this would be a moderate, long-term, beneficial impact on the size of wetlands in Yosemite Valley.

Table 4-118
Summary of Impacts by Wetland Type in Yosemite Valley

Wetland Types	Restoration (Beneficial Impact) (acres)	New Development (Adverse Impact) (acres)	Redeveloped (Potential Adverse) (acres)
Palustrine Emergent	42	5	5
Palustrine Scrub Shrub	41	0	1
Palustrine Forest	41	7	9
Riverine Upper and Lower Perennial	7	0	0
Total	**131**	**12**	**15**

Restoration would take place primarily at the cabin area at Yosemite Lodge, parts of Upper and Lower River Campgrounds, North Pines Campground, Lower Pines Campground, Backpackers and Group Campgrounds, the River Protection Overlay portion of Housekeeping Camp, Camp 6, and Swinging Bridge Picnic Area.

New development in wetlands could take place on 12 acres. Wetland delineation would be completed prior to the planning and design phase for Curry Village, where potential wetlands have been identified, to maximize the opportunity for wetland avoidance and minimization of adverse impacts. If wetlands are present in the area, adverse impacts would be avoided during site design and minimized through design modifications to the greatest extent practicable. If potential adverse impacts on wetlands are disclosed in subsequent planning efforts, additional compliance documentation would be completed as appropriate.

Potential impacts to wetlands would require a Wetland Statement of Findings to be prepared in accordance with Director's Order #77-1. Wetlands proposed for restoration by this *Final Yosemite Valley Plan/SEIS* would be counted toward the compensation of wetlands if needed for future compliance. A wetland delineation and a functional analyses would be included in each Statement of Findings. A U.S. Army Corps of Engineers 404 permit would be prepared as required.

Redevelopment in potential wetlands under Alternative 5 would occur on about 15 acres (see table 4-118). The larger areas of redeveloped wetland would occur at Sentinel Beach Picnic Area and Upper Pines Campground. Wetland delineation would be completed prior to the design phase for the proposed Sentinel Beach Picnic Area. Wetland delineation has been completed for Upper Pines Campground (Kleinfelder 1998). Redevelopment within wetland boundaries would be avoided in the Upper Pines Campground area. Redevelopment in areas adjacent to wetlands would occur primarily at Yosemite Lodge, Yosemite Village, and Ahwahnee parking. Redevelopment could have a minor, beneficial effect on neighboring wetlands if water flows that sustain wetlands are improved in the site design.

Redeveloped wetlands may be considered an adverse impact if the sites still qualify as wetlands. Procedural Manual #77-1, Section 5.4 states that "development activities proposed for wetland

sites that have been modified or degraded as a result of human activities" (but still meet the wetland definition) are considered "new actions" subject to Director's Order #77-1 and other statutes. Consequently, degraded wetlands should not be treated as preferred development sites simply because they are already in an impacted condition.

Out-of-Valley Areas

No impacts on the size of wetlands would occur at Henness Ridge, El Portal, South Entrance,Tioga Pass Entrance, or Foresta.

INTEGRITY

Yosemite Valley

The integrity of wetlands would be improved by actions proposed in Alternative 5 in terms of the benefits of the River Protection Overlay such as the re-establishment of riverine and palustrine forest wetlands along the Merced River. The restoration of campgrounds to natural conditions would also decrease foot traffic along the Merced River and allow these wetlands to become reestablished.

Under Alternative 5, no transportation-related activities would directly benefit wetlands. Transportation-related activities that could have indirect adverse impacts on wetlands include the realignment of Northside Drive south of Yosemite Lodge and construction of a new bridge across Yosemite Creek. These indirect impacts would include increased runoff and potential changes to wetland hydrology. These impacts would be mitigated through treatment ponds and road design. Direct impacts to riverine and palustrine forest would occur with the new bridge construction across Yosemite Creek; however, this would be a minor, adverse impact because of the existing level of impact that has occurred to these wetlands.

Out-of-Valley Areas

In El Portal, implementation of the River Protection Overlay and protection of existing wetlands at Hennessey's Ranch would minimize wetland impacts. Rebuilding the levee could adversely affect wetlands within the levee alignment. These impacts would be minimized by restoration of the riverine and palustrine forest wetlands between the levee and the river's edge. Should parking be constructed near the El Portal Community Hall, site designs would protect the historic river channel. Impacts on wetlands in El Portal are expected to be long term and minor and would not affect the overall viability of wetlands in the area.

In Foresta, a one and one-half acre artificial palustrine scrub shrub wetland (in an old borrow pit) is directly adjacent to the proposed parking site and is expected to be impacted by heavy foot traffic. This would be a long-term, minor, adverse impact on wetlands in Foresta, with implementation of appropriate mitigation measures (see Vol. IA, Chapter 3). Wetlands adjacent to McCauley Ranch would be avoided through site design with relocation of stable operations to Foresta. Radiating impacts from increased nutrients and potential non-native plant species introductions from the stables would be minimized by aggressive management of stock waste and feed.

CONNECTIVITY

Yosemite Valley

The entire riparian corridor in Yosemite Valley along the Merced River would be restored, reconnected, and protected from future degradation by implementation of the River Protection Overlay and removal of campgrounds at Upper and Lower Rivers Campground and other areas. This would be a long-term, major, beneficial impact on palustrine forest wetland connectivity in Yosemite Valley, though benefits to palustrine emergent wetlands would be minor.

Out-of-Valley Areas

No additional adverse impacts on wetland connectivity would take place in El Portal, Foresta, Henness Ridge, or Tioga Pass Entrance beyond those presented in Alternative 1.

CONCLUSION

Under Alternative 5 there would be a 104-acre net gain in the size of wetlands. The implementation of the River Protection Overlay would enhance the integrity of existing wetlands along the Merced River. Wetlands would remain fragmented by campgrounds and roads in Stoneman and Ahwahnee Meadow, parking at Camp 6, and other infrastructure. The actions that are proposed in Alternative 5 would have a long-term, moderate, beneficial impact on the size, integrity, and connectivity of wetlands in Yosemite Valley.

Under Alternative 5 there would be a long-term, minor, adverse impact on wetland integrity in Foresta and El Portal. Henness Ridge would have no wetland impacts. Heavy foot traffic would have minor impacts to wetland integrity at the Tioga Pass Entrance.

CUMULATIVE IMPACTS

Past, present, and reasonably foreseeable future actions that could have a cumulative impact on wetlands are all considered to be long term.

Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS); U.S. Forest Service management plans for adjacent wilderness; the Wilderness Management Plan Update (NPS); and the Fire Management Plan Update (NPS) could provide benefits to the size, integrity, and connectivity of wetlands. Cooperation among land management agencies would increase the opportunity to share common objectives and improve resource protection. These plans could also increase knowledge of resources and recreational use; they have the potential to have long-term, moderate, beneficial impacts on wetlands, though the proposed management direction has not been finalized. The Merced Wild and Scenic River Comprehensive Management Plan would affect wetlands through zoning and management designed to protect the river system and adjacent wetlands with long-term, major, and beneficial impacts.

The Tuolumne Meadows Water and Wastewater Improvements (NPS) project and the Mariposa Creek Pedestrian/Bike Path (Mariposa Co.) project are in the early stages of planning. Until the scope and design of these projects is determined, it is not possible to determine the extent of impacts on wetlands in these areas.

Other projects approved or planned for construction that could have beneficial effects on wetlands include erosion mitigation projects in Tamarack, Yosemite Creek, Bridalveil, and Hodgdon Meadows, and the Merced River at Eagle Creek Ecological Restoration Project (Yosemite Valley). Erosion control could enhance and strengthen palustrine forest and palustrine scrub shrub wetlands. The Eagle Creek project would revegetate riverbanks of palustrine forest and palustrine scrub shrub wetland. The erosion control and restoration projects would have long-term, localized, and therefore minor, beneficial impacts on wetlands.

Projects approved or planned for construction that could have adverse effects on wetlands include the Yosemite View Parcel Land Exchange (NPS), University of California, Merced campus (Merced Co.), and the Hazel Green Ranch (Mariposa Co.) project. The Yosemite View Parcel Land Exchange could directly affect existing palustrine forest and palustrine emergent wetlands. A wetland traverses the Hazel Green Ranch site, though proposed new development would not take place within the wetland corridor. The long-term direct impacts on wetlands would be moderate and adverse due to the relative rarity of undeveloped wetlands between the elevations of 1,000 and 3,000 feet and the relative importance of remaining habitat in the Sierra Nevada. Foothill areas below about 3,300 feet appear to have the greatest loss of wetlands of any region in the Sierra Nevada (UC Davis 1996a) and are particularly important in terms of their productivity and diversity.

Large-scale benefits to wetlands could take place as a result of regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced River Plan. Should substantial or full implementation of the actions included in these plans occur over time, long-term cumulative impacts on wetlands may, on balance, be moderate and beneficial. These regional plans are tempered by adverse impacts that include existing infrastructure to divert water away from wetlands in Yosemite Valley, and projects impacting wetlands outside the park with the potential direct loss of wetland habitat, including at the Yosemite View Parcel Land Exchange (NPS), and University of California Merced campus (Merced Co.) projects.

When the impact of the past, present, and future actions are combined with the actions proposed in Alternative 5, there would be a minor, beneficial impact on wetland size.

Soils

The following discussion identifies and characterizes the soils impacts expected from implementation of Alternative 5. Impact intensities are based on the size, type, and disturbance history of the soil resources impacted. Soil resources are identified as highly valued resources (HVR), resilient (R) or other (O). The primary activities that would affect soil resources are discussed for each of the project areas. Generally, adverse impacts to soils would include a combination of soil removal, profile mixing, compaction, erosion, and contamination. Beneficial impacts would occur as a result of soil restoration. Construction-related impacts (such as compaction from equipment and erosion) would be expected to be short term and temporary, because they would be minimized through the use of Best Management Practices and would occur for a limited time. All other impacts are expected to be long term unless otherwise noted.

YOSEMITE VALLEY

Approximately 228 acres would be affected by actions proposed under Alternative 5 (table 4-119). Highly valued resource soils comprise 122 acres, resilient soil resources comprise 83 acres, and other soils comprise 23 acres. Of the total area affected, 161 acres would be restored, while 67 acres would be associated with new development. Construction-related impacts (short-term) would be negligible to minor because Best Management Practices would be used to minimize erosion and to contain construction activities to the immediate area. Some minor discrepancies between acreages in the text and tables may occur due to rounding, differences in mapping sources, and because impacts less than 1 acre were not mentioned in the text. A summary of affected Valley soils is found in table 4-119.

Table 4-119
Summary of Soil Types Affected

Soil Type	Resource Type[1]	Development Limitations[2]	Affected Area (acres)	
			Restored	Developed
101 Riverwash, 0-2%	HVR	F (frequent), SBE, HWT	9	–
102 Riverwash, 1-4%	HVR	F (frequent), SBE, HWT	–	–
104 Aquandic Humaquepts, 0-2%	HVR	F (frequent), HWT	4	–
105 Histic Haploaquols	HVR		–	–
151 El Capitan fine sandy loam, 0-2%	HVR	F (occasional), SBE, HWT (moderate)	51	–
152 Vitrandic Haploxerolls, 0-3%	O	F (occasional), D, LOS	–	–
201 Leidig fine sandy loam, 0-2%	HVR	F (occasional), HWT (moderate)	46	8
301 Vitrandic Haploxerolls, coarse loamy, 0-2%	HVR	F (rare), HWT, LOS	–	–
401 Sentinel loam, 0-2%	R	F (rare), LOS	–	7
412 River course	HVR	F	2	–
501 Miwok complex, 1-5%	R	F (rare), SBE	33	43
502 Miwok sandy loam, 0-3%	O	F (rare), SBE	–	–
504 Mollic Xerofluvents, 1-5%	O	F (frequent), SBE	–	2
551 Miwok – Half Dome complex, 5-15%	O	SE, LOS, D, C, AC	11	5
552 Mollic Xerofluvents, 5-15%	O	F (frequent)	–	–
590 Terric Medisaprist, 0-3%	HVR	F (occasional), HWT, SBE	–	–
601 Half Dome complex, 25-60%	O	SE, LOS, D, AC	2	–
602 Half Dome extremely stony sandy loam, 10-25%	O	SE, LOS, D, AC	1	2
610 Rubble land – Half Dome complex, 25-60%	O	SE, D, AC	–	–
620 Half Dome complex, warm phase, 25-60%	O	SE, LOS, D, AC	–	–
630 Rubble land – Half Dome complex, warm phase, 25-60%	O	SE, LOS, D, AC	–	–
701 Vitrandic Haploxerolls, 4-30%	R	SE (moderate), LOS	–	–
702 Vitrandic Xerochrept, 4-30%	HVR	SE (moderate), LOS	2	–
900 Rock outcrop	O	B	–	–
Total Area Affected			**161**	**67**

1. HVR = Highly valued resource soil, R = Resilient soil, O = Other soil (non-HVR and non-Resilient)
2. F=Flooding, SBE=Stream Bank Erosion, SE=Slope Erosion, HWT=High Water Table, D=Doughty (low water holding capacity), LOS=Loss of Organic Surface, C=Compaction, AC=Active Colluvium, B=Bedrock Out-of-Valley
Source: Soil Survey of Yosemite National Park, Yosemite Valley, California (SCS 1991)

Curry Village

Approximately 22 acres would be affected by actions proposed under Alternative 5: 15 of these acres would be restored (HVR = 9, R = 3, O = 3); and 7 acres would be developed (R = 5, O = 2). The proposed development activities would have a negligible, adverse effect on soil resources because of their small size (7 acres) and focus on resilient soil resources. Overall, Alternative 5 would have a minor, beneficial effect on the soil resources in Curry Village.

Yosemite Lodge

Approximately 49 acres would be affected by actions proposed under Alternative 5: 42 of these acres would be restored (HVR = 18, R = 23, O = 1); and 7 acres would be developed (R = 6, O = 1). Restoration of the floodplain area between Yosemite Lodge and the Merced River would result in major, beneficial impacts to soil resources. Construction activities, such as those required for additional housing units and the new bridge south of the Yosemite Creek Bridge, would have negligible, adverse impacts since these activities are concentrated on resilient soils and the size of the impact would be relatively small. The overall impact to soil resources at Yosemite Lodge would be major and beneficial.

Yosemite Village

Approximately 20 acres would be affected by actions proposed under Alternative 5: 6 of these acres would be restored (HVR = 5, O = 1), and 14 acres would be developed (R = 6, HVR = 8). The adverse impacts would be due to construction activities related to the visitor center, and day-visitor parking. The net effect of the actions proposed at Yosemite Village would be a negligible, adverse effect on soil resources.

West Valley

Approximately 11 acres would be developed by actions proposed under Alternative 5 (R = 7, O = 4). Adverse effects are related primarily to the construction of the North American Wall Picnic Area and the El Capitan crossover. Both activities would occur on previously undisturbed resilient or other soil resources. The overall impact of activities planned for the west Valley would be minor and adverse because of the relatively small impact area and resource type.

Campgrounds

A total of 126 acres would be affected by actions proposed under Alternative 5: 97 of these acres would be restored (HVR = 86, R = 11); and 29 acres would be developed (R = 27, O = 2). Fewer campground areas would be restored under Alternative 5, with a resulting lesser beneficial impact. Campground restoration activities would result in moderate, beneficial effects. Adverse effects would be related to the development of new campground areas. Nearly all of the proposed area for new campgrounds would affect resilient soil resources. Generally, the impacts of campground development would be less disturbing to soil resources than other construction activities. Thus, although the area of impact would be relatively large (29 acres), the actual area of soil disturbance would be much less extensive. Adverse effects due to campground development

are expected to be moderate. The overall impact within the campground area would be moderate and beneficial due to the amount of restoration proposed.

Roads and Trails

Transportation corridors such as multi-use paved trails and roadways have the potential to affect several soil resource types. Generally, trail construction would occur adjacent to existing linear corridors such as roads or utilities, or would be upgrades of existing informal trails. The impact of new trail construction would be adverse; however, the impact would be minor since the impacts would primarily be in linear segments of previously disturbed soils. New trails would be constructed to accommodate surface and subsurface water flow. Additionally, upgrades to existing trails would decrease erosion in high-use areas. Overall, the construction of new roads and trails would have minor, adverse effects.

OUT-OF-VALLEY

Soils information is limited for many of the out-of-Valley locations. The following discussion is based on the available general soils information or extrapolated from other local soil surveys. It is assumed that out-of-Valley impacts would likely occur on resilient soil resources, because the geographic features outside of the Valley tend to be less constricting than those in the Valley. Disturbance to highly valued resource soils would be avoided as practicable, to reduce the likelihood of impacts on highly valued resource soils. General Best Management Practices and design requirements would reduce potential impacts to other soils. Thus, the following discussion is based on the premise that the majority of adverse impacts would occur on resilient soil resources, where feasible.

El Portal

All of the impacts at El Portal would be long-term and adverse. Impacts are related to the construction of parking facilities and employee housing. Soils within the El Portal area tend to be susceptible to mass movement and erosion and have substantial development limitations. Therefore, Best Management Practices and other mitigation measures described in Vol. IA, Chapter 2, Soil Mitigation would be implemented to minimize erosion and soil movement. Due to the size of the proposed activities and the limited space available for construction, this alternative would have a moderate, adverse impact on soil resources in the El Portal area.

Henness Ridge

Under Alternative 5, construction of a parking facility at Henness Ridge would require a relatively small area of development. Generally, the soils at Henness Ridge are suitable for the proposed activity. Impacts are expected to be moderate and adverse.

Foresta

Impacts to soils in Foresta would occur if the National Park Service and concessioner stables are relocated to McCauley Ranch, and as a result of the reconstruction of employee beds destroyed in the 1990 A-Rock fire. However, impacts would be minor and adverse, because soils in these areas tend to be resilient and the area of impact would be relatively small. A day-visitor parking

facility would also be constructed in Foresta, and would result in moderate, adverse impacts to soils.

Wawona

The soils within the Wawona area have mostly minor limitations for structures. Construction of housing facilities would occur on mostly resilient soils that are suitable for this use and would be expected to cause minor and adverse soil impacts.

Entrance Stations

Development or redevelopment of visitor centers near the existing entrance stations would result in adverse impacts to soil resources. The centers would be developed adjacent to existing stations, and generally would be located in areas suitable to the proposed use. The size of impact for each facility would be relatively small in relation to the surrounding soil resources. The impact due to construction of visitor centers would be negligible and adverse.

CONCLUSION

Four out of the five Valley locations would have overall beneficial impacts under this alternative, which proposes restoration of 161 acres and new development of 67 acres. West Valley would have the largest adverse impact. This adverse impact would be offset to a large extent by the restoration of 114 acres of highly valued resource soils, 33 acres of resilient soils, and 14 acres of other soil resources. The proposed developments would be focused on resilient soils (51 acres). Thus, the overall impact of Alternative 5 in the Valley would be minor and beneficial.

The actions under Alternative 5 would affect approximately 80 acres outside of the Valley. Most of this impact would be focused on resilient soil resources. Proper use of engineering controls and mitigation measures would result in an overall moderate, adverse impact on out-of-Valley soils.

Overall, Alternative 5 would have beneficial impacts on 161 acres and adverse impacts on approximately 67 acres. Out-of-Valley development would affect approximately 80 acres of non-highly valued resource soils. Generally, the facilities that would be relocated outside of the park would affect less sensitive resources than are currently being affected in the Valley. Furthermore, facility design and construction would use current technologies and Best Management Practices to minimize impacts. Out-of-Valley impacts would be locally moderate and adverse, but would occur on resilient soil resources at all locations except for El Portal. The overall impact for Alternative 5 would be negligible and beneficial because of the smaller scale restoration and adverse impacts at El Portal, Henness Ridge, and Foresta.

CUMULATIVE IMPACTS

The impacts of past, present, and reasonably foreseeable future areawide projects would be the same as described under Alternative 2, minor and adverse. In relation to the expected impacts resulting from areawide projects, the beneficial impacts related to restoration under this alternative would be substantial because they would be the primary beneficial impacts on soil resources that would occur in the region. Thus, the actions of this alternative would serve to offset some of the adverse cumulative effects of other projects in the vicinity of the park. Therefore, the

cumulative impact of Alternative 5, in conjunction with other areawide projects, would be negligible and beneficial.

Vegetation

All impacts on vegetation are considered long term unless otherwise noted. Short-term impacts would occur during construction or implementation of actions. Based on the mitigation measures to be taken (see Vol. IA, Chapter 2), all short-term impacts are expected to be negligible.

The composition of plant communities found in Yosemite Valley and those in out-of-Valley locations varies considerably. For example, the dominant plant species within a riparian vegetation type in El Portal would not be the same as those found within a riparian vegetation type in the Valley. Therefore, vegetation types in each of the distinct out-of-Valley locations analyzed for this section are described separately from the vegetation types described for the Valley.

YOSEMITE VALLEY

The actions proposed under Alternative 5 would result in a net gain in all plant community types, except upland and other. Table 4-120 summarizes the total areas of each vegetation type that would be adversely and beneficially impacted by this alternative. Minor discrepancies in totals between table and text are due to rounding impacts to the nearest acre. It should be noted that the size of the area affected was only one of the factors used to evaluate impact magnitude. The continuity, productivity, natural structure, and diversity of the vegetation type were also factors considered in this impact analysis.

Table 4-120
Yosemite Valley Vegetation Impacts

General Vegetation Types	Acres Impacted	
	Beneficial	Adverse
Upland	16	48
California black oak	15	4
Meadow	42	5
Riparian	89	7
Other	0	5
Total	**+ 162**	**- 69**
Net Impact	**+ 93**	

Note: Acreages presented in this table do not include features due to linear features such as roads and trails. These impact types are discussed separately in the text.

Approximately 93 acres of existing developed or disturbed areas within the Valley would be restored to natural vegetation through the restoration actions described below. These actions would have a long-term, major, beneficial impact to the continuity of Yosemite Valley's plant communities.

Due to their linear nature, transportation corridors (such as multi-use paved trails and roadways), would have the potential to affect multiple vegetation types. Therefore, rather than repeating this discussion under each vegetation type below, road and trail impacts are generally described here. Under Alternative 5, new multi-use paved trail segments would be constructed. Generally, these trails would either parallel existing linear corridors such as roads or utilities, or would be located

within areas that have been previously disturbed by past actions or informal trails. The purpose of these new trail segments would be to provide connections to existing trails, thus improving the overall paved trail network for alternative modes of transportation through the Valley and minimizing the need for cars. The impact of the new trail construction would be adverse to vegetation; however, the impact would be minor given the small amount of vegetation impacted (3 acres). The impacts would occur primarily in previously disturbed uplands (non-highly valued resource), and the trails would be designed to avoid mature trees as much as possible and accommodate surface and subsurface water flow. New paths would increase habitat fragmentation. Similarly, the one segment of realigned roadway and the one widened roadway would also have minor, adverse impacts on vegetation (0.7 acre). The new bridge over Yosemite Creek would have a moderate, adverse impact on a small area of California black oak vegetation (0.5 acre) adjacent to the existing bridge.

Restoration of meadow (0.5 acre) and California black oak (0.5 acre) vegetation would occur as a result of road removal within the turnout lanes at Northside Drive through El Capitan Meadow and Southside Drive through Sentinel Meadow. The impact on these vegetation types would be minor and beneficial since they are both highly valued resource types.

Overall, the road and trail impacts would have a negligible adverse effect on vegetation because any adverse effects would occur on previously disturbed, non-highly valued resource types and the beneficial effects to highly valued resources would be small.

Upland Communities

Uplands comprise the largest vegetation type within Yosemite Valley. Alternative 5 actions would result in the restoration of approximately 15 acres of currently undeveloped upland vegetation in the east Valley, and new development would impact roughly 48 acres of upland. The overall impact of this alternative on uplands would be minor and beneficial due to improved conditions of upland vegetation through the re-introduction of fire (prescribed burning) and decreased community fragmentation.

Beneficial Impacts

The main areas of restoration within upland communities would include the Group and Backpackers Campgrounds (3 acres), the talus slope at Curry Village (6 acres), the Yosemite Lodge area (5 acres), and the Church Bowl Picnic Area.

The beneficial effects of Alternative 5 on the size and continuity of upland vegetation would include the following:

- At the Group and existing Backpackers Campgrounds area, restoration would include small areas of upland mixed in with other high-value vegetation types. This restoration would have a minor impact.
- In the area between the Yosemite Lodge and the Merced River, areas of restoration would provide a continuous California black oak and upland vegetation corridor, linking the upland areas to restored riparian and meadow areas. This impact would be moderate.

- The Church Bowl Picnic Area restoration would have minor impacts on overall upland vegetation continuity.
- In the Ahwahnee utility area (3 acres), the current utility area would be removed and restored to upland vegetation, thus restoring habitat continuity. This impact would be minor.
- In the talus slope zone of Curry Village (6 acres), the continuity of upland stands of canyon live oak would be improved by the removal of housing and restoration of the talus slopes, resulting in a moderate impact.

The beneficial impacts to natural structure, diversity, and productivity of the upland vegetation would include the following:

- The canyon live oak community at Yosemite Village would be made more continuous through the removal of outbuildings and the National Park Service stables in the vicinity of the NPS Operations Building (Fort Yosemite), with restoration of these areas to natural vegetation cover resulting in improved habitat and decreased fragmentation. This impact would be moderate.
- The ability to manage many of the continuous, unnaturally dense stands of incense-cedar and ponderosa pine with fire would be increased. This would help slow or stop the spread of annosus root rot through many of the currently developed areas of the east Valley (such as the Upper and Lower River Campgrounds area) and would improve overall forest health. This impact would be major.
- The need to manage hazard trees within and around developed areas would be reduced because many current upland vegetation areas would be restored. Older individual trees and snags would be retained that provide important wildlife habitat. This impact would be minor.
- The productivity of smaller, more disjunct stands of upland coniferous vegetation would increase as a direct result of prescribed fire, a reduction of stand densities, a reduction in spread of annosus root rot (due to reduction in stand densities), and establishment of understory herbaceous and shrub vegetation. This impact would be major.
- The understory integrity, diversity, and overall productivity of upland vegetation would continue to improve due to the re-establishment of native understory resulting from the reduction of trampling in developed zones in the east Valley. This impact would be moderate.
- The encroachment of upland vegetation into meadows and oak communities would be reversed through fire management. The upland community would be reduced in size under Alternative 5 due to the removal of various developments in the east Valley, which would facilitate the ability of National Park Service staff to manage these areas with prescribed fire and other management tools. This would have a moderate effect on upland communities.

Adverse Impacts

The new development in upland areas would occur within both the east and west Valley and would generally be concentrated in areas that have been previously disturbed. Most of the adverse impacts in the east Valley would be in the area of the new walk-to campground north of Tenaya Creek, walk-in and drive-in campgrounds east of Upper Pines Campground (21 acres), South Camp and Backpackers Campground, the new campground check-in station at the east end of Curry Village, Yosemite Lodge (6 acres) and Curry Village (5 acres). The adverse west Valley impacts would occur mainly at the potential El Capitan crossover checkpoint (10 acres) and the North American Wall Picnic Area (2 acres).

The adverse impacts on upland community size, continuity, natural structure, diversity, and productivity would occur within the following areas:

- At Yosemite Lodge, the addition of lodging into the area north of existing Northside Drive and parking within the area would cause adverse, minor impacts to upland coniferous forest and canyon live oak communities due to establishment of new buildings, paved trails, and the need to trench underground to provide utilities for these structures. This area has been previously disturbed.
- At the Upper and Lower River Campgrounds area, upland communities would also be converted from existing upland back to a mosaic of California black oak, riparian, and meadow communities through the removal of fill material. This would have only a minor impact on upland communities because this area does not have an intact understory and was not originally upland vegetation.
- The new walk-in campgrounds in the Valley would have a moderate impact on upland communities due to trampling of the understory layer.
- The addition of South Camp and the relocated Backpackers Campground would result in moderate upland impacts due to trampling and loss of understory vegetation.
- New lodging at Curry Village would be constructed outside of the talus slope zone near the existing lodging. This impact would be minor because the area is currently impacted by trampling.
- Potential development of a traffic check station (if required) at El Capitan crossover would have a major impact on up to 10 acres of relatively undisturbed upland vegetation because of the additional pavement, utilities, and infrastructure.
- A number of the restoration actions proposed would convert existing upland vegetation types to highly valued resource types (meadow, riparian, California black oak). This would have a minor impact on upland vegetation communities because many areas to be converted were originally highly valued resource vegetation types that have since been modified due to human influences.

California Black Oak Communities

The California black oak vegetation type is considered a highly valued resource because of its transitional character between wet meadows and drier uplands, as well as its links to wildlife and ethnographic resources. Under Alternative 5, the actions proposed would result in approximately

4 acres of adverse impact and about 16 acres of beneficial impacts to this community. The overall impact of this alternative on California black oak would be major and beneficial.

Beneficial Impacts

The restored California black oak areas would primarily be in portions of the Upper and Lower River Campgrounds area, Lower Pines and Backpackers Campgrounds (12 acres), the Yosemite Lodge area (1 acre), the Ahwahnee tennis courts (1 acre), and the Superintendent's House (Residence 1) (1 acre).

The beneficial effects of Alternative 5 on the size and continuity of California black oak vegetation types would include the following:

- The reduction in size of North Pines Campground and its change from a drive-in to a walk-in area would facilitate an improved ecotonal transition from the riparian communities near Tenaya Creek and the Merced River to more California black oak stands to the south and east, thus slightly increasing the size of both vegetation communities as well as reducing some of the habitat fragmentation in this area. This impact would be minor.
- The relocation of the concessioner stable from its current location to one east of Curry Village would facilitate a continuous ecotonal transition from the riparian communities near Tenaya Creek and the Merced River to more California black oak stands to the south and east. This would increase the size of both communities and result in minor, long-term benefits.
- At Yosemite Lodge, adjacent areas of California black oak would be restored, thus creating a larger, more continuous area of potential California black oak woodland. Due to the presence of a large annosus root rot population in the area, landscaping would focus on California black oaks (which are resistant to annosus root rot) rather than conifers, leading to a greater proportion of oaks in this area. Long-term, moderate impacts would result.
- Removal of the Ahwahnee tennis courts and associated non-native vegetation would remove the gap in this otherwise intact oak woodland that surrounds the courts, thus improving the continuity of the oak woodland through the entire area between the Upper and Lower River Campgrounds and Ahwahnee Meadow to The Ahwahnee. This action would result in a moderate impact to the oak woodland community.
- Removal of some fill material at restoration sites (such as the Upper and Lower River Campground area) would remove habitat for upland communities and restore original lower (topographic) layers to California black oak woodland, which would result in long-term, major benefits.
- Restoration at the Superintendent's House (Residence 1) and the Church Bowl Picnic Area would result in minor, beneficial impacts (primarily due to their small size).
- California black oak stands in the east Valley would be minimally fragmented by development, roads, and encroaching conifers due to the enhanced ability of the National Park Service to manage areas with fire, removal of facilities, and restoration of areas such

as the Ahwahnee tennis courts and portions of the Upper and Lower River Campgrounds areas, into a mosaic of oak woodlands, meadows, and riparian areas. Moderate impacts would result.

- The natural structure of California black oak stands in the west Valley would improve due to prescribed burning, with the subsequent reduction in conifer encroachment resulting in a moderate impact. Other components of California black oak communities, such as deer grass (an important ethnographic resource), would significantly increase due to the reintroduction of natural and simulated natural processes (such as fire and corrections in drainages), resulting in a moderate impact.
- The correction of drainage problems associated with roads (potentially on Northside Drive at El Capitan Meadow and Southside Drive in the Bridalveil Fall area) and the removal of roads through Ahwahnee and Stoneman Meadows would improve the condition of California black oak stands in these locations by re-establishing natural drainages. These actions would correct problems associated with the impoundment of water upslope of roads, which keeps soils wetter for longer periods during the summer and encourages armillaria rot to become fully established. These drainage corrections would result in major impacts to vegetation communities.
- The restoration of historic landscaping characteristics at the Yosemite Village Historic District housing area would improve the condition of existing mature California black oaks and facilitate the establishment of younger generations of these trees within the district, thus improving stand structure and increasing the continuity of stands in this portion of the Valley. Moderate impacts would be expected.

Adverse Impacts

The adverse impacts on California black oaks under Alternative 5 would primarily be a result of new lodging at Curry Village (5 acres) and South Camp (2 acres) and construction of a parking lot east of Curry Village for backpackers (3 acres). The adverse effects of Alternative 5 on the size, continuity, natural structure, diversity, and productivity of California black oaks would include the following:

- The development of additional lodging units adjacent to Stoneman House would result in a direct loss of some mature oak trees and a loss of regenerating saplings, and understory structure and function. In addition, radiating human activities and a lack of prescribed burning would continue encroachment by conifers, thus leading to a gradual shift from a California black oak-dominated community to a mixed conifer, California black oak community that is more common in the Valley. The shift in the dominant vegetation community's composition would result in long-term, moderate impacts.
- The addition of the new South Camp walk-in sites would result in moderate impacts to California black oak due to trampling and loss of understory vegetation.
- Mature California black oak trees would potentially be removed during site grading and development, and additional trees could be lost with root impacts during construction, changes in drainage, and hazard tree removal, thereby resulting in loss of stand structure

and continuity in all areas of proposed development and redevelopment of the east Valley. This impact would be moderate and long term.

Meadow Communities

The meadow vegetation communities within Yosemite Valley are similar in size to the California black oak vegetation communities. The overall impact on meadow vegetation would be moderate and beneficial, with 42 acres of beneficial impacts and 5 acres of adverse impacts.

Beneficial Impacts

The proposed actions under Alternative 5 would have a beneficial impact to 42 acres through restoration. This would include 21 acres in the campgrounds, 20 acres at Yosemite Lodge, 1 acre at Superintendent's House (Residence 1), areas within the River Protection Overlay throughout the Valley, and benefits through improved water flow and a decrease in radiating impacts such as trampling.

The beneficial effects of Alternative 5 on the size and continuity of meadow vegetation types would include:

- The ecological restoration of the entire area south of the proposed new road alignment at Yosemite Lodge (aside from utilities and access near the confluence of the Merced River and Yosemite Creek) would have major, beneficial effects to the ecological function of this section of the Valley, with the potential for increased meadow acreage, enhanced wetlands, and minimal habitat fragmentation of a large low-lying area.
- An area of North Pines Campground within the River Protection Overlay would be restored to meadow; this would be a minor, beneficial impact due to the small area and radiating campground impacts.
- Meadow size (of Ahwahnee and Stoneman Meadows by the removal of the bisecting roads) would increase substantially, with improved natural drainage patterns and continuous meadow cover over large areas of the east Valley. This would result in a major impact.
- Areas of former meadow at the Upper and Lower River Campgrounds area; Ahwahnee Meadow where it is bisected by Northside Drive; former sections of Lower Pines Campground, Southside Drive near Bridalveil Fall, and Cook's Meadow would be restored by unburying meadow soils where fill was added. Hydrology would be restored over time through the restoration of original topographic variations and re-establishment of native herbaceous species due to improved soil and hydrologic conditions. This impact would be major.
- Connectedness of meadows to riparian and wetland areas would be created by removing roads and reconstructing portions of roads to facilitate natural drainage patterns, which would result in a major impact.
- Implementing the River Protection Overlay, with access direct to appropriate sites along the river, would minimize impacts to this critical ecotone and result in a major impact.

- The modification of roads at Bridalveil, El Capitan, and Cook's Meadows to allow drainage would allow for the re-establishment of functioning oxbow and cutoff channels through meadows. These modifications would create a critical link between meadow, riparian, and wetland systems, with increases in native plant establishment (due to wetter conditions), greater native biodiversity, and greater overall productivity due to changes in species, food for wildlife, cover, etc. This action would result in a major impact.

Adverse Impact

The actions proposed under Alternative 5 would result in negligible adverse impacts to the size, continuity, natural structure, diversity, or productivity of meadow vegetation types in Yosemite Valley, with consolidation of day-visitor parking at Yosemite Village/Camp 6 (1 acre) and management of Lamon Orchard for retention of this cultural resource. Impacts to underlying and adjacent meadow vegetation would be increased by these actions.

Adverse impacts to the size and continuity of meadow communities are listed below:

- Construction of new parking in the area of Camp 6 would result in negligible impact to the remaining meadow fragments (the existing meadow is less than an acre in size and severely fragmented by roads, trails, and utility lines).
- Development of a multi-use paved trail between Curry Village and Yosemite Village through Upper and Lower River Campgrounds area, as well as a picnic area in the Lower River Campground area, would not allow for the complete elimination of habitat fragmentation and impacts to existing and potential meadow and riparian zones. Aligning the multi-use paved trail along the utility corridor through the Upper and Lower River Campgrounds area, and construction of the picnic area near Housekeeping Bridge and the paved trail would minimize fragmentation somewhat (by overlapping uses), resulting in a minor impact.
- Development of a vehicle management station (if required) at El Capitan crossover could result in undesired and unplanned parking along road shoulders at El Capitan Meadow, resulting in additional impacts from vehicles, trampling, the continued need to remove hazard trees, and introduction of non-native plant species into the meadow. However, these radiating impacts would be mitigated through restricting parking along the roadway and restricting human use of the meadow, resulting in a minor impact.

Riparian Communities

Alternative 5 actions would result in an adverse impact on an estimated 7 acres of riparian vegetation but would create beneficial impacts on over 89 acres of riparian vegetation. The overall impact of this alternative on riparian vegetation would be major and beneficial.

Beneficial Impacts

Restoration actions would be concentrated in the floodplain areas near Yosemite Lodge (17 acres); the Upper and Lower River, Lower Pines, Group and Backpackers Campgrounds and the dump station (58 acres); Housekeeping Camp (9 acres); and the Swinging Bridge Picnic Area (2 acres) as well as the talus slope zone at Curry Village (3 acres).

The beneficial effects of Alternative 5 on the size and continuity of riparian vegetation types would include the following:

- The removal of Sugar Pine and Ahwahnee Bridges would eliminate the hydrologic alterations that are causing loss of riparian vegetation both upstream and downstream of these bridges. This would allow restoration to create continuous riparian bands along a portion of the Merced River and Tenaya Creek through the east Valley, which currently is almost entirely denuded. This action would result in a major impact.
- The removal of Swinging Bridge Picnic Area would improve habitat condition of the riparian communities in this area, thus promoting the establishment of understory and herbaceous vegetation layers that are currently nonexistent. This action would result in a minor impact.
- Restoration of portions of the Upper and Lower River Campgrounds area, the Upper Pines Campground dump station, a portion of Lower Pines Campground, a portion of Housekeeping Campground within the 150-foot River Protection Overlay, and Group and Backpackers Campgrounds would facilitate re-establishment of riparian corridors (oxbows and cutoff channels) through these sites as well as along the Merced River and Tenaya Creek. This impact would be major.
- Restoration of the riparian corridor within the River Protection Overlay at Camp 6 would improve the continuity of riparian habitat along the Merced River corridor through the East Valley, and would provide a connection between the wetland and meadow communities to the northeast and northwest of the proposed Yosemite Village parking area. The improvements would result in a minor impact.
- Removal of the human-built rock-rubble pile from the western channel of Yosemite Creek would allow this channel to flow for a longer period of time, thus enabling riparian vegetation to become established in this currently barren channel. The action would result in a moderate impact.
- Rehabilitation of bridges over Yosemite Creek in the braided stream channel area would remove impacts associated with these undersized bridges, which have resulted in scouring of the channel banks and loss of riparian vegetation. This would provide a moderate improvement and reduce impacts to riparian vegetation in this area in conjunction with removal of the western channel human-built rock-rubble pile.
- The redesign of portions of Southside Drive in the Bridalveil Fall area would facilitate water flow under the road and enhance the continuity of the riparian community upslope and downslope of the existing road. This impact would be moderate.
- Converting the trail south of the Happy Isles Loop Road between Curry Village and Happy Isles to a multi-use paved trail would result in continued and increased negative impacts to the fen (an alkaline wetland fed from groundwater sources located near Happy Isles) and adjacent riparian vegetation. These impacts would be due to the widening of the current trail to accommodate heavier bicycle traffic, with a long-term loss of more fen habitat. This fen is the only one of its kind in Yosemite National Park, and any impacts would be considered major due to the rarity of this type of vegetation community.

- Repair and construction of the road between the Cascades Diversion Dam and Pohono Bridge would eliminate road-edge parking and the resultant human impacts on riparian vegetation along this section of the Merced River corridor. This impact would be minor.

Adverse Impacts

Adverse impacts on riparian vegetation would occur at the new walk-in campgrounds east of Upper Pines Campground (7 acres) and at the new lodging at Curry Village (4 acres). Additional impacts would occur as a result of radiating use from new and redeveloped sites.

The adverse impacts to the size, continuity, productivity, diversity, and structure of riparian vegetation are listed below:

- At Curry Village, a small area of riparian vegetation would be impacted so that existing lodging can be relocated outside of the talus slope zone. This new lodging development would be designed to minimize impacts to riparian vegetation. This would result in moderate local impacts. In relationship to the overall impacts to riparian vegetation these impacts would be minor.
- Walk-in camp sites would have minor impacts on riparian vegetation due to trampling and localized fill for tent pads.
- Development of a picnic area with restrooms, barbecue grills, and picnic table pads at the Lower River Campground near Housekeeping Bridge could result in moderate, adverse impacts due to trampling and increased radiating human impacts. These impacts would result in a loss of structure and integrity of riparian vegetation, but mitigation would include fencing, signage, and other measures to keep trampling confined to the picnic area. This would result in a minor overall impact.
- Paving or hardening the eastern channel trail at Yosemite Creek for accessibility would directly impact some riparian vegetation because this action would involve widening or relocating the current trail. However, the area of impact would be small, and this site has already had an almost complete loss of herbaceous cover due to undirected foot traffic adjacent to the current access trail to Lower Yosemite Fall Bridge. The resulting impact would be minor.
- Development of a 550-vehicle parking lot in Yosemite Village would have a minor impact on riparian vegetation, from radiating uses to the Merced River. These would be mitigated by directing visitors to resilient areas of the riverbank.

Other Communities

The Alternative 5 actions would result in adverse impacts to about 5 acres of other types of vegetation ground cover. Twenty-five acres of bare ground, orchards, watered lawns, bare areas, and developed open areas would be restored to either upland or highly valued resource vegetation types. The beneficial impacts have been discussed in the upland, California black oak, meadow, and riparian discussions above. They include restoration of much of the Curry Orchard to a mix of meadow, riparian, and California black oak woodlands and restoration of the River Protection Overlay at North Pines Campground to riparian, meadow, and California black oak woodlands.

Adverse impacts would occur in areas where sparsely vegetated lands would be developed, such as the addition of parking at Camp 6 and new housing and lodging at Curry Village. Overall, there would be negligible beneficial impacts on these other vegetation types under Alternative 5.

OUT-OF-VALLEY AREAS

The proposed out-of-Valley day-visitor parking locations would be at Henness Ridge, El Portal, and Foresta. Housing would be developed in Wawona and Foresta and improvements would be made at the South, Big Oak Flat, and Tioga Pass Entrance Station areas. The overall impact of Alternative 5 on out-of-Valley areas would be moderate and adverse.

El Portal

Vegetation in the El Portal area of impact include canyon live oak (a type of upland) and riparian types; however, the plant composition of these types varies from those in the Valley. Meadow and California black oak types are not represented here. The overall impact of this alternative on El Portal area vegetation would be moderate and adverse.

Oak and Upland Communities

ADVERSE IMPACTS

- Existing oak stands would experience moderate, long-term impacts from the development of housing throughout El Portal. A direct loss of trees would occur with the development of housing within areas that are already somewhat impacted by low-density housing, as well as development of new housing sites at Hillside East and Hillside West. These developments would prevent retained trees from reproducing (due to pavement, yard activities, landscaping, trampling, and the presence of structures), resulting in a decrease in the size and continuity of these oak woodlands.
- The natural structure, diversity, and productivity of oak and upland communities would be moderately impacted because of the increased likelihood of non-native plant species and lack of natural fire and fire frequencies.
- Prescribed burning and mechanical treatment of vegetation surrounding El Portal would continue to maintain semi-natural stands of oaks around developed areas. These actions would promote oak regeneration by reducing competing vegetation. Many areas currently managed this way would be developed into housing, parking, and infrastructure, leaving fewer acres of oaks to regenerate, provide habitat, and add to the diversity of this area, which would result in a minor impact.
- The development of a parking area could require the removal of large individual oaks adjacent to the Merced River at Middle Road. The development of housing upslope of this site would eliminate the connectedness of the oak stands on the slopes above El Portal with riparian and flat terrain oak communities. The action would result in a minor impact.

Riparian Communities

ADVERSE IMPACTS

- Riparian areas would receive minor impacts from the development of high-density housing at Hennessey's Ranch (due to their currently impacted condition). Associated increases in human use would cause a decline in the continuity of this vegetation community as social trails develop.
- The size of riparian areas would continue to be impacted by existing developments and new development (at Hennessey's Ranch and Village Center). A continued decline in riparian community size would also occur both in length along the river and width from the water's edge up to the bank edge, resulting in a minor impact.
- An increased human population and an associated increase in landscaping, numbers of vehicles, and foot traffic (and means for seed dispersion), would result in more non-native plant species problems throughout the riparian and oak woodland areas. Increases in non-native species would result in a moderate impact.
- The isolated nature of riparian areas in the El Portal core area (Crane Creek to Foresta Bridge), because of structures and Highway 140 riprap, would continue to inhibit natural exchange of other biological components (mammals, amphibians, and reptiles) as well as wind-dispersed seeds. This would result in lower overall productivity of these areas and a minor impact.

BENEFICIAL IMPACTS

- The removal and restoration of the old treatment plant at Rancheria Flat adjacent to the river would enhance the continuity of riparian vegetation along this bend of the Merced River, with potential increased habitat for rare plant species growing adjacent to the site. This action would result in a major impact to vegetation communities in the area.
- Implementation of the River Protection Overlay and management zoning, prescribed in the *Merced Wild and Scenic River Comprehensive Management Plan*, would help protect the riparian corridor throughout the El Portal Administrative Site.
- Restoration of the sand pit area, with removal of the remaining concrete wing wall and re-establishment of riparian vegetation, would enhance the river corridor and increase potential habitat for Congdon's woolly-sunflower, a state-listed rare plant, resulting in a minor impact.

Foresta

Alternative 5 would not replace Yellow Pine Campground; therefore, no impacts would occur in that area. As under the other alternatives, 14 employee houses would be added, as well as a stable for National Park Service and concessioner administrative use, and a parking facility for 660 vehicles (18 acres). This alternative would therefore have moderate, adverse impacts on vegetation in the Foresta area.

- Use of the Foresta area, and specifically Big Meadow, would likely increase substantially due to the development of a parking facility above the meadow. This would reduce the

size and continuity of vegetation (by paving) and would increase radiating use levels to the riparian and meadow communities in and around Foresta. Impacts would be moderate and adverse.

- Isolated but extreme impacts from the establishment and spread of non-native plant species (including spotted knapweed, yellow star-thistle, and oxe-eye daisy) would occur at a much more rapid rate from the substantially increased vehicle use of this area with the development of a parking area. Management efforts would continue to attempt to contain and control (and eventually eradicate) existing and new non-native species. This would be a major and adverse impact.
- Development of the National Park Service and concessioner administrative stables at McCauley Ranch in Foresta, with access road widening and rebuilding of a bridge along the access road, would further break up the continuity of the upland and riparian communities that exist along this road corridor. These adverse impacts would be minor since a road and bridge are already present.
- Development in Foresta, would also increase the possibility for the establishment and spread of non-native plant species. Foresta remains fairly susceptible to non-native plant species establishment because of the severe impacts that occurred during the 1990 fires. Stable operations (with constant ground disturbance, the need to maintain road corridor, and the importation of potentially contaminated feed) could increase the chance of additional non-native species becoming established in the vicinity of the road and corral. This would result in moderate impacts.

Henness Ridge

Development of a 370-vehicle parking area at Henness Ridge would necessitate removal of a large number of overstory trees as well as the intact shrub and herbaceous layers. This development would result in long-term, moderate, adverse impacts to this somewhat intact mixed coniferous forest (roads and social trails currently exist).

Adverse Impacts

- Installation of utilities and facilities associated with the parking area would require trenching and the expansion of existing infrastructure. Impacts would occur to root systems and riparian zones (due to trenching and the potential need to create an expanded wastewater leach field). Additional radiating impacts would occur on conifers, with the potential for higher stress levels on large sugar pines in the area, thus increasing their susceptibility to white pine blister rust.
- Higher levels of vehicle use and more open areas (disturbed ground) could increase the potential for introduction and establishment of non-native plant species.

Wawona

Construction of housing with associated infrastructure improvements, would have a long-term, moderate, and adverse overall impact on vegetation in Wawona.

Adverse Impacts

- The addition of housing on approximately 8 acres of land would adversely impact the lower mixed conifer forest and stands of California black oak, resulting in a moderate impact. The size of the stand and continuity of the canopy would be broken by the addition of housing units and associated infrastructure.
- Continuity of the surrounding area would be further impacted by the need to manage for hazard trees that could potentially impact the new housing development. The impacts would be minor.
- The overstory, understory, and herbaceous vegetation structure would be adversely impacted by the addition of housing, access roads, and trails, and installation of infrastructure. Some vegetation structure could be maintained through site planning to avoid large trees and concentrate housing to allow for larger blocks of intact vegetation between units. The impacts would be moderate.
- The diversity of native vegetation would decline due to the loss of some layers of the forest (primarily understory and herbaceous) from the developments under the overstory canopy. The diversity decline would result in long-term, moderate impacts.
- The potential for introduction and establishment of non-native plant species would increase due to landscaping and groundskeeping activities in and around the housing area. This could be minimized by aggressive adherence to the landscaping guidelines outlined in the *Vegetation Management Plan*.
- Productivity of the site would decline due to the need to remove hazard trees, resulting in a loss of structure and diversity. These dying and dead trees and snags currently provide habitat for a wide range of wildlife, which would be impacted by their loss at this site. This impact would be long-term, moderate, and adverse.
- Increased ground disturbance during construction and through higher levels of human use would increase the potential for non-native plant species to be established through inadvertent introductions. Since the site is currently not impacted by many non-natives, this would be a short- to long-term, moderate, adverse impact.
- Radiating impacts to surrounding areas (the river to the north and designated Wilderness to the south and east) would directly effect ground cover, thus changing structure of litter and duff (through trampling) and resulting in reduced effectiveness of prescribed fire activities. This would impact the National Park Service's ability to continue managing natural stand structure (and thus productivity) throughout Wawona. However, this could be mitigated through fencing, trails, and linking to established trail systems, and signs to keep people out of sensitive areas, resulting in a minor impact.

Big Oak Flat Entrance

Additional parking and construction of a new visitor contact station (visitor center) would increase the footprint of the existing site by up to 5 acres. Impacts at the Big Oak Flat Entrance would be long-term, minor, and adverse due to the small size of additional impact, the existing

level of habitat fragmentation, and the existing high potential for introduction of non-native plant species.

Impacts to upland vegetation (ponderosa pine forest and mixed conifer forest) may occur depending on the actual site design, which is not known at this time. Impacts would include paving, the removal of trees and groundcover, an increased difficulty in managing fuels and vegetation structure with fire (due to the presence of additional structures requiring fire protection), and trenching impacts to root systems (with potential weakening of health of directly affected trees).

Tioga Pass Entrance

Tioga Pass vegetation is characterized by a mosaic of both wet and dry subalpine meadows (dominated by native perennial grasses, sedges, rushes and forbs), and lodgepole pine forests. Continued degradation of these vegetation types would occur under Alternative 5. The impact resulting from this alternative would be long-term, moderate, and adverse, as there would be loss of vegetation and further degradation of vegetation community structure and diversity within a currently disturbed area.

Adverse Impacts

- Construction of a new visitor center and associated parking (with potential impacts of up to 5 acres) in the vicinity of Tioga Pass would impact lodgepole pine forests and wet and dry subalpine meadows. Dry meadows and lodgepole forests would be affected by paving and the addition of structures, utility lines, and trails, thus reducing both the size and continuity of these vegetation types and resulting in long-term, moderate, and adverse impacts. Wet meadows would receive long-term, moderate, and adverse impacts from radiating uses as a result of increased human activity in the area. Impacts to wet meadows could be mitigated by more clearly defining trails leading to the Mt. Dana cross-country route, and would most likely remain moderate (despite any mitigation) simply as a result of increased levels of human use in the area.
- Paved areas and structures would result in changes in drainage patterns, with moderate adverse impacts. An increased number of visitors because of the new visitor center would increase the likelihood of additional firewood collection (causing a loss of nutrient recycling), more vehicles in the area would increase the chance of non-native plant establishment as a result of more trampling and denuding of soils.

South Entrance

Vegetation at the South Entrance to Yosemite National Park is characterized by dense montane, mixed conifer forest dominated by a white fir overstory with subordinate sugar pine, Douglas-fir, ponderosa pine, and Jeffrey pine. Riparian vegetation occurs along ephemeral and perennial stream channels. Continued degradation of these vegetation types would occur under Alternative 5. The impact of this alternative would be long-term, minor, and adverse because there would be some increase in vegetation loss and degradation as compared to the existing condition.

Adverse Impacts

- Increased parking and structures would further add to the fragmentation of the South Entrance area, with an increased loss of riparian vegetation from the potential filling in of drainages and increased loss of forest cover. The loss of riparian vegetation could be minimized by using existing old road and railroad corridors rather than creating new developed areas, resulting in minor, adverse impacts (due to the small area affected). Forests would be impacted by the loss of up to 5 acres of trees in a currently forested area. Additional impacts would occur from the expansion of the hazard tree management zone along the corridor and around new parking areas.
- An increase in paved areas, how long vehicles are parked, and levels of human use in the South Entrance area would increase the potential for introduction and establishment of non-native species through higher levels of road-edge maintenance, increased introduction of sand with potential weed seeds, and more people with seeds clinging to clothing and cars. Impacts would be moderate and adverse to riparian vegetation and minor to forested areas.
- The increased human population would make reintroduction of fire into the South Entrance area more problematic due to smoke and the presence of structures. These limitations could be minimized by designing the site to concentrate structures in as small an area as possible. Vegetated "islands" would also be minimized to allow management of adjacent vegetation with fire.

CONCLUSION

In Yosemite Valley, minor, beneficial impacts would occur under Alternative 5 to upland communities due to the removal of some facilities. California black oak and meadow vegetation would experience moderate, beneficial impacts due to the relocation of some facilities out of California black oak and potential meadow areas. Riparian areas would experience major, beneficial impacts under Alternative 5 from the removal of some facilities, the consolidation of others out of the Merced River floodplain, and an increased ability to restore some large portions of the Valley to natural conditions.

In El Portal, long-term, moderate, and adverse impacts would occur to the oak and upland communities as a result of new housing and parking development, with a permanent loss of habitat. Riparian areas would also experience moderate, adverse impacts due to the following: (1) radiating uses from increased human presence, (2) an increased likelihood of establishment of non-native plant species, and (3) loss of fire as a management tool to retain natural structure to forests and meadow areas.

Wawona, Foresta, Tioga Pass, and Henness Ridge would experience moderate, adverse effects. In each of these areas, upland forests and California black oaks would be impacted by new housing; montane forests, lodgepole pine, and riparian areas would be impacted by new parking. Expected radiating impacts would have minor, adverse effects on meadow, riparian, and other adjacent vegetation types due to an increased human presence in the spring and summer.

Long-term, minor, and adverse impacts would occur at Big Oak Flat Entrance and South Entrance due to a slight increase in vegetation habitat fragmentation.

The overall effect of Alternative 5 on vegetation would be minor, long term, and beneficial based on the relatively large areas of highly valued resource vegetation that would be restored in Yosemite Valley, as compared to the majority of adverse impacts outside the Valley that would occur in non-highly valued resource vegetation types (uplands and other) and involve limited amounts of new habitat fragmentation.

CUMULATIVE IMPACTS

The overall cumulative impacts of past, present, and reasonably foreseeable future projects on vegetation would be the same under Alternative 5 as it is described under Alternative 2. The majority of these adverse impacts would occur within non-highly valued resource vegetation types.

Increased human activity and related air quality degradation in the El Portal area and elsewhere could adversely affect ponderosa pine, Jeffrey pine, and other ozone-intolerant species. The National Park Service has operated an ozone monitoring station at Turtleback Dome for more than a decade to identify ozone trends in the Valley. Although cleaner burning vehicles and fuels should reduce the amount of ozone in the atmosphere in the future, cumulative effects to such species are expected to continue.

Other cumulative impacts to vegetation under Alternative 5 would include community fragmentation resulting from increased land development and potential continued introduction of non-native plant species. Cumulative impacts to riparian vegetation would also be expected due to development and other pressures along the narrow Valley floor adjacent to the Merced River.

Adverse impacts to upland vegetation communities under Alternative 5 would occur at Henness Ridge, El Portal, Foresta, Wawona, and at all entrance stations. These impacts, in conjunction with impacts to upland communities in Yosemite Valley from a loss of forests over time to highly valued resource meadow, California black oak, and riparian vegetation types, would constitute minor overall impacts to upland vegetation types. In conjunction with reasonably foreseeable future projects, actions proposed under Alternative 5 would result in a cumulative, minor, adverse impact to upland vegetation due to the abundance of upland vegetation types throughout the Sierra Nevada region.

Some restoration actions are proposed to take place in oak woodlands through the removal of structures, but development of new facilities within oak stands would negate some beneficial impacts. Adverse impacts would also occur to canyon live, blue, black, and valley oaks by the development of housing and parking in El Portal. Site planning would be used to avoid large trees and minimize irrigation impacts, somewhat mitigating these adverse impacts. Talus live oak communities in the Valley would continue to be impacted under this alternative. In conjunction with reasonably foreseeable future projects, there would be cumulative minor, negligible impacts to oaks as a result of this project.

Alternative 5 also calls for the implementation of a River Protection Overlay zone in Yosemite Valley, which would create some long, linear sections of intact riparian vegetation following restoration efforts. The natural links with meadows would be restored by restoring large

continuous meadow areas throughout most of the east Valley. This alternative also prescribes some additional multi-use paved trails, which often follow or cross riparian areas. Impacts could also occur to subalpine meadows at Tioga Pass. Thorough site planning could prevent impacts to riparian and meadow vegetation in these newly developed areas by avoidance, resulting in a cumulative minor, beneficial impacts to riparian and meadow vegetation. Therefore, the overall cumulative impacts of Alternative 5, in conjunction with reasonably foreseeable future projects, would be negligible and beneficial.

Wildlife

This analysis describes impacts to wildlife in terms of changes to habitat, such as habitat loss or gain, degradation or enhancement, fragmentation or connectivity, amount of human disturbance, and potential for increased or decreased conditioning of wildlife to human food. The Vegetation section provides detail (including acreage breakdowns) on the vegetation types that are related to the habitat types covered in this section: upland, California black oak woodland, meadow, riparian, and other. All but the upland and other habitat types are considered highly valued resources by the park because of their value to wildlife combined with other factors, such as scarcity on a regional basis and value as critical components in park ecosystems. General wildlife species associated with these habitat types are discussed in Vol. IA, Chapter 3, Affected Environment, Wildlife; table 3-5 illustrates the connections between vegetation types and wildlife habitats. Special-status wildlife species are discussed in a separate section of this chapter.

Short-term impacts would occur to wildlife during construction or implementation of actions described in this section. Based on the mitigation measures that would be implemented during construction, all expected short-term impacts would be negligible.

Other impacts on wildlife and wildlife habitat generally would be characterized as long term for the actions reviewed under this alternative.

YOSEMITE VALLEY HABITATS

Habitat restoration would result in approximately 162 acres of restored or enhanced wildlife habitat within the Valley, of which 147 acres would be restored to highly valued resource habitat types. New or relocated development within existing wildlife habitat would result in approximately 69 acres of lost or degraded wildlife habitat, of which 53 acres would occur within upland or “other” habitat types within the Valley.

In restored habitat of all types, the resulting benefit to wildlife is highly dependent upon the size of the area restored and its connection or proximity to other natural or restored areas. Such benefit is also related to the proximity of the restored area to continued human activities and development. Larger restored areas of habitat tend to support a higher abundance and diversity of wildlife species and are less affected by human disturbance from adjacent development and uses. Connections within and among habitat types allow more natural wildlife movement, and access to food, cover, and reproduction sites necessary for all stages the life cycles of various species. Management of human use in areas adjacent to natural or restored areas can minimize disturbance that would degrade habitat quality, especially of sensitive habitats such as meadows and riparian. For example, signs and fencing could keep visitors away from sensitive habitats or

wildlife species, and control of human food sources in developed areas could reduce conditioning of wildlife and minimize human/wildlife conflicts.

In addition, where development is removed and human presence is reduced, management practices required to enhance public safety (at the cost of natural resources) could also be reduced. For example, dead trees (snags) are important habitat features for many wildlife species, but must be removed when they occur in or near roads, developed areas, or other sites of high human use. With the removal of development and the reduction in human use in an area, snags can be allowed to stand and benefit wildlife.

Upland Habitats

Approximately 47 acres of existing upland habitat would be developed under this alternative, approximately 16 acres would be restored, and an additional 78 acres would be restored to highly valued resource habitat types. The beneficial impacts to upland habitats would primarily be the result of increased connectivity of uplands with other habitats as well as enhancement of habitat structure. Adverse impacts to upland habitat would occur primarily as a result of habitat loss.

Beneficial and adverse impacts are generally the same as described for Alternative 2. The primary differences in actions from those described in Alternative 2 are the numerous restorations not included in Alternative 5, such as Yellow Pine Campground and Curry Orchard parking lot. A summary of actions and impact intensities for Alternative 5 are provided in table 4-121.

- A new picnic area with grills would be established at Curry Orchard, causing moderate, adverse effects through creation of a new area for human/wildlife conflicts. The removal of parking from the orchard under this alternative would reduce the conditioning of bears to food in vehicles, and reduce damage to vehicles. Picnicking in the orchard, however, would likely result in dangerous interactions between wildlife and humans, especially when the apple trees are fruiting, attracting large numbers of black bears, deer, and squirrels. This situation would be prolonged by maintenance of the orchard, which could increase the longevity of the trees.
- Development of the Yellow Pine Campground for volunteers and groups would cause moderate, adverse impacts. A small area of forest habitat would be removed to expand the existing development. Increased radiating impacts into adjacent riparian and wetland areas would affect those highly valued resource habitat types and disturb wildlife. The site would become an increased source of human food to wildlife, leading to further conditioning of wildlife and human/wildlife conflicts. Animal-resistant trash cans and food lockers would help limit this problem, but adverse effects on wildlife behavior would still occur.
- Relocation of the concessioner commercial stable to east of Curry Village and continuation of guided trail rides would support a large population of brown-headed cowbirds, with continued effects of nest parasitism on species such as yellow warbler, solitary vireo, and warbling vireo. However, with the removal of the National Park Service and concessioner administrative stables operations from the Valley under this alternative, minor, beneficial effects would occur to songbird populations.
- The use of Northside Drive for motor vehicle traffic would perpetuate the impacts of noise, light, and roadway mortality on wildlife and continue to fragment habitat in Yosemite Valley. There would be no impact from this action, since it is essentially the existing condition.

Table 4-121 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Beneficial Impacts				
Implementation of 150-foot River Protection Overlay	Reduction in human disturbance and habitat degradation	All	2, 3, 4, 5	Major
Removal of campgrounds within the River Protection Overlay and ecological restoration of areas	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction of human disturbance	All	2, 3, 4, 5	Major
Removal of campsites at North Pines from highly valued resource habitat types	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction of human disturbance	Riparian	2, 3, 4	Moderate
Removal of campsites at Lower Pines from highly valued resource habitat types	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human disturbance	Riparian	2, 3, 4, 5	Major
Restoration of Yosemite Lodge cabin area to natural conditions	Reduction in habitat fragmentation Reduction in human presence Improvement of habitat integrity Increase in habitat quantity	Riparian Meadow	2, 3, 4, 5	Moderate
Removal of 164 Housekeeping units and restoration of area to natural conditions	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human disturbance	Riparian	2, 5	Moderate
Removal of 212 Housekeeping units and restoration of area to natural conditions	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction of human disturbance	Riparian	3, 4	Major
Removal of roads through Stoneman and Ahwahnee Meadows and restoration of areas to natural condtions	Restoration of natural hydrology and vegetation Reduction in habitat fragmentation Reduction in human disturbance	Meadow	2, 3, 4	Major
Removal of Bridges: Sugar Pine and Stoneman (if necessary)	Restoration of natural hydrology to allow natural cycles of riparian habitat formation, and improve aquatic habitat	Riparian	2	Major
Removal of Bridges: Sugar Pine, Stoneman, Housekeeping, Superintendent's	Restoration of natural hydrology to allow natural cycles of riparian habitat formation, and improve aquatic habitat	Riparian	3, 4	Major
Removal of Bridges: Sugar Pine and Ahwahnee	Restoration of natural hydrology to allow natural cycles of riparian habitat formation, and improve aquatic habitat	Riparian	5	Major
Removal of Yellow Pine Campground and restoration to natural conditions	Restoration of habitat quality, integrity, and continuity Reduction in human disturbance	Riparian Upland	2, 3	Moderate

Table 4-121 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Removal and restoration of tennis courts and utility area near The Ahwahnee	Restoration of habitat and reduction in human disturbance	California black oak	2, 3, 4, 5	Moderate
Removal of Swinging Bridge Picnic Area	Restoration of forest understory and riparian habitat Reduction in wildlife feeding	Riparian Upland	2, 3, 4, 5	Moderate
Removal of Church Bowl Picnic Area	Restoration in habitat quantity and continuity Reduction in human disturbance	Upland	2, 5	Minor
Removal of Camp 6 parking from River Protection Overlay	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human disturbance	Riparian Meadow	2, 3, 4, 5	Moderate
Removal of Camp 6 parking from River Protection Overlay and highly valued resource areas	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human disturbance	Riparian Meadow	3, 4	Major
El Portal Road reconstruction from intersection with Big Oak Flat Road to Pohono Bridge	Reduction in impact to thin strip of riparian habitat from minor road realignment and removal of most turnouts, which would reduce human disturbance of habitats	Riparian	2, 3, 4, 5	Minor
Removal of Cascades Diversion Dam	Restoration of natural hydrology and cycle of riparian habitat formation	Riparian	2, 3, 4, 5	Minor
Removal of Curry Village tent cabins from talus zone	Restoration of habitat Reduction in habitat fragmentation Reduction in human disturbance	Upland Riparian	2, 3, 4, 5	Moderate
Removal of Curry Orchard and restoration to natural conditions	Reduction in human/wildlife conflicts Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation	Meadow	2, 3	Moderate
Removal of parking from Curry Orchard, but trees allowed to remain	Reduction in human/wildlife conflicts	Other	4, 5	Minor
Removal of all orchards and resoration to natural habitat	Increase in habitat quantity Improvement in habitat integrity Reduction in habitat fragmentation Reduction in human/wildlife conflicts	Upland Meadow	3	Major
Removal of Yosemite Falls parking area and redesign of trails	Restoration of small area of habitats, but with continued high levels of human disturbance in the area	Riparian Upland	2, 3, 4, 5	Minor
Removal of concessioner and NPS stables from Yosemite Valley and restoration of habitat (if operations can be moved to McCauley Ranch)	Increased habitat integrity and continuity Reduced parasitism by brown-headed cowbirds on native bird species	All	2, 3, 4	Moderate
Discontinue private stock use in Yosemite Valley	Reduction in brown-headed cowbird parasitism on native bird species	All	3	Minor

Table 4-121 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Modification of Northside Drive between Yosemite Lodge and El Capitan crossover to a multi-use (pedestrian/bicycle) paved trail	Reduction in traffic disturbance to habitats and wildlife in a substantial portion of Yosemite Valley Reduction in wildlife killed by vehicles and in habitat fragmentation	Other	2, 3, 4	Major
Removal of Superintendent's House (Residence 1) and restoration of area to natural habitat	Restoration of a small area of a high-value resource type Increased continuity with adjacent habitats	California black oak	2, 3, 5	Moderate
Restoration of the gas station site to natural habitat	Restoration of a small area of highly valued resource habitat Continued human impact from adjacent development	California black oak	2, 3	Minor
Removal of Ahwahnee Row houses and restoration to natural habitat	Restored meadow-forest edge More natural hydrology and habitat assiciated with Indian Creek	Meadow Riparian California black oak	3, 4, 5	Moderate
Happy Isles: ice cream/snack stand not replaced (temporary stand removed)	Reduction in human food sources to wildlife	Other	3, 4	Minor
Removal of parking along Northside Drive through El Capitan Meadow	Reduced impact to meadow from human trampling Reduced exposure of wildlife to human food, and reduced conditioning of bears to food left in cars overnight	Other	2, 3, 4, 5	Moderate
Reconstruction of roads at El Capitan Meadow and Bridalveil Creek to accommodate natural water flows	Restoration of natural water flows to sustain riparian, wetland, and meadow habitats Reduction in habitat fragmentation	Riparian Meadow	2, 3, 4, 5	Major
Adverse Impacts				
Establishment of new walk-in campsites in Yosemite Valley	Removal of habitat New areas for wildlife to be exposed to human food, leading to human/wildlife conflicts	Upland	2, 3, 4, 5	Moderate
Development of replacement housing and lodging at Curry Village outside of talus slope zone	Removal of habitat Increased human disturbance of adjacent habitats	Upland California black oak Riparian	2, 3, 4, 5	Minor
Redevelopment of area in Yosemite Village for 550 parking spaces	Increased human disturbance in adjacent habitats Increased trampling of vegetation Increased chance for human/wildlife conflicts	Upland	2, 5	Moderate
Development of new lodging at Yosemite Lodge	Loss of habitat (previously disturbed) Increased human presence	Upland	2, 3, 4, 5	Minor
Increased water levels in meadows from restoration	Potential increased bullfrog populations that would prey on native species; eradication is necessary for mitigation	Meadow Riparian	2, 3, 4, 5	Moderate
Establishment of a new picnic area at North American Wall	Loss of upland habitat Increased human disturbance Increased chance of wildlife conditioning to human food	Upland	2, 3, 4, 5	Minor
Development of the El Capitan crossover traffic check station, if required	Loss of habitat Disturbance from traffic and people	Upland	2, 5	Minor

Table 4-121 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Development of new housing at Wawona	Loss of montane hardwood conifer habitat and increased human disturbance	Upland	2, 5	Moderate
Development of new housing and administrative facilities in El Portal	Loss of habitat Increased human disturbance	Upland Riparian	2, 3, 4, 5	Moderate
Development of parking in El Portal	Loss of habitat Increased human disturbance	Upland California black oak	2, 4, 5	Moderate
Development of parking at Badger Pass on previously paved area	Increased human disturbance Trampling in adjacent habitats Increased human/wildlife conflicts	Upland Meadow	2, 4	Minor
Development of parking at Hazel Green, or at Foresta if Hazel Green is not viable	Loss of habitat Increased human disturbance in the area Increased trampling of vegetation Increased chance of human/wildlife conflicts	Upland	2	Moderate
Construct new visitor centers at or near park entrances	Minor loss of habitat Increased human disturbance	Upland	2, 3, 4, 5	Minor
Construction of a new trail adjacent to Southside Drive from El Capitan Bridge to Swinging Bridge	Loss of habitat Increased need for hazard tree management, reducing snag habitat	All	2, 3, 4	Moderate
Development of new roads and trails from realignments and new connections	Loss of habitat Removal of hazard trees, reducing snag habitat	All	2, 3, 4, 5	Moderate
Relocation of NPS and concessioner stables to McCauley Ranch in Foresta	Impact to meadow and forest habitat Creation of a new area for brown-headed cowbird infestation, affecting native bird species	Upland Meadow	2, 3, 4	Moderate
Widening of Southside Drive, where necessary, to accommodate two-way traffic	Removal of habitat already affected by proximity to existing road	Upland	2, 3, 4	Moderate
Construction of a new vehicle bridge across Yosemite Creek near Yosemite Lodge	Removal of small area of habitat	Riparian	2, 3, 4, 5	Minor
Construction of parking and transit facility at Taft Toe in mid-Yosemite Valley	Removal of approximately 53 acres of forest habitat Increased habitat fragmentation in a relatively intact area Increased human disturbance to surrounding habitats Noise and light disturbance from facility Increased chance of human/wildlife conflicts	Upland	3, 4	Major
Development of a new picnic area at the Curry Orchard	Increased chance for human/wildlife conflicts, especially in fall when apples are ripening and attracting wildlife	Other	3, 4	Moderate
Development of a new picnic area at former site of Superintendent's House (Residence 1)	Destruction of understory habitat Increased human disturbance Inhibited regeneration of oaks Increased exposure of wildlife to human food	California black oak	4	Minor
Development of parking at South Landing	Loss of forest habitat Increased human disturbance in the area Increased chance for human/wildlife conflicts	Upland	4	Moderate

Table 4-121 Wildlife Habitat Impacts				
Action	**Habitat Impact**	**Habitat Type**	**Common to Alternatives**	**Intensity[1]**
Relocation of concessioner stable to east of Curry Village and continuation of guided rides	Loss of habitat from development of facility Increased local effects of brown-headed cowbird parasitism	Upland	5	Minor
Development of parking at Henness Ridge	Loss of habitat Increased human disturbance in adjacent habitats Increased chance of human/wildlife conflicts	Upland	5	Moderate
Expansion of the Yellow Pine Campground to accommodate volunteers and group campers	Loss of habitat Increased human disturbance in adjacent habitats Increased chance of human/wildlife conflicts	Upland Riparian	5	Moderate

1. Reasons for impact intensities are described in the text, along with explanations of mitigation measures incorporated into this evaluation. A complete list of mitigation measures is found in Chapter 2, Alternatives, Mitigation Measures Common to All Action Alternatives, Wildlife.

California Black Oak Habitat

Approximately 4 acres of existing California black oak woodland habitat would be developed under this alternative, and approximately 15 acres would be restored to this highly valued resource habitat. The beneficial impacts to California black oak woodland habitats would primarily be the result of increased habitat size and connectivity with other habitats as well as enhancement of habitat structure. The adverse impacts to California black oak woodland habitat would occur primarily as a result of habitat loss.

Beneficial and adverse impacts under Alternative 5 would generally be the same as described under Alternative 2. The primary differences in actions from those described in Alternative 2 are discussed below. A summary of actions and impact intensities for Alternative 5 are provided in table 4-121. Beneficial impacts on California black oak woodland habitat would have corresponding beneficial effects on many species, including mule deer, acorn woodpeckers, squirrels, mice, great-horned owls, and a variety of small birds.

The former gas station site would be restored to California black oak woodland, providing a minor, beneficial impact. However, this area represents a relatively small portion of this habitat type in the Valley and would receive continued impact from human activities at Yosemite Lodge and Camp 4 (Sunnyside Campground), which would reduce its value as wildlife habitat. The former bank building (now the Art Activity Center) would remain.

Riparian and Meadow Habitats

Approximately 12 acres of existing meadow and riparian habitat would be developed under Alternative 5, and approximately 151 acres restored to these highly valued resource habitats. The beneficial impacts to meadow and riparian habitats would primarily be the result of increased habitat size and connectivity with other habitats as well as enhancement of habitat structure. The adverse impacts to meadow and riparian habitat would occur primarily as a result of habitat loss.

Beneficial and adverse impacts to meadow and riparian habitats would generally be similar to those described under Alternative 2. In Alternative 5, Stoneman and Ahwahnee Meadows would not be fully restored, there would be less restoration at North Pines Campground, and Stoneman Bridge would not be removed. A summary of actions and impact intensities for Alternative 5 is provided in table 4-121.

- Ahwahnee Row houses would be removed and the area restored to riparian and some meadow habitat. The meadow edge would be restored, providing high-value transitional habitat for wildlife. Flows from Indian Creek could be allowed to follow a more natural course, leading to improved meadow habitat and the formation of riparian habitats (both highly valued resources). Impacts from domestic pets and non-native plants associated with current housing would be reduced. This restoration would have a moderate, beneficial effect, because the restored habitat would be a relatively thin strip, and continued high levels of human use in adjacent areas would limit the value of this restoration to wildlife by causing disturbance in the area.

- Removal of Stoneman and Ahwahnee Bridges would restore natural hydrology and natural cycles of riparian habitat formation. This would have a major, beneficial effect on wildlife by helping to restore the contiguity of this highly valued resource habitat.
- Outside the River Protection Overlay, the re-establishment of campsites in North Pines Campground (70 sites) and the increase in campsites at Upper Pines (22 sites) would reduce the area of highly valued resource habitats restored relative to Alternative 2. Because these increases in campsites all occur in the same general area, the adverse effect on the extent and contiguity of habitats would be substantial, but would be moderate and adverse in the context of habitat restoration that would occur elsewhere in the Valley. Removal of development from the River Protection Overlay and restoration of natural habitats would still have a major, beneficial impact, but the effect would be diminished by this expansion in the number of campsites.
- Roads through Stoneman and Ahwahnee Meadows would remain, continuing to cause disruption of natural hydrology through the meadows and fragmenting these highly valued resource habitats. No new impacts would occur, because this is the existing condition.
- Curry Orchard would remain and be maintained. This would not allow restoration of the meadow habitat that it occupies, as would occur under Alternative 2. No new impact would occur, since this is the existing condition.

OUT-OF-VALLEY HABITATS

Parking, housing, and administrative facilities would be developed outside of Yosemite Valley to replace those removed from the Valley under this alternative. This would result in largely adverse impacts to wildlife and habitat in those locations where new facilities are established. Most of this impact would be to upland habitats. However, some restoration would occur in El Portal as part of local projects.

The out-of-Valley impacts would generally be related to the development of parking facilities at Henness Ridge, Foresta, and El Portal that would remove habitat, causing radiating human impacts. More visitor use in these areas would increase exposure of wildlife to human food. Cars parked at these facilities, especially in the early mornings and late evenings, could be damaged by bears (which could become conditioned to this human food source). Standard mitigation measures, such as fencing and signs to keep people out of sensitive habitats, adequate garbage receptacles and collection, and enforcement of regulations regarding wildlife access to human food, would be incorporated into project design to minimize wildlife impacts (see Chapter 2, Alternatives, Mitigation Measures Common to All Action Alternatives).

El Portal

Impacts on wildlife and habitat in this location would be the same as under Alternative 2, except approximately 35 fewer parking spaces would be developed in the Middle Road area, for a total of approximately 335 spaces. Impacts of development in El Portal would remain the same as under Alternative 2 (moderate, adverse) because the area spared development would be relatively small, and the Middle Road area is between two roads and has existing habitat degradation.

Wawona

Impacts in this area on wildlife and habitat would be the same as under Alternative 2 (moderate, adverse) because employee housing would be constructed in an area already affected by adjacent development.

Foresta

Impacts in this location would be essentially the same as under Alternative 2 (moderate, adverse), in which a day-visitor parking facility would be developed in Foresta (if an agreement cannot be reached to develop parking at Hazel Green). Under Alternative 5, however, Foresta is the only option considered for parking along this transportation corridor; Hazel Green is not considered.

Henness Ridge

Development of a parking area for up to 370 spaces would remove an area of Sierra mixed conifer habitats, resulting in moderate, adverse impacts. Radiating impacts from increased visitor concentration are likely to affect surrounding habitats, although proximity to a heavily traveled road and the nearby development of housing and lodging at Yosemite West have likely already degraded these habitats. This development would increase local disturbance of wildlife in adjacent habitats due to traffic flow through the area, increased light and noise, and increased human presence. Trampling and human presence could affect small mammals and ground-nesting birds, and hazard tree management could impact cavity-nesting birds and roosting bats. Availability of human food could lead to conditioning of wildlife. Species potentially affected by habitat alteration include the pileated woodpecker, hermit thrush, northern goshawk, and marten.

Entrance Stations

As described in more detail in Alternative 2, limited expansion of facilities at South Entrance, Big Oak Flat Entrance, and Tioga Pass Entrance and a corresponding increase in human presence in these areas would have a minor, adverse effect, both individually and in total, on wildlife and habitat. The additional area of habitat would be relatively small and is already affected by humans due to its proximity to existing developments. Site design of these facilities would likely avoid any high-valued habitat types in the area, and signs, fencing, and visitor education would be used to minimize impact to adjacent sensitive habitats.

CONCLUSION

Overall impacts on wildlife and habitat under Alternative 5 would be minor and beneficial. Implementation of the River Protection Overlay would enable the restoration of extensive areas of meadow, riparian, and wetland habitats along the Merced River and reduce habitat fragmentation of these highly valued resource types. But increased numbers of campsites relative to Alternative 2 would be developed in potential highly valued resource areas, and roads would be allowed to remain in meadows under Alternative 5. This would substantially affect the overall benefit of habitat restoration to wildlife in the Valley by perpetuating habitat fragmentation and occupation of sensitive habitats by development in some areas. Similar effects would occur from the development of Yellow Pine Campground for groups and volunteers, extending human disturbance westward in the Valley. The use of Northside Drive by motor vehicles would

continue adverse effects on wildlife from noise, light, roadway mortality, and habitat fragmentation.

Outside Yosemite Valley, impacts to wildlife and habitat would remain essentially the same as in Alternative 2.

A decrease of approximately 10% in the number of parking spaces established in El Portal would likely result in less area developed, compared to Alternative 2, but would not appreciably affect the level of impact.

Development of day-visitor parking at Henness Ridge would affect an area of mixed conifer habitat, but the level of impact and the species affected would be similar to what would occur at Hazel Green under Alternative 2.

CUMULATIVE IMPACTS

The beneficial and adverse impacts of past, present, and reasonably foreseeable future projects on wildlife are described under cumulative impacts for Alternative 2. When the expected impacts to wildlife from Alternative 5 are considered in combination with these other projects, minor, beneficial cumulative effects on wildlife habitat and populations in the region would likely result over the long term. Adverse cumulative effects would occur primarily from habitat loss and fragmentation, as well as reduced habitat quality from human disturbance. Beneficial cumulative effects would result from habitat restoration, particularly riparian, meadow, and wetland areas. Future land management planning efforts could also lead to beneficial cumulative impacts to wildlife habitat and populations through habitat protection and restoration.

Alternative 5 would provide restoration of riparian, meadow, and riverine habitats (highly valued resources) through implementation of the River Protection Overlay. Restoration of the Yosemite Lodge cabin area, part of Camp 6, and much of Lower Pines Campground and Housekeeping Camp would help re-establish riparian and meadow habitat connectivity in the east Valley, benefiting wildlife by allowing greater natural movement and increasing habitat availability. These actions would be consistent with the basic goals of land management plans such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic River Comprehensive Management Plan (NPS). However, beneficial impacts would be less than those under Alternative 2 due to continued use of North Pines Campground. Removal of two bridges would help restore riparian and aquatic habitats along those river reaches. Exposure of wildlife to human food would be reduced in the east Valley to some degree as a result of the replacement of numerous tent cabins with hard-sided cabins at Curry Village.

Other actions associated with Alternative 5 would adversely affect areas of upland habitat and its accompanying wildlife, including establishment of new campgrounds north of Tenaya Creek and east of Curry Village. These actions would result in loss of upland habitat, habitat degradation from increased human activity, and additional areas where wildlife could become conditioned to human food. These effects would be in addition to impacts to uplands outside the park from past and present land management practices, such as logging and grazing, that have reduced the availability and quality of food and cover for wildlife. Foreseeable future projects such as the Evergreen Lodge Expansion (Tuolumne Co.), Hardin Flat Lodging and Conference Facilities

(Tuolumne Co.), and the Evergreen Road Improvements (multi-agency, see Appendix H) would cause similar impacts to upland habitats.

Under Alternative 5, development outside of Yosemite Valley would include establishment of additional parking and transit facilities at Henness Ridge, Foresta, and El Portal; employee-related housing at El Portal and Wawona; and visitor centers at or near park entrances. These actions would result in habitat loss and habitat degradation from human activity and would add to impacts of other actions that affect similar habitats. For example, development at Henness Ridge, Wawona, and South Entrance (visitor centers) would adversely affect mixed conifer habitats. These effects (habitat loss and degradation) would be in addition to logging and grazing that have occurred over wide areas of mixed conifer habitat outside the park, as well as to proposed projects such as Yosemite West Rezone of 55 Acres (NPS), Silvertip Resort Village Project (Mariposa Co.), and reforestation projects. The proposed Silvertip Resort Village Project in Fish Camp would have the greatest interaction with the South Entrance visitor facilities proposed under this alternative, due to its proximity to the South Entrance and similarity in habitat.

Adverse impacts associated with the development of employee housing and parking facilities at El Portal would combine with impacts from other development projects proposed in the area, including the Yosemite View Parcel Land Exchange (NPS), Yosemite Motels Expansion, El Portal (Mariposa Co.), and the El Portal Road Improvement Project (NPS) to adversely affect riparian and upland habitats and associated species. However, because much of the area of potential development has been previously disturbed, the adverse impacts are expected to be minimal. Nevertheless, quality of forage and cover for species such as scrub jay, gray fox, and northern alligator lizard could be adversely affected.

The conclusion that cumulative impacts would be minor and beneficial is conservative because it is based on the goals and objectives of ongoing planning efforts (such as the Sierra Nevada Framework for Conservation and Collaboration) that are being undertaken to improve ecosystem management over much of the Sierra Nevada. However, should substantial or full implementation of the actions included in these plans occur over time, long-term cumulative impacts on wildlife may, on balance, be beneficial to a greater degree.

Special-Status Species

WILDLIFE

A Biological Assessment was prepared in accordance with Section 7 of the Endangered Species Act to assess potential impacts to federal endangered and threatened species (see Appendix K). Specific, action-by-action analysis of impacts on vegetation types and general wildlife habitat is provided in the Vegetation and Wildlife sections of this chapter, respectively. The actions of Alternative 5 that would result in potential wildlife habitat impacts are listed in the Wildlife section. The effect of these habitat impacts on individual special-status species is described below. The impacts identified in this section are generally long term, except where noted.

This analysis covers federal and/or California special-status species. Recent correspondence from the U.S. Fish and Wildlife Service indicates that a number of these species are being considered for elevated federal status; these species also are evaluated in this section. Special-status species

are listed in table 3-6 (see Vol. IA, Chapter 3). The "area" column of table 3-6 indicates the recorded locations of species occurrence or areas that may possess suitable habitat for each species in the vicinity of the location. Identification of a location in the "area" column for a species does not necessarily indicate that the species has been documented to occur in that location.

A total of 46 special-status wildlife species are known to occur, have historically occurred, or are likely to occur in the Yosemite Valley or in the general vicinity of out-of-Valley project areas. One is classified as both federal and California endangered, one is federal threatened and California endangered, two are federal threatened, three are California endangered, and three are state threatened. The remaining 36 wildlife species are federal species of concern and/or California species of special concern. Of these lesser-status species, six are being considered by the U.S. Fish and Wildlife Services for elevation to threatened or endangered status. These species are discussed along with threatened or endangered species. The potential impacts to these species or their primary habitats as a result of this alternative are described below.

Potential Effects on Federal and California Threatened or Endangered Species

Valley elderberry longhorn beetle *(Desmocerus californicus dimorphus)*

Status: Federal threatened. The overall impact intensity for this species would be the same as under Alternative 2. Mitigation required by the U.S. Fish and Wildlife Service and the abundance of elderberry plants in surrounding areas would result in minor to moderate, adverse impacts, relative to the No Action Alternative.

Limestone salamander *(Hydromantes brunus)*

Status: Federal species of concern; California threatened. The overall impact intensity for this species would be the same as under Alternative 2 (negligible and adverse). The development in El Portal would not affect suitable habitat, and the occurrence of this species in El Portal is questionable.

California red-legged frog *(Rana aurora draytonii)*

Status: Federal threatened; California species of special concern. Alternative 5 would have minor, beneficial impacts to this species compared to Alternative 1. Although many actions would be similar to Alternative 2, Alternative 5 would increase occupation of potential habitat by campgrounds and the remaining effect of roads through meadows. Parking established at Foresta could affect red-legged frog habitat, but such habitat would be avoided by development and visitor access would be restricted. Impacts on potential habitat, in El Portal and Wawona would be the same as for Alternative 2.

Bald eagle *(Haliaeetus leucocephalus)*

Status: Federal threatened; California endangered. The overall impact intensity for this species would be the same as under Alternative 2 (minor and beneficial). Although less highly valued resource habitat, including riparian, would be restored under Alternative 5, implementation of the River Protection Overlay would still provide substantial benefit to bald eagles, although the species does not breed in the Valley and is rarely seen there.

Peregrine falcon *(Falco peregrinus)*

Status: Recently delisted at federal level; California endangered. The overall impact intensity under this alternative would remain the same as under Alternative 2 (moderate and beneficial). Although more campsites would be established in Yosemite Valley under Alternative 5, the remaining areas restored would provide substantial benefit to this species. Even under existing conditions, two nesting pairs of peregrine falcons use the east end of Yosemite Valley, which is a relatively high density.

Great gray owl *(Strix nebulosa)*

Status: California endangered. Under Alternative 5, the overall impact intensity on great gray owls would be moderate and adverse. Development of parking at Foresta and its impact to great gray owls would be the same as under the Foresta scenario of Alternative 2. The radiating effect of increased human activity on owls using Big Meadow and development of stables at McCauley Ranch would result in moderate, adverse impacts. In Yosemite Valley, roads through meadows would remain, and Northside Drive would continue to be used by motor vehicles. Both of these factors could continue to affect the use of Yosemite Valley by great gray owls. However, the species is seldom seen in this location.

Willow flycatcher *(Empidonax traillii)*

Status: California endangered. Under Alternative 5, beneficial effects on this species would be minor. Roads would be left in Stoneman and Ahwahnee Meadows under Alternative 5 and would continue to affect the ability of these habitats to provide features necessary for this species (e.g., dense willow shrubs). The continuation of commercial stable operations and trail rides would allow nest parasitism by brown-headed cowbirds to continue. Implementation of the River Protection Overlay would still allow substantial restoration of suitable habitat for willow flycatchers.

Sierra Nevada red fox *(Vulpes vulpes necator)*

Status: Federal species of concern; California threatened. The overall impact intensity for this species would be the same as under Alternative 2 (minor and adverse). Increased development and human disturbance would occur at Tioga Pass. The development of day-visitor parking at Henness Ridge could affect potential habitat, but the impacts would be essentially the same as would occur at Hazel Green under Alternative 2. There would be less development at Foresta and less disturbance at Badger Pass under this alternative compared to Alternative 2, but the occurrence of this species at those locations is questionable. The species is thought to now exist only at higher elevations.

California wolverine *(Gulo gulo luteus)*

Status: Federal species of concern; California threatened. The overall impact intensity under Alternative 5 would be the same as under Alternative 2 (minor and adverse). Minor expansion of facilities at Tioga Pass could affect small areas of upland habitat, and increased visitor presence could lead to greater human disturbance in surrounding habitats, which could affect their use by the wolverine.

Sierra Nevada bighorn sheep *(Ovis canadensis sierrae)*

Status: Federal endangered; California endangered. Impacts to this species would remain the same as under Alternative 2: (negligible and adverse). Possible development would occur at Tioga Pass, the only area of potential effect.

Potential Effects on Species That Are Being Considered for Elevated Federal Listing

Yosemite toad *(Bufo canorus)*

Status: Federal species of concern; California species of special concern. The overall impact intensity for Yosemite toads under Alternative 5 would be the same as under Alternative 2 (negligible and adverse) because of potential development and human disturbance at Tioga Pass. Under Alternative 5, Badger Pass would not be used for parking, thus limiting the possibility of disturbance of Yosemite toads in that area to levels similar to those under the No Action Alternative.

Foothill yellow-legged frog *(Rana boylei)*

Status: Federal species of concern; California species of special concern. Beneficial impacts to this species would be minor because of increased occupation of potential habitat by campgrounds and the remaining effects of roads through meadows. Parking established at Foresta could affect foothill yellow-legged frog habitat, but such habitat would be avoided by development and visitor access would be restricted. The impacts in other areas of potential habitat, such as El Portal and Wawona, would be the same as under Alternative 2.

Mountain yellow-legged frog *(Rana muscosa)*

Status: Federal species of concern; California species of special concern. The overall impact intensity for this species under Alternative 5 would be the same as under Alternative 2 (minor to moderate and beneficial). Potential development and human disturbance at Tioga Pass would be the same between the two alternatives. Under Alternative 5, Badger Pass would not be used for parking, thus limiting the possibility of disturbance of mountain yellow-legged frogs in that area to a similar level as under the No Action Alternative.

California spotted owl *(Strix occidentalis occidentalis)*

Status: Federal species of concern; California species of special concern. Under Alternative 5, the beneficial impact to this species would be negligible. The continued use of Northside Drive by motor vehicles would continue the impacts of light, noise, and road-kills along this stretch of road. Development of day-visitor parking at Henness Ridge would occur in the foraging habitat of California spotted owls, but such impacts would be minor and essentially the same as at Hazel Green under Alternative 2. Under Alternative 5, Badger Pass would not be used for parking, thus eliminating the possibility of disturbance of spotted owls in that area.

Marten *(Martes americana)*

Status: Federal species of concern. The overall impact intensity for this species under Alternative 5 would be the same as under Alternative 2 (minor and adverse). Development of day-visitor parking at Henness Ridge would affect marten habitat, but this impact would essentially be the

same as at Hazel Green under Alternative 2. The continued use of Northside Drive by motor vehicles could have an effect on martens, but the relatively low elevation of Yosemite Valley makes it marginal habitat for martens, as reflected by the extreme rarity of observations in this location. Under Alternative 5, Badger Pass would not be used for parking, thus limiting the possibility disturbance to martens in that area to levels similar to that of the No Action Alternative.

Pacific fisher *(Martes pennanti pacifica)*

Status: Federal species of concern; California species of special concern. The overall impact intensity for fishers under Alternative 5 would be moderate and adverse because development at Henness Ridge would occur in an area that is likely prime habitat for the species. Two fishers have been killed on roads near Henness Ridge in the last 10 years. The development would remove foraging habitat and cause increased human disturbance in the area. Under Alternative 5, Badger Pass would not be used for parking as it would under Alternative 2, thus limiting the possibility of disturbance of fishers in that area to levels similar to those of the No Action Alternative.

Potential Effects on Federal Species of Concern and California Species of Special Concern

Merced Canyon shoulderband snail *(Helminthoglypta allynsmithi)*

Status: Federal species of concern. The overall impact intensity for this snail species would be the same as under Alternative 2 (negligible and adverse). It is unlikely that the small increase in parking spaces that would be developed in El Portal, would affect the moist talus habitat of this species.

Mariposa sideband snail *(Monadenia hillebrandi)*

Status: Federal species of concern. The overall impact intensity for this species would be the same as under Alternative 2 (moderate and beneficial). Beneficial effects would occur primarily from restoration of potential habitat in the talus above Curry Village.

Sierra pygmy grasshopper *(Tetrix sierrana)*

Status: Federal species of concern. The overall impact intensity for this grasshopper species would be the same as under Alternative 2 (negligible to minor and adverse). Development in El Portal would probably not occur in riparian areas, the favored habitat of the species.

Wawona riffle beetle *(Atractelmis wawona)*

Status: Federal species of concern. The overall impact intensity for this species would be the same as under Alternative 2 (moderate and beneficial). Large-scale restoration of riparian and wetland habitats would benefit the aquatic habitat of the riffle beetle. The development of additional campsites in Yosemite Valley, which would be the greatest number among the action alternatives, would adversely affect some riparian habitat. However, this additional development would have a negligible effect on the overall impact because campsites would be located outside the River Protection Overlay and not directly affect aquatic habitat.

Bohart's blue butterfly *(Philotiella speciosa bohartorum)*

Status: Federal species of concern. Under this alternative, the overall impact intensity for the Bohart's blue butterfly would be the same as under Alternative 2 (minor and adverse) because development in El Portal would be essentially the same.

Mount Lyell salamander *(Hydromantes platycephalus)*

Status: Federal species of concern; California species of special concern. The overall impact intensity for this species would be the same as under Alternative 2 (minor and beneficial) because actions in the most likely habitat, Tioga Pass and Curry Village in Yosemite Valley, would be the same.

Northwestern pond turtle *(Clemmys marmorata marmorata)* and Southwestern pond turtle *(Clemmys marmorata pallida)*

Status: Federal species of concern; California species of special concern. Under this alternative, the overall impact intensity for this species is expected to be the same as under Alternative 2 (minor and beneficial). The development of additional campsites in Yosemite Valley would affect some riparian habitat, and the retention of roads through Stoneman and Ahwahnee Meadows would continue to affect natural hydrology in these areas. These actions, however, would not change the overall impact on western pond turtles because the actions would have little effect on pond and slow-moving water habitats. These habitats would benefit primarily from implementation of the River Protection Overlay and other restorations of highly valued resource areas. A slightly greater number of parking spaces in Foresta compared to Alternative 2 could increase potential disturbance of breeding and hibernation habitat in upland areas, but the area affected would be relatively small.

Harlequin duck *(Histrionicus histrionicus)*

Status: Federal species of concern; California species of special concern. The overall impact intensity for harlequin ducks under this alternative would be the same as under Alternative 2 (minor and beneficial). Development of additional campsites in Yosemite Valley would affect some areas of riparian habitat, but the area of direct impact would be outside the River Protection Overlay and would be relatively small. Implementation of the River Protection Overlay and other restorations of highly valued resource habitats (e.g., Upper and Lower River Campgrounds) would provide a majority of the benefits to harlequin ducks.

Cooper's hawk *(Accipiter cooperi)*

Status: California species of special concern. The overall impact intensity for Cooper's hawks under this alternative would be essentially the same as under Alternative 2 (minor and beneficial). Although development of additional campsites under Alternative 5 would affect some riparian habitat, implementation of the River Protection Overlay, and other highly valued resource habitat restorations (e.g., River Campgrounds), would provide a majority of the benefit to Cooper's hawks by providing the mix of forested and open habitats favored by this species. Development of parking at Henness Ridge under Alternative 5 would affect an area of forest habitat, but would have essentially the same effect as similar development at Hazel Green under Alternative 2.

Under Alternative 5, Badger Pass would not be used for parking, limiting the possibility of disturbance of Cooper's hawks in that area to levels similar to that of the No Action Alternative.

Northern goshawk *(Accipiter gentilis)*

Status: Federal species of concern; California species of special concern. The impact intensity to northern goshawks would be minor and adverse. Development at Henness Ridge would have effects on this species similar to those that would occur at Hazel Green under Alternative 2. Under Alternative 5, Badger Pass would not be used for parking, thus limiting the possibility of disturbance to goshawks in that area to levels similar to the No Action Alternative.

Sharp-shinned hawk *(Accipiter striatus)*

Status: California species of special concern. The overall impact intensity on sharp-shinned hawks under this alternative would be the same as under Alternative 2 (minor and beneficial.) Development of additional campsites in Yosemite Valley would adversely affect some riparian habitat. Implementation of the River Protection Overlay, and other restorations of highly valued resource habitats, would provide a majority of the benefit to this species by helping to restore the natural mixture of forest and open areas (especially meadows) that are the sharp-shinned hawk's favored habitat. The development of day-visitor parking at Henness Ridge would remove some forest habitat, but the effect would be similar to that at Hazel Green under Alternative 2.

Golden eagle *(Aquila chrysaetos)*

Status: California species of special concern. Under this alternative, overall impact intensity for golden eagles would be the same as under Alternative 2 (minor and beneficial). Primary benefit to this species would come from restoration of open habitat in Yosemite Valley, which would be essentially the same as Alternative 2. Impacts in potential habitat outside Yosemite Valley would also be essentially the same as under Alternative 2.

Merlin *(Falco columbarius)*

Status: California species of special concern. Under this alternative, the overall impact intensity for merlins would be the same as under Alternative 2 (minor and beneficial). Under Alternative 5, restoration of open habitat in Yosemite Valley would be essentially the same as under Alternative 2.

Prairie falcon *(Falco mexicanus)*

Status: California species of special concern. Under this alternative, the overall impact intensity for prairie falcons would be the same as under Alternative 2 (minor and beneficial), based primarily on restoration of habitats in Yosemite Valley. Parking spaces at Foresta would adversely affect an area of habitat, but the area affected (post-fire regrowth) is not good habitat for the species.

Long-eared owl *(Asio otus)*

Status: California species of special concern. Beneficial impacts on long-eared owls under this alternative would be negligible (a lower impact intensity than under Alternative 2). Additional campsites in Yosemite Valley relative to Alternative 2 would occupy some riparian habitat, which

could adversely affect long-eared owls. The continuation of motor vehicle traffic on Northside Drive would perpetuate noise and light disturbance in a long stretch of the Valley. Implementation of the River Protection Overlay and other restorations of highly valued resource habitats (e.g., Upper and Lower River Campgrounds) would provide benefit to short-eared owls, and would essentially be the same as in Alternative 2. Effects in other areas of potential habitat would be the same as in Alternative 2.

Yellow warbler *(Dendroica petechia)*

Status: California species of special concern. Impacts on yellow warblers under this alternative would be minor to moderate and beneficial. Additional campsites (the greatest number among the action alternatives) would be developed. Some of this development would affect riparian habitats that are favored by yellow warblers. The continuation of commercial stable operations and trail rides would allow nest parasitism by brown-headed cowbirds to continue. Implementation of the River Protection Overlay and other restorations of highly valued resource habitats (e.g., River Campgrounds) would greatly benefit yellow warblers.

Mount Lyell shrew *(Sorex lyelli)*

Status: Federal species of concern. Under this alternative, impacts to this species would be the same as under Alternative 2 (negligible and adverse) because development at Tioga Pass would be the same as under Alternative 2, with a minor expansion of entrance station facilities.

Bat species

Overall impact intensities for all special-status bat species would remain the same as under Alternative 2, as listed below for each species. The development of more campsites and the continued disturbance of Stoneman and Ahwahnee Meadow by roads under Alternative 5 would affect some areas of highly valued resource habitat types that many bat species depend upon. However, implementation of the River Protection Overlay and other restorations of highly valued resource habitats (e.g., Upper and Lower River Campgrounds) would provide the majority of benefit to bat species. Development of parking at Henness Ridge under Alternative 5 would have similar effects as the development at Hazel Green under Alternative 2.

PALLID BAT *(ANTROZOUS PALLIDUS)*

Status: California species of special concern (moderate, beneficial).

TOWNSEND'S BIG-EARED BAT *(CORYNORHINUS TOWNSENDII TOWNSENDII)*

Status: California species of special concern (minor, beneficial).

SPOTTED BAT *(EUDERMA MACULATUM)*

Status: Federal species of concern; California species of special concern (minor, beneficial).

SMALL-FOOTED MYOTIS BAT *(MYOTIS CILIOLABRUM)*

Status: Federal species of concern (minor, beneficial).

LONG-EARED MYOTIS BAT *(MYOTIS EVOTIS)*

Status: Federal species of concern (minor, beneficial).

FRINGED MYOTIS BAT *(MYOTIS THYSANODES)*

Status: Federal species of concern (minor, benefical).

LONG-LEGGED MYOTIS BAT *(MYOTIS VOLANS)*

Status: Federal species of concern (minor, beneficial).

YUMA MYOTIS BAT *(MYOTIS YUMANENSIS)*

Status: Federal species of concern; California species of special concern (moderate, beneficial).

GREATER WESTERN MASTIFF BAT *(EUMOPS PEROTIS CALIFORNICUS)*

Status: Federal species of concern; California species of special concern (moderate, beneficial).

Sierra Nevada snowshoe hare *(Lepus americanus tahoensis)*

Status: Federal species of concern. The overall impact intensity for snowshoe hares under Alternative 5 would be the same as under Alternative 2 (minor and adverse). Development of parking facilities at Henness Ridge would remove an area of potential habitat and result in radiating human impacts into adjacent areas. Badger Pass would not be used for parking, so no additional impacts would occur there. However, development of parking at Foresta could affect habitat, although the low elevation and questionable suitability of this habitat for snowshoe hares make it doubtful that any snowshoe hares would be affected at this location.

White-tailed hare *(Lepus townsendii)*

Status: California species of special concern. The overall impact intensity for this species under Alternative 5 would be the same as under Alternative 2 (minor and adverse). The possible minor expansion of facilities at Tioga Pass (the only areas with potential occurrence of this species) would be the same for the two alternatives.

Sierra Nevada mountain beaver *(Aplodontia rufa californica)*

Status: Federal species of concern; California species of special concern. Under Alternative 5, adverse effects on mountain beaver would be negligible and adverse. Badger Pass would not be used for transit and parking, which would limit human disturbance and pollution of stream habitat in this area to levels similar to that of the No Action Alternative.

Conclusion

Impacts under Alternative 5 on special-status species would be similar to those under Alternative 2. Some areas of increased development, retention of roads through meadows, and continued use of Northside Drive for motor vehicles would limit overall benefits to special-status species to minor and beneficial. Large blocks of riparian, meadow, and wetland would be restored, thus increasing the size, contiguity, and connections within and among habitat types; this would subsequently increase the availability of food, cover, and reproductive sites for a variety of wildlife

species, including special-status species. These restored blocks of habitat would also help insulate wildlife from human impacts radiating from the adjacent development that would remain.

Under Alternative 5, however, there would be several notable impacts on special-status species. Continued use of Northside Drive by motor vehicles would affect California spotted owls and long-eared owls by perpetuating noise and light disturbance in the north part of the Valley and continuing the risk of road-kills. An increased number of campsites in riparian habitats would have an adverse effect on yellow warblers and long-eared owls. Retention of roads through Stoneman and Ahwahnee Meadows would continue to degrade the hydrology and quality of these habitats, affecting California red-legged frogs, foothill yellow-legged frogs, and willow flycatchers. Retention of the concessioner's commercial stable and trail rides in Yosemite Valley would continue to support brown-headed cowbirds and affect yellow warblers and willow flycatchers through nest parasitism.

For some special-status wildlife species, the magnitude of benefit provided under this alternative would be limited by existing impacts on these species outside of Yosemite National Park that have led to population declines over wide regions of the Sierra Nevada. Such impacts have affected the abundance of some special-status species inside the park, despite the presence of relatively intact habitats (e.g., willow flycatcher).

Relocation of the concessioner stable to east of Curry Village could increase the abundance of brown-headed cowbirds in that area and intensify the adverse impacts on the yellow warbler and willow flycatcher, although relocating the stable would reduce impacts in its current location.

The adverse effect of this alternative on Henness Ridge, Foresta, and El Portal would be minor due to the loss of small areas of habitat within much larger areas of suitable habitat. Comparing the adverse and beneficial impacts of this alternative to the existing condition, the overall impact on rare species would be minor and beneficial, given the moderate increase in acreage of riparian and meadow habitats that are both highly valued resources and the preferred habitat of many of these rare species. These species would also benefit from the enhanced integrity of these habitats and the improved connectivity with other highly valued resource habitats.

Cumulative Impacts

The following sections discuss the potential impacts of other past, present, and foreseeable future projects on special-concern species in conjunction with the impacts of Alternative 5. Appendix H presents other ongoing or future projects in the region that were considered in the cumulative impacts analysis. The analysis assumed that California Environmental Quality Act and Endangered Species Act mitigation requirements would be implemented as part of each foreseeable future project, as applicable.

Potential Cumulative Impacts on Federal and California Threatened or Endangered Species

VALLEY ELDERBERRY LONGHORN BEETLE *(DESMOCERUS CALIFORNICUS DIMORPHUS)*

Status: Federal threatened; California species of special concern. Projects at elevations below 3,000 feet that could affect the abundance of elderberry plants, the Valley elderberry longhorn beetle's host plant, would affect this species and could ultimately affect populations in Yosemite

National Park. The distribution of Valley elderberry longhorn beetles and their host plant in the park is rather small, with the only suitable habitat occurring in the Merced River Canyon in El Portal. Current and reasonably foreseeable future projects in this location would therefore have the greatest potential to affect the park population of Valley elderberry longhorn beetle. Current and reasonably foreseeable future projects in this location with the potential to adversely affect this species include the Yosemite View Parcel Land Exchange (NPS) and the Yosemite Motels Expansion, El Portal (Mariposa Co.). However, the impact would be limited by the high abundance of elderberry plants in the surrounding area and by mitigation that would be required by the U.S. Fish and Wildlife Service. Other projects that could have potential adverse effects on Valley elderberry longhorn beetles include the Mariposa Creek Pedestrian/Bike Path (Mariposa Co.); the Buildout of City of Merced, General Plan; and the Merced River Canyon Trail Acquisition (BLM). Actions under this alternative would also be primarily adverse due to development of housing, parking, and administrative facilities in El Portal.

All of these projects could damage or destroy elderberry plants, which would directly affect local Valley elderberry longhorn beetle populations. However, mitigation requirements established through consultation with the U.S. Fish and Wildlife Service and other agencies would limit these impacts to minor and adverse. Minor, beneficial impacts would be expected from the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) because these plans could lead to greater protection of elderberry plants. The combination of beneficial effects from implementation of regional plans that cover wide areas of the Valley elderberry longhorn beetle range, and adverse impacts that would generally affect relatively small numbers of elderberry plants (including from actions under this alternative), would result in an overall minor, beneficial impact on Valley elderberry longhorn beetles. Adverse impacts would be minimized through implementation of mitigation measures prescribed by the U.S. Fish and Wildlife Service to protect the species.

LIMESTONE SALAMANDER *(HYDROMANTES BRUNUS)*

Status: Federal species of concern; California threatened. The limestone salamander has a very restricted distribution. Its habitat is protected by the 120-acre Limestone Salamander Ecological Reserve and the Bureau of Land Management's 1,600-acre Limestone Salamander Area of Critical Environmental Concern. It is only known to occur in the mixed chaparral habitats of the Merced River and its tributaries, in association with limestone outcrops between 800 and 2,500 feet in elevation. Existing features that affect this species include road cuts and water impoundments that alter its habitat. Current and reasonably foreseeable future projects in El Portal (Yosemite View Land Parcel Exchange [NPS] and Yosemite Motels Expansion, El Portal [Mariposa Co.]) are the only projects with potential impacts, but this species has never been found in El Portal. Impact to this species would therefore be negligible. Likewise, projects in El Portal associated with this alternative are unlikely to cause any effect on limestone salamanders. The overall cumulative impact on this species would therefore be negligible.

CALIFORNIA RED-LEGGED FROG *(RANA AURORA DRAYTONII)*

Status: Federal threatened; California endangered. Projects in the vicinity of Yosemite National Park are unlikely to affect any known populations of red-legged frogs. Environmental compliance carried out in association with these projects would require further surveys to evaluate whether unknown populations of red-legged frogs could be affected. Projects that degrade aquatic habitats, however, are likely to adversely affect suitability of such habitats for red-legged frogs, should reintroduction or recolonization of this species become possible.

Current and reasonably foreseeable future projects that could have adverse impacts on aquatic habitats include Rio Mesa Area Plan (Madera Co.); University of California, Merced Campus (Merced Co.); and the Buildout of City of Merced, General Plan. Beneficial impacts to aquatic habitats may result from the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS). These beneficial effects would be augmented by restoration of potential habitat in Yosemite Valley under this alternative. The overall cumulative impact would be beneficial, based on potential protection of red-legged frog habitat through implementation of plans that cover wide areas in combination with restoration of suitable habitat that would occur under this alternative. The intensity of this impact would be minor because this species is almost extinct from the Sierra Nevada region, but habitat should nonetheless be protected for potential reintroduction or recolonization of the species. Projects with a possible negative impact on red-legged frogs would affect a relatively small area of habitat compared to projects with potential beneficial impacts, but these projects could have a major, negative impact if they affected an unknown population of red-legged frogs, which could be among the last in the Sierra Nevada. However, site surveys would be completed in compliance with state and federal regulations, as applicable, thus minimizing the potential for adverse effects.

BALD EAGLE *(HALIAEETUS LEUCOCEPHALUS)*

Status: Federal threatened; California endangered. Projects associated with the Merced River could adversely affect habitat that is transiently used by bald eagles, such as at the Yosemite View parcel land exchange (NPS). The Merced Wild and Scenic River Comprehensive Management Plan (NPS) has the potential to benefit eagles by preserving riparian and riverine habitat through implementation of the River Protection Overlay. These beneficial effects would be enhanced by restoration of riparian and river habitats in Yosemite Valley under this alternative. Overall, the cumulative impact would be minor and beneficial.

PEREGRINE FALCON *(FALCO PEREGRINUS)*

Status: California endangered. Because peregrine falcons forage over a wide range of habitat types adjacent to their nesting cliffs, implementation of plans with potential widespread effects would have the greatest impact on this species. These include the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Merced Wild and Scenic River Comprehensive Management Plan (NPS), and the Fire Management Plan Update (NPS), which would have minor, beneficial effects. These plans would complement the beneficial effects of this alternative on peregrine falcons in Yosemite,

where the concentration of the species is among the highest in the Sierra Nevada. No current or reasonably foreseeable future projects are anticipated to have an adverse impact on peregrine falcons cliff nesting habitat or surrounding foraging habitat. Greater regional effects on peregrine falcons that nest in the Sierra Nevada are due to degradation of seasonally used coastal and wetland habitats and pesticide residues in the peregrine falcon's food chain.

Restoration of a diversity of habitat types in Yosemite Valley under this alternative would augment regional beneficial impacts anticipated from current and foreseeable projects outside the park. The overall cumulative impact on peregrine falcons would be minor and beneficial, based primarily upon the effects of wide-reaching plans on Sierra Nevada habitats, but the benefit would be limited by the continued effects of pesticides.

GREAT GRAY OWL *(STRIX NEBULOSA)*

Status: California endangered. The great gray owl nests in mixed conifer and red fir forests near meadows and winters at lower elevations in mixed conifer down to blue oak woodlands. Nearly the entire California population of great gray owls breeds in the Yosemite region, where habitats are relatively intact. Some research suggests that this species is susceptible to human disturbance, which may explain its absence from Yosemite Valley, where great gray owls are rarely seen despite the presence of apparently suitable habitat. The Hazel Green Ranch (Mariposa Co.) project, because of its meadow habitats and proximity to the park, has the greatest potential to impact great gray owls. Past studies and recent surveys, however, indicate the meadows are seldom used by great gray owls and probably only by transient owls moving between wintering and nesting areas (Skiff 1995; Skenfield 1999). Development at Hazel Green Ranch would likely avoid meadow habitats, but increased human disturbance in the area could deter owls from using these areas, resulting in minor, adverse effects. Sites of other reasonably foreseeable future projects have habitats that are unsuitable for great gray owls or have experienced previous impacts that have rendered habitats unsuitable. Current and reasonably foreseeable future development projects are therefore expected to have a minor but adverse effect on great gray owls. Projects that could have a beneficial effect on the species, by preserving or restoring habitat, include the Sierra Nevada Framework for Conservation and Collaboration (USFS), Fire Management Plan Update (NPS), Merced Wild and Scenic River Comprehensive Management Plan (NPS), and Fire Management Action Plan for Wilderness (USFS, Stanislaus). These plans could beneficially affect great gray owls by restoring habitat and limiting future impacts over wide areas of the Sierra Nevada. Under this alternative, restoration of habitats in Yosemite Valley would be beneficial to great gray owls, but development of parking and stables at Foresta could cause adverse effects. The overall cumulative impact on great gray owls resulting from current and reasonably foreseeable future projects, in combination with actions under this alternative, would be moderate and beneficial, based primarily on implementation of regional plans with widespread effects. Adverse effects from development projects would be localized.

WILLOW FLYCATCHER *(EMPIDONAX TRAILLII)*

Status: California endangered. The willow flycatcher was formerly a common Sierra Nevada species in meadows with dense growth of willow shrubs. Likely causes for recent steep declines

in populations include destruction of habitat and nest parasitism by brown-headed cowbirds. Willow flycatchers have not nested in Yosemite Valley for more than 30 years but have been seen in recent years at Wawona Meadow and Hodgdon Meadow. Projects that would cause degradation of meadow habitat or increased abundance of brown-headed cowbirds would adversely affect willow flycatchers through habitat loss and nest parasitism, respectively. The site of the Hazel Green Ranch (Mariposa Co.) project contains meadows that could be directly or indirectly affected. No willow flycatchers were found in this location during recent surveys, and habitat in the meadows appears to be unsuitable for the species. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) 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. These regional benefits would be augmented by actions under this alternative that would restore willow flycatcher habitat in Yosemite Valley and reduce cowbird abundance. The overall cumulative impact on willow flycatchers would be minor and beneficial.

SIERRA NEVADA RED FOX *(VULPES VULPES NECATOR)*

Status: Federal species of concern; California threatened. The Sierra Nevada red fox is found mostly above elevations of 7,000 feet in a wide variety of habitat types. The Sierra Nevada red fox is rare, and its population appears to be declining. The cause of this decline is unknown but could be related to human activities that disturb habitat, such as logging and fire suppression. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for red foxes. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending upon the alternatives chosen for implementation and the extent of their implementation over time.

Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for red foxes include Evergreen Lodge Expansion (Tuolumne Co.) and the Hazel Green Ranch (Mariposa Co.) project. These projects would primarily affect forest habitat. In addition, actions under this alternative would have a minor, adverse impact on red foxes, primarily through effects on habitat at Tioga Pass and Henness Ridge.

Overall, there would be a moderate, beneficial impact on Sierra Nevada red foxes, based on the potential protection of suitable habitat through implementation of regional plans. The projects with a possible adverse impact on red foxes, including the actions under this alternative, would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

CALIFORNIA WOLVERINE (*GULO GULO LUTEUS*)

Status: Federal species of concern; California threatened. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS),

U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for California wolverines. These regional plans would have a long-term, moderate, beneficial effect on the California wolverine.

Possible expansion of facilities at Tioga Pass and increased visitor use in that area under this alternative could have an adverse effect on wolverines. However, this impact would be minor, given the apparent scarcity of the species in the Sierra Nevada.

The overall cumulative impact on California wolverines would be moderate and beneficial, based primarily on the implementation of management plans that could protect wide areas of wolverine habitat in the Sierra Nevada, compared to the limited effects of increased human use at Tioga Pass from this alternative.

SIERRA NEVADA BIGHORN SHEEP (*OVIS CANADENSIS SIERRAE*)

Status: Federal endangered; California endangered. Because this species occurs at high elevation, few of the current and reasonably foreseeable future projects would affect it. Implementation of plans that cover wide areas of habitat outside the park, such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and U.S. Forest Service plans for wilderness adjacent to the park, could result in moderate to major beneficial effects on bighorn sheep, depending upon the alternatives selected and the extent of their implementation over time. Such benefit could be substantial if the plans reduce the area grazed by domestic sheep, which would reduce the threat of disease transmission to bighorns and open more areas for reintroduction of the species.

Only the Tioga Inn, Lee Vining (Mono Co.) project could cause adverse effects on bighorn sheep. Historically, some bighorn sheep probably descended to this area during winter, and the area could be used again if the species recovers in abundance. However, existing development has already affected the quality of habitat in the area.

The possible expansion of facilities at Tioga Pass Entrance is the only action under Alternative 5 that could affect bighorn sheep, but this impact would be negligible given the relative inaccessibility of their habitat. The overall cumulative impacts on Sierra Nevada bighorn sheep under this alternative would be moderate and beneficial, based on potential implementation of land management plans that could protect and improve habitat conditions over wide areas of the Sierra Nevada.

Potential Cumulative Impacts on Species that are Being Considered for Elevated Federal Listing

The U.S. Fish and Wildlife Service indicates that the following species of concern may be listed as federal threatened or endangered in the future. Because these species could be listed before the *Final Yosemite Valley Plan/SEIS* is finalized, the potential impacts to these species are also described.

YOSEMITE TOAD *(BUFO CANORUS)*

Status: Federal species of concern; California species of special concern. Projects that would have an appreciable impact on meadow habitats of this high-elevation species are most likely to affect populations of the Yosemite toad. Projects that could have a beneficial impact on the Yosemite toad, due to complementary management objectives, include the Fire Management Plan Update (NPS), the Sierra Nevada Framework for Conservation and Collaboration (USFS), Merced Wild and Scenic River Comprehensive Management Plan (NPS), and U.S. Forest Service plans for adjacent wilderness. Projects that could have an adverse impact on the Yosemite toad include the Tioga Inn, Lee Vining (Mono Co.); Highlands, June Lake (Mono Co.); and Double Eagle Resort Construction at June Lake (Mono Co.) projects. Actions under this alternative that would expand facilities at Tioga Pass Entrance and lead to increased visitor use of Badger Pass could affect Yosemite toads, but such effects would be negligible.

The overall cumulative impact on the Yosemite toad would be moderate and beneficial, based primarily on the potential for protection of habitat and populations resulting from implementation of plans that would affect large, high-elevation areas. Projects with adverse impacts would affect relatively small areas, where the presence of the Yosemite toad is questionable.

MOUNTAIN YELLOW-LEGGED FROG *(RANA MUSCOSA)*

Status: Federal species of concern; California species of special concern. The current and reasonably foreseeable future projects that would have beneficial impacts to aquatic habitats due to complementary management objectives include the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Merced Wild and Scenic River Comprehensive Management Plan (NPS), U.S. Forest Service plans for adjacent wilderness, and Fire Management Action Plan for Wilderness (USFS, Stanislaus). Development that would occur at Badger Pass and Tioga Pass would have a negligible effect on mountain yellow-legged frogs and therefore would not be a factor in cumulative impacts. Current and reasonably foreseeable future projects with potential adverse impacts include the Hazel Green Ranch (Mariposa Co.) project and projects at June Lake (Mono Co.). Overall, the cumulative impact on mountain yellow-legged frogs is expected to be moderate and beneficial, based on the amount of habitat and number of populations that would be affected by implementation of plans designed to better protect Sierra Nevada ecosystems. Projects with negative impacts could affect small areas and relatively few populations (if present).

FOOTHILL YELLOW-LEGGED FROG *(RANA BOYLEI)*

Status: Federal species of concern; California species of special concern. The impact on the foothill yellow-legged frog would be similar to that of the California red-legged frog. The foothill yellow-legged frog is virtually extinct in the Sierra Nevada, and therefore projects in its area of former occurrence would not affect any existing populations. However, projects that affect suitable habitat (e.g., wet meadows and rocky streams) could affect reintroduction or recolonization of this species. Projects that would have beneficial impacts include the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Merced Wild and Scenic River Comprehensive Management Plan

(NPS), U.S. Forest Service plans for adjacent wilderness, and Fire Management Action Plan for Wilderness (USFS, Stanislaus).

These beneficial effects would be augmented by restoration of suitable habitat in Yosemite Valley. Overall, the cumulative impact would be minor and beneficial, based on potential protection of foothill yellow-legged frog habitat through implementation of plans that cover wide areas and restoration of potential habitats in Yosemite Valley under this alternative. The intensity of this impact would be minor because this species is almost extinct from the Sierra Nevada, but habitat should nonetheless be protected to allow for reintroduction or recolonization of the species. Projects with a possible adverse impact on foothill yellow-legged frogs, such as the Mariposa Creek Pedestrian/Bike Path (Mariposa Co.), Yosemite View Parcel Land Exchange (NPS), and Merced Canyon Trail Acquisition (BLM) would affect a relatively small area of habitat compared to projects with potential beneficial impacts, but these projects could have a major, adverse negative impact if they affected an unknown population of foothill yellow-legged frogs, which could be among the last in the Sierra Nevada. However, site surveys would be completed, where applicable, as required by the Council on Environmental Quality and the Endangered Species Act(s) prior to disturbance to determine whether this species is present.

CALIFORNIA SPOTTED OWL *(STRIX OCCIDENTALIS OCCIDENTALIS)*

Status: Federal species of concern; California species of special concern. Decline of the California spotted owl in the Sierra Nevada has been linked to degradation of its forest habitats from logging, which affects the size of forested tracts as well as tree density and age. Projects likely to have a beneficial impact on spotted owl habitat, through long-term habitat improvement plans, include the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Orange Crush Fuels Treatment Projects (USFS, Stanislaus), A-Rock Reforestation (USFS, Stanislaus), Rogge-Ackerson Fire Reforestation (Tuolumne Co.), and the Fire Management Action Plan for Wilderness (USFS, Stanislaus). In addition, actions under this alternative would restore habitats near known spotted owl nest sites in Yosemite Valley, thus providing beneficial effects. Development outside of Yosemite Valley would affect areas of spotted owls foraging habitat, but such areas are distant from known or suspected nesting areas. Projects with potentially adverse impacts include the Evergreen Lodge Expansion (Tuolumne Co.), the Hazel Green Ranch (Mariposa Co.) project, and Yosemite West Rezone for 55 Acres (Mariposa Co.).

Overall, the cumulative impact on this species would be moderate and beneficial, based primarily on implementation of plans for ecosystem-based management of forest habitats over much of the Sierra Nevada in combination with reforestation projects that would hasten a return of habitat more suitable for spotted owls. Projects with negative impacts would affect relatively small areas, and may impact local owls, but would not have far-ranging impacts on the California spotted owl or habitat restoration that would occur under this alternative.

MARTEN *(MARTES AMERICANA)*

Status: Federal species of concern. This species is dependent upon dense, complex coniferous forests with large trees, snags, and structural complexity near the ground. Projects likely to

have a beneficial impact on marten habitat due to complementary management objectives include the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Orange Crush Fuels Treatment Projects (USFS, Stanislaus), A-Rock Reforestation (USFS, Stanislaus), Rogge-Ackerson Fire Reforestation (USFS, Stanislaus), and the Fire Management Action Plan for Wilderness (USFS, Stanislaus). Projects likely to have an adverse impact on marten habitat include the Evergreen Lodge Expansion (Tuolumne Co.), the Hazel Green Ranch (Mariposa Co.) project, and the Yosemite West Rezone for 55 Acres (Mariposa Co.). Effects on martens under this alternative would be primarily adverse due to development of parking facilities and expansion of entrance stations outside of Yosemite Valley.

Overall, the cumulative impact would be moderate and beneficial, based primarily on better protection of forest habitats through implementation of plans that could affect wide areas of the Sierra Nevada. In addition, reforestation projects could hasten the return of forest habitats that are more favorable to marten. In comparison, projects with potential adverse impacts on marten, including this alternative, would affect relatively small areas of forest habitat.

PACIFIC FISHER *(MARTES PENNANTI PACIFICA)*

Status: Federal species of concern; California species of special concern. Fishers in the Sierra Nevada prefer coniferous forests (especially fir) with a high degree of canopy closure and structural complexity. Projects likely to have a beneficial effect on fisher habitat, due to complementary management objectives, include the Fire Management Plan Update (NPS), Sierra Nevada Framework for Conservation and Collaboration (USFS), Orange Crush Fuels Treatment Projects (USFS, Stanislaus), A-Rock Reforestation (USFS, Stanislaus), Rogge-Ackerson Fire Reforestation (Tuolumne Co.), and the Fire Management Action Plan for Wilderness (USFS, Stanislaus). Projects likely to have an adverse effect on fisher habitat include the Evergreen Lodge Expansion (Tuolumne Co.), the Hazel Green Ranch (Mariposa Co.) project, and the Yosemite West Rezone for 55 Acres (Mariposa Co.). Effects on fishers under this alternative would be primarily adverse due to development of parking facilities and expansion of entrance stations outside of Yosemite Valley.

Overall, the cumulative impact on the Pacific fisher would be moderate and beneficial, based primarily on better protection of forest habitats through implementation of plans that could affect wide areas of the Sierra Nevada. In addition, reforestation projects could hasten the return of forest habitats more favorable to fisher. In comparison, projects with potential adverse impacts on fishers, including this alternative, would affect relatively small areas of forest.

Potential Cumulative Impacts on Federal Species of Concern and California Species of Special Concern

MERCED CANYON SHOULDERBAND SNAIL (*HELMINTHOGLYPTA ALLYNSMITHI*)

Status: Federal species of concern. Regional planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Merced Canyon shoulderband snail. These actions could

have long-term, minor, beneficial effects on suitable habitat. The Incline Road Construction, Foresta Road Bridge to South Fork (Mariposa Co.) project could have a detrimental effect on snail habitat, but this impact is expected to be minor because it would occur primarily in previously affected areas. Development that would occur in El Portal under this alternative would cause negligible impacts to this snail species, because no suitable habitat would be affected.

Overall, there would be a minor, beneficial, cumulative impact on the Merced Canyon shoulderband snail, based on the potential protection of suitable habitat resulting from regional plans, whereas actions under this alternative would have a negligible effect.

MARIPOSA SIDEBAND SNAIL (*MONADENIA HILLEBRANDI*)

Status: Federal species of concern. Regional planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Mariposa sideband snail. These actions could have long-term, minor, beneficial effects on suitable habitat. Restoration of potential habitat in Yosemite Valley under this alternative would augment this beneficial effect. Projects with the potential for adverse effects on this species include the El Portal Road Improvement Project (NPS), the Incline Road Construction, Foresta Road Bridge to South Fork (Mariposa Co.) project, and Yosemite Motels Expansion, El Portal (Mariposa Co.). These projects are expected to have a local, minor, adverse effect because they would occur in areas of previous disturbance or in areas that do not contain suitable habitat.

Overall, there would be a minor, beneficial cumulative impact on the Mariposa sideband snail, based on the potential protection of suitable habitat provided by regional plans and restoration of habitats in Yosemite Valley.

SIERRA PYGMY GRASSHOPPER (*TETRIX SIERRANA*)

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Sierra pygmy grasshopper. These actions could have long-term, minor, beneficial effects on suitable habitat. Projects with potential adverse effects include the Incline Road Construction Foresta Road Bridge to South Fork (Mariposa Co.) project and the Yosemite Motels Expansion, El Portal (Mariposa Co.). The effects of these projects would be limited to minor and adverse because they would occur in areas that do not contain suitable habitat or in areas of previous disturbance. Under this alternative, restoration of riparian habitats in Yosemite Valley would beneficially affect this species, while developments in El Portal and South Entrance could have a localized, adverse effect on suitable habitat.

The overall cumulative impact on the Sierra pygmy grasshopper is expected to be minor and beneficial, based on the potential protection of large areas of suitable habitat resulting from implementation of regional plans in combination with mixed effects from this alternative.

WAWONA RIFFLE BEETLE (*ATRACTELMIS WAWONA*)

Status: Federal species of concern. Cumulative effects that could have large-scale benefits to Wawona riffle beetle habitat include regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic River Comprehensive Management Plan (NPS). These beneficial effects would be augmented by restoration of large areas of riparian and meadow habitat in Yosemite Valley that would occur under this alternative. The Yosemite View parcel land exchange (NPS) could affect aquatic habitat for the riffle beetle in the adjacent reach of the Merced River. Overall, there would be a minor, beneficial cumulative effect on the riffle beetle. This is largely due to regional and parkwide planning that would protect wide areas of habitat for the Wawona riffle beetle, coupled with habitat restoration that would occur under this alternative.

BOHART'S BLUE BUTTERFLY (*PHILOTIELLA SPECIOSA BOHARTORUM*)

Status: Federal species of concern. The documented occurrence of the Wawona riffle beetle closest to the park is near Briceburg, west of El Portal. The Sierra Nevada Framework for Conservation and Collaboration (USFS) could improve the size, integrity, and connectivity of suitable habitat for the Bohart's blue butterfly over a wide area of foothill habitat. This action has the potential to have long-term, minor, beneficial effects on suitable habitat. Further surveys found this species in other areas such as Merced, Fresno, and Tulare Counties. Projects in those areas, such as the Rio Mesa Area Plan (Madera Co.) and University of California, Merced Campus (Merced Co.) could have a minor, local effect on Bohart's blue butterfly. These effects would be limited in scale in comparison to the Sierra Nevada Framework for Conservation and Collaboration, which would help protect wide areas of foothill woodland habitat that is declining rapidly. Development of parking, housing, and administrative facilities under this alternative could adversely affect suitable habitat, although the occurrence of the Bohart's blue butterfly in El Portal is questionable.

The overall cumulative impact on the Bohart's blue butterfly would be minor and beneficial, based on the potential protection of wide areas of suitable habitat resulting from the Sierra Nevada Framework, as opposed to potential localized impacts in El Portal that would occur under this alternative.

MOUNT LYELL SALAMANDER (*HYDROMANTES PLATYCEPHALUS*)

Status: Federal species of concern; California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Mount Lyell salamander over a wide area. These actions, augmented by habitat restoration in Yosemite Valley under this alternative, could have long-term, minor, beneficial cumulative effects on suitable habitat, depending on the alternatives chosen and the extent of their implementation over time. No current and reasonably foreseeable future projects are expected to have an adverse effect on Mount Lyell salamanders.

NORTHWESTERN POND TURTLE (*CLEMMYS MARMORATA MARMORATA*) AND SOUTHWESTERN POND TURTLE (*CLEMMYS MARMORATA PALLIDA*)

Status: Federal species of concern; California species of special concern. Cumulative effects that could have large-scale benefits to western pond turtle habitat include regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS) and the Merced Wild and Scenic River Comprehensive Management Plan (NPS). These beneficial effects would be augmented by restoration of large areas of riparian and wetland habitats in Yosemite Valley under this alternative. The Yosemite View Parcel Land Exchange (NPS) would directly affect a small area of habitat suitable for the western pond turtle. Overall, there would be a minor, beneficial cumulative effect on the western pond turtle. This benefit would largely derive from implementation of regional and parkwide planning that would protect habitat for western pond turtles and restoration of suitable habitat in Yosemite Valley under this alternative.

HARLEQUIN DUCK (*HISTRIONICUS HISTRIONICUS*)

Status: Federal species of concern; California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the harlequin duck. Under this alternative, about 100 acres of suitable riparian and aquatic habitat would be restored or protected. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen and the extent of their implementation over time.

Current and reasonably foreseeable future projects that could have adverse impacts on suitable habitat for the harlequin duck include the Yosemite View Parcel Land Exchange (NPS) and the Incline Road Construction, Foresta Road Bridge to South Fork (Mariposa Co.) project. There are no known populations of the harlequin duck in these areas.

Overall, there would be a moderate, beneficial cumulative impact on the harlequin duck, based on the potential protection of suitable habitat offered by regional plans combined with restoration of suitable habitat provided under this alternative. The projects with possible adverse impacts on harlequin duck habitat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

COOPER'S HAWK (*ACCIPITER COOPERI*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) would improve the size, integrity, and connectivity of suitable habitat for the Cooper's hawk. These regional plans would have a long-term, moderate to major, beneficial effect on the Cooper's hawk, depending on the alternatives chosen and the extent of their implementation over time. These beneficial effects would be augmented by restoration of habitats in Yosemite Valley provided under this

alternative. Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for the Cooper's hawk include the Hazel Green Ranch (Mariposa Co.) project; Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Evergreen Lodge Expansion (Tuolumne Co.); and Yosemite West Rezone for 55 Acres (Mariposa Co.). In addition, development of parking at Henness Ridge, El Portal, and Foresta would affect an area of potential Cooper's hawk habitat, as would development of housing at Wawona, and housing, parking, and administrative facilities at El Portal.

The overall cumulative impact on Cooper's hawks would be moderate and beneficial, based primarily on implementation of wide-ranging plans that would protect large areas of the Sierra Nevada in combination with restoration of habitats in Yosemite Valley under this alternative, compared to localized adverse effects on relatively small areas from individual projects.

NORTHERN GOSHAWK (*ACCIPITER GENTILIS*)

Status: Federal species of concern; California species of special concern. Projects likely to have a beneficial effect on northern goshawk habitat include the Fire Management Plan Update (NPS), the Sierra Nevada Framework for Conservation and Collaboration (USFS), Wilderness Management Plan Update (NPS), and U.S. Forest Service plans for adjacent wilderness. Implementation of these plans would have a moderate to major effect on northern goshawks, depending on the alternatives chosen and the extent of their implementation over time.

Projects that could have an adverse effect on northern goshawk habitat include the Hazel Green Ranch (Mariposa Co.) project, Evergreen Lodge Expansion (Tuolumne Co.), and the Yosemite West Rezone for 55 Acres (Mariposa Co.). Development of parking at Henness Ridge under this alternative would adversely affect an area of forest habitat. These projects, however, would affect relatively small areas of habitat.

Overall, there would be a long-term, moderate, beneficial cumulative impact on the northern goshawk, primarily from the potential protection of wide areas of habitat through implementation of regional land management plans, compared to adverse effects on small, localized areas of habitat from individual projects (including effects from this alternative).

SHARP-SHINNED HAWK (*ACCIPITER STRIATUS*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of wide areas of suitable habitat for the sharp-shinned hawk. A mix of habitats favorable to sharp-shinned hawks would be restored in Yosemite Valley under this alternative. These regional plans, in combination with this alternative, would have a long-term, minor to moderate, beneficial effect on the sharp-shinned hawk, depending on the alternatives chosen and the extent of their implementation over time. The intensity of the effect

would be lower than for other *Accipiter* species because sharp-shinned hawks do not commonly nest in the Sierra Nevada.

Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for sharp-shinned hawks include the Hazel Green Ranch (Mariposa Co.) project; Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement (NPS); Evergreen Lodge Expansion (Tuolumne Co.); and Yosemite West Rezone for 55 Acres (Mariposa Co.). Under this alternative, some habitat would be adversely affected, including habitat at Henness Ridge, Foresta, Wawona, and El Portal.

The overall cumulative impact on sharp-shinned hawks would be moderate and beneficial, based primarily on implementation of plans that would protect large areas of the Sierra Nevada and restoration of diverse habitats in Yosemite Valley under this alternative, compared to localized adverse effects on relatively small areas from individual projects.

GOLDEN EAGLE (*AQUILA CHRYSAETOS*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for golden eagles. These regional plans would have a long-term, moderate, beneficial effect on golden eagles. Restoration of habitats in Yosemite Valley under this alternative would also benefit golden eagles.

Current and reasonably foreseeable future projects that could have an adverse effect on golden eagles include the Rio Mesa Area Plan (Madera Co.); University of California, Merced Campus (Merced Co.); Buildout of City of Merced, General Plan; and the Tioga Inn, Lee Vining (Mono Co.). Development of parking in Foresta that could occur under this alternative would affect a small area of potential habitat. These projects, in total, would have a minor, adverse impact on golden eagles because of the limited area they would affect.

The overall cumulative effects on golden eagles would be minor and beneficial, based primarily on the protection of habitat provided by implementation of land management plans that would cover large areas of the Sierra Nevada in combination with restoration of habitats in Yosemite Valley under this alternative. The area of effect would be limited for projects that have an adverse impact on golden eagles, including development in some habitat under this alternative.

MERLIN (*FALCO COLUMBARIUS*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of large areas of suitable habitat for the merlin. These regional plans could have a long-term, minor to moderate, beneficial effect on the merlin, depending on the alternatives chosen and the extent of their implementation over time. Merlin habitat would

be further supplemented by restoration of meadow and riparian habitats in Yosemite Valley under this alternative.

Current and reasonably foreseeable future projects that could have an adverse effect on merlins include the Yosemite View Parcel Land Exchange (NPS); Rio Mesa Area Plan (Madera Co.); Yosemite Motels Expansion, El Portal (Mariposa Co.); University of California, Merced Campus (Merced Co.); and Buildout of City of Merced, General Plan. These projects would have a minor, adverse effect on merlins, depending on the alternatives chosen and the extent of their implementation over time. Under this alternative, habitat could be adversely affected by development in Foresta, Wawona, and El Portal, but the areas affected would be less suitable habitat.

The overall cumulative effects would be moderate and beneficial, based primarily on the implementation of land management plans that could affect large areas of the Sierra Nevada in combination with restoration of habitats in Yosemite Valley that would occur under this alternative.

PRAIRIE FALCON (*FALCO MEXICANUS*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the prairie falcon. These actions could have long-term, moderate to major, beneficial effects on prairie falcon habitat, depending on the alternatives chosen and the extent of their implementation over time. Further benefit to this species would be provided by restoration of habitats in Yosemite Valley that would occur under this alternative.

Current and reasonably foreseeable future projects that could have an adverse effect on prairie falcons include the Rio Mesa Area Plan (Madera Co.); University of California, Merced Campus (Merced Co.); Buildout of City of Merced, General Plan; and Tioga Inn, Lee Vining (Mono Co.). The development of parking in Foresta under this alternative could affect prairie falcons, but the area involved is marginal habitat. In total these projects, would have a minor, adverse effect on prairie falcons because of the limited area they would affect.

The overall cumulative impact on prairie falcons would be moderate and beneficial, based primarily on the protection of habitat provided by implementation of land management plans that would cover large areas of the Sierra Nevada combined with restoration of Yosemite Valley habitats under this alternative. Projects with an adverse impact on prairie falcons would have a limited area of effect.

LONG-EARED OWL (*ASIO OTUS*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the

size, integrity, and connectivity of suitable habitat for long-eared owls. These regional plans would have a long-term, moderate, beneficial effect on long-eared owls, depending on the alternatives chosen and the extent of their implementation over time. Restoration of extensive riparian habitats in Yosemite Valley under this alternative would also benefit long-eared owls.

Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for long-eared owls include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); and Evergreen Lodge Expansion (Tuolumne Co.). Development of parking, housing, and administrative facilities in El Portal under this alternative could affect some areas of potential habitat.

The overall cumulative effect on long-eared owls would be minor and beneficial, based primarily on the protection of habitat provided by implementation of wide-ranging land management plans that would cover large areas of the Sierra Nevada, as well as restoration of large areas of riparian habitat in Yosemite Valley under this alternative. There would be a limited area of effect for projects that have an adverse impact on long-eared owls.

YELLOW WARBLER (*DENDROICA PETECHIA*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of large areas of suitable habitat for the yellow warbler. These regional plans would have a long-term, moderate to major, beneficial effect on the yellow warbler, depending on the alternatives chosen and the extent of their implementation over time. Under this alternative, extensive areas of riparian habitat would be restored, thus providing high-quality habitat for yellow warblers. A reduction in stable facilities in Yosemite Valley could reduce brown-headed cowbird abundance and their effects of nest parasitism on yellow warblers.

Current and reasonably foreseeable future projects with potential adverse effects on yellow warblers include the Hazel Green Ranch (Mariposa Co.) project, Yosemite View Parcel Land Exchange (NPS), and the Yosemite West Rezone of 55 Acres (Mariposa Co.). Development in El Portal, Wawona, and Foresta that would occur under this alternative would affect habitat. These projects would have a minor, adverse impact because the affected area is generally lower-quality habitat for yellow warblers and is limited in size, and because large areas of suitable, unaffected habitat would remain in surrounding areas.

The overall cumulative effects on yellow warblers would be moderate and beneficial, based primarily on the protection of high-quality habitat provided by implementation of regional land management plans that would cover large areas of the Sierra Nevada as well as restoration of large areas of high-quality riparian habitat in Yosemite Valley from this alternative. There would be a limited area of impact on lower-quality habitat for projects that would have an adverse effect on yellow warblers.

MOUNT LYELL SHREW (*SOREX LYELLI*)

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), the Wilderness Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Mount Lyell shrew. These regional plans would have a long-term, minor, beneficial effect on suitable habitat for the Mount Lyell shrew. Development at Tioga Pass, the only area of potential effect, would have a negligible impact on Mount Lyell shrews. No current and reasonably foreseeable future projects are expected to have an adverse effect on this species; therefore, the overall impact would be minor and beneficial.

PALLID BAT (*ANTROZOUS PALLIDUS*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the pallid bat. These regional plans would have a long-term, minor to moderate, beneficial effect on the pallid bat, depending on the alternatives chosen and the extent of their implementation over time. Restoration of large areas of riparian, meadow, and California black oak habitats that would occur under this alternative would further benefit pallid bats by providing important foraging habitat.

Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for the pallid bat include the Hazel Green Ranch (Mariposa Co.) project, Yosemite View Parcel Land Exchange (NPS), Yosemite Motels Expansion (Mariposa Co.), El Portal Road Improvement Project (NPS), Yosemite West Rezone for 55 Acres (Mariposa Co.), and Evergreen Lodge Expansion (Tuolumne Co.). New development that would occur at Henness Ridge, Foresta, El Portal, and Wawona under this alternative could affect pallid bats.

Overall, there would be a minor, beneficial, cumulative impact on the pallid bat, based on the potential protection of suitable habitat resulting from regional plans and restoration of diverse habitats in Yosemite Valley under this alternative. The projects with a possible adverse effect on the pallid bat, including new development under this alternative, would affect a relatively small area of habitat compared to projects with potential beneficial effects.

TOWNSEND'S BIG-EARED BAT (*CORYNORHINUS TOWNSENDII TOWNSENDII*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of large areas of suitable habitat for the Townsend's big-eared bat. These regional plans would have a long-term, minor to moderate, beneficial effect on the Townsend's big-eared bat, depending on the alternatives chosen and the extent of their implementation over time. Such benefits would be augmented by this alternative through

restoration of large areas of riparian, meadow, and California black oak habitats in Yosemite Valley. These areas are important foraging areas for Townsend's big-eared bats.

Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for Townsend's big-eared bats include the Hazel Green Ranch (Mariposa Co.) project; Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Evergreen Lodge Expansion (Tuolumne Co.); and Yosemite West Rezone for 55 Acres (Mariposa Co.). New development at Henness Ridge, Wawona, El Portal, and Foresta could affect small areas of suitable habitat.

Overall, there would be a minor, beneficial cumulative impact on Townsend's big-eared bat, based on the potential protection of suitable habitat through implementation of regional plans as well as restoration of Yosemite Valley habitats under this alternative. The projects with a possible adverse impact on the Townsend's big-eared bat would affect a relatively small area of marginal habitat compared to projects with potential beneficial effects.

SPOTTED BAT (*EUDERMA MACULATUM*)

Status: Federal species of concern; California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the spotted bat. These actions have the potential for long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Such beneficial impacts would be augmented by restoration of large areas of riparian and meadow habitats under this alternative. These habitats are important foraging areas for spotted bats.

Projects that could have adverse effects on suitable habitat for the spotted bat include the Yosemite View parcel land exchange (NPS); El Portal Road Improvement Project (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.); Hazel Green Ranch (Mariposa Co.) project; and Yosemite West Rezone for 55 Acres (Mariposa Co.). New development at Henness Ridge, Wawona, El Portal, and Foresta would affect potential habitat. Adverse cumulative impacts on spotted bats would be minor, based on their relatively limited area of effect and the type of habitat affected.

In total, there would be a moderate, beneficial impact on the spotted bat, based primarily on the potential protection of large areas of suitable habitat resulting from regional plans,in combination with restoration of important habitats in Yosemite Valley that would occur under this alternative. The projects with possible adverse impacts on the spotted bat would affect a relatively small area of less-suitable habitat compared to projects with potential beneficial impacts.

SMALL-FOOTED MYOTIS BAT (*MYOTIS CILIOLABRUM*)

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans

for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the small-footed myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Further benefit would occur under this alternative from restoration of large areas of riparian and meadow habitats in Yosemite Valley, which are important foraging habitat for the small-footed myotis bat.

Projects that could have adverse effects on suitable habitat for the small-footed myotis bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion; El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). New development at Henness Ridge, El Portal, Wawona, and Foresta under this alternative could affect foraging habitat.

In total, the cumulative impact on the small-footed myotis bat would be moderate and beneficial, based primarily on implementation of large-scale regional plans that could protect wide areas of habitat, and restoration of important habitats in Yosemite Valley under this alternative. In comparison, projects with potential adverse impacts would affect relatively small areas of habitat.

LONG-EARED MYOTIS BAT (*MYOTIS EVOTIS*)

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the long-eared myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Further benefit would occur under this alternative from restoration of large areas of riparian and meadow habitats in Yosemite Valley, which are important foraging areas for long-eared myotis bats.

Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for the long-eared myotis bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development at Henness Ridge, El Portal, Wawona, and Foresta under this alternative.

Overall, there would be a moderate, beneficial cumulative impact on long-eared myotis bats, based on the potential protection of suitable habitat from implementation of regional plans, in combination with restoration of important habitats in Yosemite Valley. The projects with possible adverse impacts on the long-eared myotis bat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

FRINGED MYOTIS BAT (*MYOTIS THYSANODES*)

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the fringed myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Further beneficial effects would result from restoration of large areas of riparian and meadow habitats in Yosemite Valley under this alternative. Such areas are important foraging habitat for fringed myotis bats.

Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for fringed myotis bats include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development at Henness Ridge, El Portal, Wawona, and Foresta under this alternative.

Overall, there would be a moderate, beneficial cumulative impact on the fringed myotis bat, based on the potential protection of suitable habitat resulting from wide-reaching regional plans in combination with actions under this alternative that would restore important habitats in Yosemite Valley. The projects with possible adverse impacts on the fringed myotis bat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

LONG-LEGGED MYOTIS BAT (*MYOTIS VOLANS*)

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the long-legged myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Further beneficial effects would be provided by restoration of large areas of riparian and meadow habitats in Yosemite Valley that would occur under this alternative. Such areas are important foraging habitat for long-legged myotis bats.

Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for the long-legged myotis bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development at Henness Ridge, El Portal, Wawona, and Foresta under this alternative.

Overall, there would be a moderate, beneficial cumulative impact on the long-legged myotis bat, based on the potential protection of suitable habitat through implementation of regional plans in combination with restoration of important habitats in Yosemite Valley under this alternative. The projects with a possible adverse impact on the spotted bat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

YUMA MYOTIS BAT (*MYOTIS YUMANENSIS*)

Status: Federal species of concern; California species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the Yuma myotis bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time. Actions under this alternative would provide additional benefit to Yuma myotis bats by restoring large areas of meadow and riparian habitats in Yosemite Valley, which are important foraging areas for this species.

Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for the Yuma myotis bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development at Henness Ridge, El Portal, Wawona, and Foresta under this alternative.

Overall, there would be a moderate, beneficial cumulative impact on the Yuma myotis bat, based on the potential protection of suitable habitat from implementation of regional plans, augmented by restoration of important habitats in Yosemite Valley under this alternative. The projects with possible adverse impacts on Yuma myotis bats would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

GREATER WESTERN MASTIFF BAT (*EUMOPS PEROTIS CALIFORNICUS*)

Status: Federal species of concern; California species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of large areas of suitable habitat for the greater western mastiff bat. These actions could have long-term, moderate to major, beneficial effects on suitable habitat depending on the alternatives chosen for implementation and the extent of their implementation over time. Further benefit would be provided by this alternative through restoration of large areas of meadow and riparian habitats that are important foraging areas for mastiff bats.

Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for the greater western mastiff bat include the Yosemite View Parcel Land Exchange (NPS); Yosemite Motels Expansion, El Portal (Mariposa Co.); El Portal Road Improvement Project (NPS); Hazel Green Ranch (Mariposa Co.) project; Yosemite West Rezone for 55 Acres (Mariposa Co.); and Evergreen Lodge Expansion (Tuolumne Co.). Additional adverse impacts would occur from new development at Henness Ridge, El Portal, Wawona, and Foresta under this alternative, although no suitable roosting habitat (cliffs) is nearby.

Overall, there would be a moderate, beneficial cumulative impact on the greater western mastiff bat, based on the potential protection of suitable habitat from implementation of regional plans in combination with restoration of important habitats in Yosemite Valley that would occur under this alternative. The projects with possible adverse impacts on the greater western mastiff bat would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

SIERRA NEVADA SNOWSHOE HARE (*LEPUS AMERICANUS TAHOENSIS*)

Status: Federal species of concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for snowshoe hares. These actions could have long-term, moderate to major, beneficial effects on suitable habitat, depending on the alternatives chosen for implementation and the extent of their implementation over time.

Current and reasonably foreseeable future projects that could have adverse effects on suitable habitat for snowshoe hares include Evergreen Lodge Expansion (Tuolumne Co) and Hazel Green Ranch (Mariposa Co.). This project would primarily affect forest habitat. Development of parking on Henness Ridge under this alternative could affect snowshoe hare habitat.

Overall, there would be a minor, beneficial impact on snowshoe hares, based on the potential protection of suitable habitat from implementation of regional plans. The projects with possible adverse impacts on snowshoe hares would affect a relatively small area of habitat compared to projects with potential beneficial impacts.

WHITE-TAILED HARE (*LEPUS TOWNSENDII*)

Status: California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the white-tailed hare. These regional plans would have a long-term, moderate, beneficial effect on the white-tailed hare. No reasonably foreseeable future projects are expected to have an adverse effect on white-tailed hare, including minor expansion of Tioga Pass Entrance that could occur under this alternative.

SIERRA NEVADA MOUNTAIN BEAVER (*APLODONTIA RUFA CALIFORNICA*)

Status: Federal species of concern; California species of special concern. Regional and parkwide planning efforts such as the Sierra Nevada Framework for Conservation and Collaboration (USFS), U.S. Forest Service plans for adjacent wilderness, the Fire Management Plan Update (NPS), and the Merced Wild and Scenic River Comprehensive Management Plan (NPS) could improve the size, integrity, and connectivity of suitable habitat for the mountain beaver. These regional plans would have a long-term, moderate, beneficial effect on suitable habitat for the mountain beaver. No foreseeable future projects are expected to have an adverse effect on Sierra Nevada mountain beaver, including the increased visitor use at Badger Pass under this alternative.

Cumulative Impacts Conclusion

Many of the cumulative impact principles given in the conclusion for general wildlife earlier in this alternative also apply to special-status species.

Overall, current and reasonably foreseeable future projects within the cumulative impact assessment area considered in conjunction with the actions under Alternative 5 would have a moderate, beneficial effect on special-status species and their habitats. This is primarily due to the potential effects that would come from implementation of large-scale planning documents that could protect and restore wildlife habitats over much of the Sierra Nevada. These plans would compliment actions under this alternative, which would restore large areas of meadow, riparian, and California black oak habitats that are important to many special-status species.

Under Alternative 5, adverse impacts would affect some special-status species such as Valley elderberry longhorn beetle, great gray owl, and fisher from new development outside of Yosemite Valley, and California spotted owl, yellow warbler, willow flycatcher, and California red-legged frog from new development in the Valley. Development of parking at Henness Ridge would affect an area of prime fisher habitat. Such impacts would add to the adverse effects of some current and reasonably foreseeable future projects. However, these impacts would be of limited severity because of the limited area of habitat affected, and would have little effect on the overall cumulative impacts on special-status species under this alternative, which would be moderate, beneficial.

VEGETATION

Forty-seven special-status species in Yosemite Valley and other out-of-Valley areas could be affected by Alternative 5 as proposed in the *Final Yosemite Valley Plan/SEIS*. Refer to table 3-7 (Vol. IA, Chapter 3) for this list of species; their state, federal and local status; and their general habitat requirements and locations. The impacts that have been identified in this section are generally long term, except where noted. Out-of-Valley areas affected by this alternative include El Portal, Foresta, Henness Ridge, and Wawona, and the park entrances at Big Oak Flat, Tioga Pass, and South Entrance.

Yosemite Valley

No federal- or state-listed plant species are known to occur in Yosemite Valley. Twelve park rare plant species currently exist in the Valley: sugar stick, round-leaved sundew, stream orchid, fawn-lily, northern bedstraw, Sierra laurel, false pimpernel, azure penstemon, phacelia, wood saxifrage, giant sequoia, and ladies' tresses. Northern bedstraw, false pimpernel, ladies' tresses, round-leaved sundew, phacelia, and Sierra laurel would experience a moderate, beneficial impact from the restoration of large portions of potentially wet meadows and riparian areas (at Yosemite Lodge, former Upper and Lower River and Lower Pines Campgrounds, and a portion of Housekeeping Camp) and from the removal and ecological restoration of the Ahwahnee Row houses. Development of Camp 6 as parking would only allow for a small zone of increased potential habitat within the River Protection Overlay for these species. The stream orchid would continue to occur within concession landscaped areas, but natural habitat at Happy Isles would be affected by replacement of the snack stand near the restroom. Minor, adverse impacts would be anticipated from installation of a new snack stand, as a relatively small area of habitat would be affected in this high traffic area.

Removal of the Ahwahnee tennis courts would have a long-term, major, adverse impact on the planted giant sequoia trees in this area, because these trees would be removed and the site restored to California black oak woodland. Redesign of the Ahwahnee parking lot could have adverse impacts to the planted giant sequoias, depending on final alignment of parking lots and driveways. Removal of the Superintendent's House (Residence 1) and restoration of this area could result in removal of the single planted giant sequoia along the access road. None of these actions would affect overall sustainability of giant sequoias in the park's three naturally occurring groves, with negligible adverse impacts.

The fawn-lily is currently affected by people trampling on and picking its showy flowers. This species would not be further affected under this alternative. The wood saxifrage typically grows on moist cliffs and also would not be affected by the actions of this alternative.

Out-of-Valley

This alternative would have no impacts on rare plant species at Hazel Green Ranch, Badger Pass, or South Landing, given that no actions are proposed within these areas.

El Portal

Currently one federal plant species of concern (Congdon's lomatium), four state-listed rare species (Yosemite onion, Tompkin's sedge, Congdon's woolly-sunflower, and Congdon's lewisia), and six park rare species (Indian paintbrush, collinsia, pitcher sage, Congdon's monkeyflower, Palmer's monkeyflower, and phacelia) occur within the general El Portal area.

Adverse impacts from trampling would continue to occur to all of these species, with the exception of Yosemite onion and Congdon's lomatium, which grow on steep, inaccessible slopes in association with poison oak. Impacts to the remaining species would be increased from current conditions due to a substantial increase in the residential population. Adverse impacts as a result of habitat loss and competition for resources (e.g., light, water, and nutrients) would continue to adversely effect most species because of the continued high degree of non-native species

encroachment expected in this area and the increased potential for new introductions. Potential adverse impacts to Tompkin's sedge, Indian paintbrush, collinsia, pitcher sage, Palmer's and Congdon's monkeyflowers, and phacelia would occur from development of out-of-Valley parking and employee housing. These impacts would be minimized as much as possible through mitigation measures such as avoidance (site selection), plant salvage and replanting, and/or topsoil salvage and reapplication after construction. The restoration of habitat at the old treatment plant at Rancheria Flat and at the sand pit would have moderate beneficial effects on Congdon's woolly-sunflower. Unavoidable losses of habitat with new development would lead to an overall minor, adverse impact in El Portal, despite mitigation efforts.

Foresta

No federal- or state-listed plant species occur in Foresta. Five park rare species are found within the general Foresta area (snapdragon, Small's southern clarkia, goldenaster, inconspicuous and pansy monkeyflowers). All five rare species would experience adverse impacts as a result of increased human activity from the reconstruction of 14 houses, as well as potential development of administrative stables operations for the National Park Service and concessioner, and construction of day-visitor parking in Foresta. Goldenaster and both monkeyflower species would experience moderate, long-term, adverse impacts from the construction of out-of-Valley parking due to loss of habitat. Radiating impacts of visitors would be minor in the parking lot area, as the installation of fences, signs, or other measures would be used to direct visitors away from sensitive habitats. There would be potential moderate, adverse impacts to rare plant habitat because of encroachment of non-native species associated with landscaping activities and increased numbers of residential and day-visitor vehicles, resulting in moderate, adverse overall impacts to rare plants in Foresta under Alternative 4.

Henness Ridge

No federal-listed, state-listed, or park rare plant species are known to occur at Henness Ridge; therefore, no impacts to such species would occur.

Wawona

No federal-listed, one state-listed plant species (Yosemite onion) and eight park rare species occur within the Wawona basin (snapdragon, Child's blue-eyed Mary, round-leaved sundew, Sierra sweet-bay, Bolander's skullcap, giant sequoia, trillium, and Hall's wyethia). New housing development would result in loss of a portion of the trillium population, with a moderate, adverse impact on this species. Increased human use in this area during the spring and summer would have potential radiating impacts, such as trampling on all of the Wawona rare species. However, these impacts would be minor with the implementation of specific mitigation measures, including avoidance of habitat or populations of special-status species through site design.

Big Oak Flat Entrance

No impacts to federal-, state-, or park-listed plant species would occur under Alternative 5 because no special-status species are known to occur at the Big Oak Flat Entrance area.

South Entrance

No federal- or state-listed plant species occur in the South Entrance area. One park rare species (Sierra sweet-bay) is located within the riparian areas adjacent to the current road alignment. Expanded parking and visitor center structures in this vicinity would be designed to avoid riparian areas, which would minimize the potential impact on the Sierra sweet-bay. The impacts of Alternative 5 on this species would be minor and adverse as a result of increased visitor use in the South Entrance area as well as the potential loss of a small area of habitat.

Tioga Pass Entrance

One federal species of concern (Tiehm's rock-cress) and thirteen park rare species occur within hiking distance of Tioga Pass. One species, the common juniper, could be directly impacted by construction of a new or expanded entrance/visitor contact station at Tioga Pass. Construction may result in habitat loss or direct loss of individual plants. There could be indirect effects on Tiehm's rock-cress and all 13 park rare species from increased foot traffic and associated trampling and soil compaction in the area. There could be increased hiking on Mt. Dana, which is within a day's hike from the Tioga Pass Entrance Station. The popular hike to the top of Mt. Dana is a cross-country path, without a formal route. Increased hiking on Mt. Dana could have a long-term, moderate, adverse impact on these rare plant species on Mt. Dana.

Conclusion

Forty-seven special-status plant species could be affected under Alternative 5. The proposed actions of this alternative would include mitigation measures to minimize adverse impacts to these species. Radiating impacts from new development (including trampling, picking, and increased non-native plants from increased visitor uses in and out of the Valley) would be limited to negligible to minor by managing uses within these sensitive areas and increasing management efforts to control non-natives.

Adverse impacts as a result of habitat loss would occur in El Portal for two state-listed rare species, for six park rare species, in Wawona for trillium, and in the Valley for the giant sequoia. These impacts would be mitigated by reasonable designs to avoid these species (as identified in site-specific surveys) and for some species, the retention and reuse of salvaged topsoil at the site to encourage re-establishment, resulting in minor, adverse local impacts.

Moderate beneficial impacts to northern bedstraw, false pimpernel, round-leaved sundew, Sierra laurel, phacelia, and ladies' tressess would occur because of restoration of riparian and meadow habitat. Alternative 5 would have minor adverse impacts on the stream orchid and no impacts on the fawn-lily or wood saxifrage.

Restoration of riparian habitat at the old treatment plant at Rancheria Flat and the sand pit would have moderate, beneficial effects by increasing potential habitat for Congdon's woolly-sunflower.

Therefore, the overall impact to park rare or special concern plant species would be minor and adverse, primarily resulting from habitat loss and impacts of trampling in Wawona, Foresta, and El Portal.

Cumulative Impact

The description of the impacts on special-status vegetation from reasonably foreseeable future projects within the cumulative impact assessment area is the same as for Alternative 2. The projects considered in this analysis are listed in Vol. II, Appendix H. These management and planning projects within the cumulative impact assessment area would have regional minor to moderate, beneficial impacts on rare species and their habitats due to similar management objectives. Development projects, such as the Yosemite View parcel land exchange and Yosemite Motels Expansion, El Portal (Mariposa Co.), would have the potential for localized minor to moderate, adverse effects on rare species habitat. However, with the implementation of site-specific surveys and state- and federal-required mitigation measures, these localized adverse impacts would be minor.

As summarized in the conclusions for this alternative, actions proposed under this alternative alone would have minor adverse impacts on rare species because of habitat loss and trampling impacts.

Alternative 5, in conjunction with other regional planning and development activities, would have a minor, adverse cumulative impact on rare plant species, largely due to habitat loss from developments regionally and within the out-of-Valley areas.

Air Quality

VEHICLE-GENERATED EMISSIONS

A summary of the traffic air emissions in Yosemite Valley under Alternative 5 is provided in table 4-122. The emissions data noted in table 4-122 reflect emissions from the following four major vehicle fleet categories:

- Visitor vehicles
- Commercial tour buses
- In-Valley and out-of-Valley shuttle buses (four propulsion/fuel technology options including diesel, propane, compressed natural gas, and fuel cell were analyzed)
- National Park Service and concessioner employee vehicles
- National Park Service and concessioner maintenance and administration road vehicles
- National Park Service and concessioner maintenance and administration non-road vehicles

Compared to air emissions under Alternative 1 in 2015, with the use of diesel fuel in the shuttle bus fleet, volatile organic compounds would decrease by 8%, carbon monoxide would decrease by 36%, nitrogen oxide emissions would increase by 24%, and PM_{10} would decrease by 36%. A moderate decrease in particulate matter would result from a reduction in vehicle miles traveled and associated road dust.

If compressed natural gas were to be used in the shuttle bus fleet instead of diesel fuel, emissions of carbon monoxide would increase and emissions of all other pollutants would decrease. The use of propane in the shuttle bus fleet would result in increases in emissions of volatile organic compounds and carbon monoxide and decreases in emissions of nitrogen oxides, sulfur dioxide and PM_{10} compared to the use of diesel fuel. The use of fuel cells in the shuttle bus fleet would reduce emissions of all pollutants compared to the use of diesel fuel.

Table 4-122
Summary of Annual Air Emissions from Vehicles in Yosemite Valley (Tons/Yr)

Alter-native	2000				2005				2010				2015			
	Shuttle Bus Fuel Type				Shuttle Bus Fuel Type				Shuttle Bus Fuel Type				Shuttle Bus Fuel Type			
	Diesel	CNG	Propane	FC	Diesel[1]	CNG	Propane	FC	Diesel[1]	CNG	Propane	FC	Diesel[1]	CNG	Propane	FC
VOC Emissions																
1[2]	50.9	No alternative fuels			28.0	No alternative fuels			14.0	No alternative fuels			8.6	No alternative fuels		
5	NA				19.3	18.7	21.5	NA[3]	11.0	10.5	13.3	8.4	7.9	7.3	10.1	5.3
CO Emissions																
1[2]	568.2	No alternative fuels			364.1	No alternative fuels			249.2	No alternative fuels			189.8	No alternative fuels		
5	NA				221.5	241.0	215.2	NA[3]	155.3	182.5	155.6	142.5	120.9	155.0	126.9	108.1
NO_X Emissions																
1[2]	84.2	No alternative fuels			59.3	No alternative fuels			44.9	No alternative fuels			38.8	No alternative fuels		
5	NA				60.0	54.3	48.9	NA[3]	51.6	46.2	40.5	26.6	48.1	43.0	37.0	23.1
SO_2 Emissions																
1[2]	6.3	No alternative fuels			5.8	No alternative fuels			5.6	No alternative fuels			5.4	No alternative fuels		
5	NA				4.6	3.7	3.7	NA[3]	4.4	3.6	3.6	3.6	4.3	3.5	3.5	3.5
PM_{10} Emissions																
1[2]	2.5	No alternative fuels			2.3	No alternative fuels			2.2	No alternative fuels			2.2	No alternative fuels		
5	NA				1.5	1.5	1.4	NA[3]	1.4	1.4	1.4	1.3	1.4	1.4	1.3	1.3
PM_{10} Road Dust																
1[2]	165				165				165				165			
5	97				97				97				97			

1. Assumes that in-Valley shuttle buses are conventional diesel buses that would meet emissions standards in effect in 2000. Shuttle buses in this alternative could employ advanced technologies to lower emissions.
2. No Action
3. NA = Not Applicable; fuel cell scenarios were assumed not be available until the year 2010
Note: Values expressed in tons per year
CNG = compressed natural gas
FC = Fuel Cell

Traffic flow was modeled to perform carbon monoxide and PM_{10} hot-spot analyses for Northside Drive from Yosemite Lodge to park headquarters. For the inbound peak travel hour, the EMFAC model predicted a maximum 1-hour average carbon monoxide concentration of 1.9 parts per million and a carbon monoxide concentration of 1.9 parts per million for the outbound peak travel hour. When added to a background carbon monoxide concentration of 3.0 parts per million, the estimated carbon monoxide concentration of 4.9 parts per million for both inbound and outbound traffic scenarios, respectively, would not exceed the federal or California 1-hour carbon monoxide standards of 35 parts per million and 20 parts per million. The calculated maximum 8-hour average carbon monoxide concentration was 3.43 parts per million, based on traffic in both the inbound and outbound peak travel hour. The carbon monoxide concentrations under Alternative 5 would not exceed the federal or California 8-hour carbon monoxide standard of 9 parts per million. As shown in table 4-123, these carbon monoxide concentrations would represent minor and moderate reductions in ambient carbon monoxide levels for the inbound and outbound peak hours, respectively, when compared to Alternative 1.

Table 4-123
Predicted Maximum Carbon Monoxide Concentrations

Alternative	Standard		Inbound Peak Hour		Outbound Peak Hour	
	CA	Fed	Maximum (ppm)	Reduction[1] (%)	Maximum (ppm)	Reduction[1] (%)
	(ppm)					
1-Hour Concentration						
1	20	35	5.10	NA	6.50	NA
5			4.90	9.5	4.90	45.7
8-Hour Concentration						
1	9	9	3.57	NA	4.55	NA
5			3.43	9.5	3.43	45.7

1. Based on results without background concentrations and relative to the No Action Alternative
NA = Not applicable

For both the inbound and outbound peak travel hour, the maximum 1-hour PM_{10} concentration would be 43.4 micrograms per cubic meter ($\mu g/m^3$). The estimated PM_{10} concentrations for the inbound and the outbound peak hours would not exceed the federal standard of 150 $\mu g/m^3$ or the California standard of 50 $\mu g/m^3$. As shown in table 4-124, these carbon monoxide concentrations represent minor and moderate reductions in ambient PM_{10} levels for the inbound and outbound peak hours, respectively, when compared to Alternative 1.

Table 4-124
Predicted Maximum 24-Hour PM_{10} Concentrations

Alternative	Standard[1]		Inbound Peak Hour		Outbound Peak Hour	
	CA	Fed	Maximum ($\mu g/m^3$)	Reduction[1] (%)	Maximum ($\mu g/m^3$)	Reduction[1] (%)
	($\mu g/m^3$)					
1	50	150	46.2	NA	64.2	NA
5			43.4	11.1	43.4	48.1

1. Based on results without background concentrations and relative to the No Action Alternative
NA = Not applicable

Construction-Generated Air Emissions

Air emissions associated with construction activities proposed for Alternative 5 are summarized in table 4-125. A description of construction-related emissions and the approach used for this analysis are included in the Methodologies and Assumptions section of this chapter. These construction-related emissions would represent minor, adverse impacts to air emission in the short term.

Conclusion

Compared with Alternative 1, Alternative 5 would produce moderate, adverse impacts for nitrogen oxide emissions; moderate, beneficial impacts for carbon monoxide and PM_{10} emissions; and minor, beneficial impacts on volatile organic compounds emissions throughout the time periods of interest with the use of diesel fuel in the shuttle bus fleet. In comparison with the use of diesel fuel under Alternative 5, only the fuel cell scenario would be able to produce lower vehicle traffic emissions for all pollutants by 2015. The fuel cell emission reductions also would be the largest among the three alternative fuel options.

Air emissions associated with construction and demolition projects would be minor, occur only once, and be generated over a relatively short-term period.

Table 4-125
Air Emissions from Construction Activities

Construction Activity	Emissions (tons/yr)				
	VOC	CO	NO_X	PM_{10}	SO_2
Yosemite Lodge Redevelopment	0.32	1.37	1.75	4.16	0.49
Yosemite Falls Parking Removal and Trails	0.08	0.41	0.40	3.96	0.11
Traffic Management Facility El Capitan crossover	0.02	0.07	0.12	0.39	0.08
Southside/Northside Drives Lane Conversion	0.22	0.37	0.84	6.51	1.10
Out-of-Valley Parking	0.30	0.60	1.20	7.69	1.30
Day Visitor Parking in the Village	0.15	0.31	0.61	3.85	0.68
Transit Facility	0.02	0.09	0.10	0.61	0.03
New El Portal/Wawona Employee Housing	1.39	6.82	7.25	45.19	2.05
NPS/Concessioner Headquarters	0.09	0.39	0.51	1.88	0.15
El Portal Road Improvements	0.15	0.46	0.71	2.50	0.48
Total	**2.74**	**10.89**	**13.49**	**76.74**	**6.47**

CO = carbon monoxide
NO_x = nitrogen oxide
PM_{10} = particulate matter less than 10 microns in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compounds
NPS = National Park Service

Cumulative Impacts

Air quality in Yosemite National Park currently is affected by internal air pollution sources, such as furnaces, boilers, woodstoves, and campfires. Estimates of air emissions from these sources are provided in table 3-12 (see Vol. IA, Chapter 3). For purposes of this analysis, these air pollution sources would continue to exist, with emission levels remaining relatively similar to existing levels. These emission sources are relatively small when compared to vehicle emissions and overall air emissions in the region.

Cumulative impacts on air emissions associated with Alternative 5 would include new housing and lodging developments outside the park. These developments include the construction of new housing in the City of Merced, in the Rio Mesa area in Madera County, and at University of California facilities in Merced. Other factors would include overall population increases in the area that are expected to range from 25% to 30% by 2015. The cumulative impacts for Alternative 5 would be the same as those associated with Alternative 2. Considered with the moderate, adverse impact resulting from the past, present, and reasonably foreseeable future projects in the Yosemite region, the impacts resulting from Alternative 5 in Yosemite National Park would remain moderate and beneficial.

Geologic Hazards

Impacts are described as levels of risk to human life and property and are based on the facility categories defined in the *Yosemite Valley Geologic Hazard Guidelines*,see Vol. II, Appendix C, and the presence or absence of geologic hazards (rockfall), as mapped by the U.S. Geological Survey (USGS 1998).

This impact analysis was completed only for those areas currently within the talus slope zone and the shadow line zone in the Valley. Rockfall hazards would likely be long term and permanent. The potential for rockfall is ongoing, as this natural process continues to occur in Yosemite Valley. With the exception of the Arch Rock Entrance Station, there are no permanent structures planned for the area between Yosemite Valley and El Portal. Also, traffic along the roadway in this area is considered transitory and not a permanent population. The transitory nature of the traffic allows little exposure at any one time to potential geologic hazards. For these reasons, this area was not included in the analysis of geologic hazards for Yosemite Valley. Other out-of-Valley areas were not included in the analysis. The relative risk of rockfall in these areas is negligible due to the lack of evidence of past rockfall events in these areas.

HOUSEKEEPING CAMP AREA

All of the Housekeeping Camp facilities are within the shadow line zone. The LeConte Memorial Lodge is within the talus slope zone. Under this alternative, the density of Housekeeping Camp would be reduced by 164 units. The LeConte Memorial Lodge, a historic structure, and Housekeeping Camp are both standard occupancy facilities, thus the action would be adverse and retain moderate risks. Retaining conditions of this type would be consistent with the *Geologic Hazard Guidelines*, and risks would remain moderate.

CURRY VILLAGE AREA

Numerous visitor and employee facilities are located within Curry Village. This alternative calls for the removal of most tent cabins and many other cabins from the talus slope zone, which would be a beneficial impact. The redevelopment of the guest parking areas in the talus slope and shadow line zones would also reduce risk to life and property, and adhere to the *Geologic Hazard Guidelines* because new miscellaneous structures (parking) may be placed in any area. These facilities are standard occupancy facilities, except the pavilion, which is considered special occupancy. Consequently, these actions would be beneficial, and would reduce levels of risk to minor, except at the pavilion, where adverse risks would remain moderate.

Campground Areas

A majority of the existing, as well as proposed, campground and facilities are located outside of both the talus slope zone and the shadow line zone and have negligible risks. A small portion of Upper Pines Campground is located in the talus slope zone. Campgrounds are miscellaneous occupancy facilities, and the risks associated with those portions of the campgrounds located in the talus slope and shadow line zones would remain. This would be consistent with the *Geologic Hazard Guidelines*, and risks to life and property would remain as they are currently.

The Ahwahnee Area

The Ahwahnee and associated support facilities, which are special occupancy facilities, are within the shadow line zone. A small portion of the hotel parking lot is within the talus slope zone. Retaining existing conditions would be an adverse effect. This action would be consistent with the *Geologic Hazard Guidelines*, and existing risk to life and property would remain adverse and moderate.

Yosemite Village Area

The entire Yosemite Village is within the shadow line zone, and approximately one-half of the area is within the talus slope zone. This area has a number of structures within the talus slope and shadow line zones that are essential facilities (fire station, law enforcement, jail, court, communication center); special occupancy facilities (visitor center and auditoriums); and one facility in the hazardous facility category (fuel storage). Numerous standard occupancy facilities are located within both the talus slope zone and the shadow line zone (employee housing, maintenance facilities, retail sales, and post office). The fire station would be removed out of a talus slope zone; however, it would be relocated in a shadow line zone. A portion of parking at Yosemite Village would be within the shadow line zone. Under this alternative, no changes would be made, and the risk of adverse impact from rockfall would remain. Risks would be considered adverse and major due to the large concentration of essential, hazardous, and special occupancy facilities within the talus slope zone.

Yosemite Lodge Area

All existing buildings and proposed lodge facilities would remain within the shadow line zone, as delineated in the *Geologic Hazard Guidelines*. Additionally, an employee housing facility would be constructed within the lodge complex. All existing buildings are standard occupancy except for the restaurants, which are considered special occupancy facilities. Camp 4 (Sunnyside Campground) is a miscellaneous structure facility within both the talus slope zone and the shadow line zone. An increase in density within the shadow line zone would be adverse, but risks would remain minor.

Yosemite Falls facilities are also considered miscellaneous and are located in the shadow line zone. Retaining existing conditions would be consistent with the *Geologic Hazard Guidelines*; thus, risk to life and property would remain as they are currently: adverse and moderate.

Bridalveil Fall Area

Currently, no facilities are located within the talus slope or shadow line zones in this area; consequently, the risk of adverse impacts from rockfall would be negligible.

Conclusion

Alternative 5 does not propose to remove or relocate existing facilities or change occupancy categories, but would increase the density of facilities within the shadow line zone. Thus, the current level of risk to life and property would remain the same. Potential impacts from rockfall would always be adverse when individuals and property are involved. Overall, actions would be considered adverse, and risks would remain major because of the high concentration of essential, hazardous, and special occupancy facilities within the talus slope and shadow line zones.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects could have a cumulative effect, in conjunction with impacts of Alternative 5, if such projects would affect the characteristics of the geologic resource, specifically the steep granite walls and drainage systems within Yosemite Valley. Risks associated with the Indian Cultural Center cannot be evaluated because the occupancy category has not yet been determined; however, it would be located within the shadow line zone. These buildings are likely to be categorized as standard occupancy, and their placement would be consistent with the *Geologic Hazards Guidelines.* Past and present actions, which at times require the use of explosives for trail maintenance or road work, could trigger rockfall events. This would be an adverse effect. Risk of such effects are evaluated before decisions concerning the type of work to be undertaken is made. There are no reasonably foreseeable future projects (Appendix H, see Vol. II) that would impact or change the geologic structure of the granite walls within Yosemite Valley. The park uses explosives guidelines, and if these guidelines are applied consistently and effects of blasting are monitored, the cumulative impacts would not increase the level of risk at facilities in the Valley.

Scenic Resources

Impacts in this section are considered long term, unless otherwise noted.

Yosemite Valley

Under this alternative, 130 acres of developed land would be restored to natural conditions, thus improving the scenic quality of Yosemite Valley. Proposed restoration and development (in acres) within each scenic category are found in table 4-126. The primary improvements would be restoration along the Merced River, primarily within the River Protection Overlay. This would result in long-term, moderate, beneficial impacts.

A total of 68 acres of new development would occur. The new development would be principally in the Camp 6 and Curry Village areas, and would have a long-term, moderate, adverse impact. In the west Valley, a traffic check station at El Capitan crossover on Southside Drive would be constructed. This facility would be constructed such that it would not obstruct scenic vistas and vantage points.

This alternative would result in a relatively small amount of restoration, and a small net decrease in development. As a result, this alternative would have an overall impact on scenic resources that is long-term, minor, and beneficial.

Table 4-126
Proposed Restoration and Development by Scenic Category (acres)

Action	A Scenic	B Scenic	C Scenic	Alternative 5 Totals[1]	Alternative 1 Totals
Natural Resource Restoration	109 acres	54 acres	0	130 acres[2]	0
Developed[3]	82 acres	165 acres	28 acres	275 acres	406 acres
New Development	26 acres	35 acres	7 acres	68 acres	0
Total Development				**343 acres**	**406 acres**
Development Difference				**-63 acres**	

1. Totals may differ due to rounding.
2. Of the total 163 acres of natural resource restoration in A, B, and C Scenic areas, only 127 acres currently contain intrusions to scenic views, i.e., developed facilities. Thus, 36 acres of restoration are not included in this analysis of acreage of restored scenery. Because these 36 acres have not been further analyzed to determine their exact locations within A, B, and C Scenic categories, only the total acreage figure reflects the reduction of these 36 acres from the analysis. Also, the total acreage has been increased by the three acres of restoration in areas not classified as either A, B, and C Scenic in the 1980 *General Management Plan*.
3. Developed acres include areas that are redeveloped or that remain unchanged.

Table 4-127 lists the impacts on each vantage point (vantage points are site-specific locations that have either been designed for or provide specific opportunities for visitors to view the scenery). All impacts would be long term in duration.

Table 4-127
Potential Impacts on Vantage Points

Vantage Point	Major Impacts of this Alternative	Intensity of Impact	Type of Impact
Tunnel View	None	Negligible	Neutral
Bridalveil Fall turnout along Southside Drive	None	Negligible	Neutral
Valley View	None	Negligible	Neutral
Dewey Point	El Capitan crossover traffic check station may be visible.	Minor	Adverse
Taft Point	El Capitan crossover traffic check station may be visible.	Minor	Adverse
Upper Yosemite Fall	63 acres less development in east Valley; the parking at Yosemite Village would be more visible. Implementation of the River Protection Overlay.	Moderate	Beneficial
Sentinel Dome	None	None	Neutral
Glacier Point	63 acres less development in east Valley; the parking at Yosemite Village would be more visible. Implementation of the River Protection Overlay.	Minor	Beneficial
El Capitan Meadow	Less crowding and the removal of parking	Minor	Beneficial
Sentinel Meadow turnout along Southside Drive	None	Negligible	Neutral
Sentinel Bridge	Parking at Yosemite Village may be visible.	Minor	Adverse
Four Mile Trail	None	Negligible	Neutral
Columbia Point	Removal of the Yosemite Falls parking lot, and less development visible in east Valley.	Moderate	Beneficial
Lower Yosemite Fall View	Improved by removal of adjacent vehicles, reduced traffic, and redesign of area.	Minor	Beneficial
Cook's Meadow	Improved by removal of Superintendent's House (Residence 1).	Minor	Beneficial

Table 4-128 lists the impacts on the 11 most important scenic features within the Valley. All impacts would be long term in duration.

Table 4-128 Potential Impacts on Scenic Features			
Scenic Feature	**Major Impacts of this Alternative**	**Intensity of Impact**	**Type of Impact**
Yosemite Falls	Crowding and traffic would be reduced; parking along Northside Drive could be eliminated.	Minor	Beneficial
Sentinel Rock	None	Negligible	Neutral
Glacier Point	None	Negligible	Neutral
Half Dome	Camp 6 parking and campground check-in station could be visible.	Minor	Adverse
North Dome	None	Negligible	Neutral
Royal Arches	Vistas near Ahwahnee Meadow would be improved by removal of the tennis courts; foreground restoration of the former Upper and Lower River Campground and the implementation of the River Protection Overlay would improve the scene. Camp 6 parking and campground check-in station could be visible.	Minor	Beneficial
El Capitan	None	None	Neutral
Bridalveil Fall	None	Negligible	Neutral
Cathedral Rock and Spires	The view from the El Capitan crossover could include the traffic check station.	Minor	Adverse
Washington Column	Vistas near Ahwahnee Meadow would be improved by removal of the tennis courts; foreground restoration of the former Upper and Lower River Campground and the implementation of the River Protection Overlay would improve the scene. Camp 6 parking and campground check-in station could be visible.	Minor	Beneficial
Three Brothers	None	Negligible	Neutral

OUT-OF-VALLEY

Under this alternative, three out-of-Valley parking facilities (Henness Ridge, El Portal, and Foresta) would be constructed, facilities at each entrance station would be expanded, housing at Wawona would be increased, and housing and administrative facilities in El Portal would be increased. The parking facility at Henness Ridge would have only a long-term, minor, adverse impact, as it would not be visible from the Wawona Road. The development of Foresta as an out-of-Valley parking location would have a long-term, minor, and adverse impact on the landscape when viewing from the Big Meadow overlook on the Big Oak Flat Road, and various locations along the Big Oak Flat Road. Increased housing in the Wawona area would have a long-term, minor, adverse impact because it would be visible only from immediately adjacent areas. The impact of placing relocated parking and administrative facilities In El Portal would be minor, long-term, and adverse because actions would be visible from Highway 140 as the visitor approaches Yosemite National Park. The expansion of entrance station facilities would be mitigated through design, and the impacts would be long-term, minor, and adverse because they would cause imperceptible changes to views at each location.

CONCLUSION

This alternative would have a long-term, minor, beneficial impact on the overall scenic quality of Yosemite Valley. There would be a net decrease of 63 acres in the development footprint within Yosemite Valley. The majority of the areas to be restored are within the A Scenic category, but

the majority of the actions would not result in a substantial improvement of scenic vistas and vantage points, as no large contiguous tract of highly valued resources would be restored.

Yosemite Valley would remain one of the world's premier landscapes. The amount of intrusion into the scenery of Yosemite Valley would be reduced and consolidated in the east Valley.

Additionally, the development of Foresta as an out-of-Valley parking location would have a minor, adverse impact on the landscape when viewing from the Big Meadow overlook on the Big Oak Flat Road, and a long-term, moderate, adverse impact when viewing from within Foresta. No visual intrusions would occur within the Tunnel View vantage point. Collectively, there would be long-term, minor, and adverse impacts in all out-of-Valley locations; however, impacts in these areas contribute directly to the improvement of the scenery within the Valley.

CUMULATIVE IMPACTS

Alternative 5, in conjunction with the impacts of reasonably foreseeable areawide projects, would result in a long-term, minor, beneficial, and cumulative impact, primarily due to the restoration of A Scenic and B Scenic resources in the Valley.

Cultural Resources

ARCHEOLOGICAL RESOURCES

Impacts to archeological resources are permanent unless otherwise noted.

As described for Alternative 2, every effort would be made to avoid archeological sites through careful project design and subsequent site-specific environmental compliance. If sites could not be avoided, all data recovery to retrieve important information would be done in accordance with the Yosemite Programmatic Agreement (see Vol. II, Appendix D).

Yosemite Valley

Yosemite Lodge and Vicinity

Impacts under this alternative would be the same as for Alternative 2. With data recovery excavations, the resultant impacts would be permanent, minor, and adverse, as well as long-term, minor, and beneficial.

Yosemite Falls

Impacts under this alternative would be the same as for Alternative 2. With data recovery excavation, resultant adverse impacts would be minor or negligible. Beneficial impacts would be minor.

Yosemite Village

Proposed undertakings include redesigning the National Park Service maintenance area; rehabilitating the Yosemite Village housing area; constructing a new fire station; removing picnic areas; and constructing a day-visitor parking lot and a transit facility. These actions would involve grading, trenching, and other earthmoving activities that would potentially disturb portions of two prehistoric/historic American Indian habitation sites. Site data potential ranges from low to

high. Data recovery to retrieve important information, conducted in accordance with the Programmatic Agreement, would reduce the intensity of adverse impacts from moderate to minor. As described for Alternatives 2, 3, and 4, the burial area in Yosemite Village currently paved and used for materials staging would be restored to a natural condition, and protected from future development. All work in the vicinity of the burial area would be designed to avoid disturbing intact deposits, and would be monitored by archeologists and representatives of culturally associated American Indian people.

Surface conditions on a portion of one site would be restored to natural conditions with the implementation of this action. As such, long-term impacts associated with the visitor use would be avoided or reduced. This would ultimately result in a minor and beneficial impact.

The Ahwahnee

Impacts under this alternative would be the same as under Alternatives 2, 3, and 4. With archeological data recovery, the resultant impact would be minor and adverse.

Housekeeping Camp

Under this alternative, removal of some of the units from Housekeeping Camp would involve grading and trenching that would potentially disturb intact deposits at a prehistoric/historic American Indian habitation site with moderate data potential. Careful project design and data recovery to retrieve important information, conducted in accordance with the Programmatic Agreement, would reduce the intensity of adverse impacts from minor to negligible.

Campgrounds

As described for Alternative 2, intact archeological deposits at ten sites would be potentially disturbed by grading, trenching, and other earthmoving activities associated with redeveloping Lower Pines and Upper Pines Campgrounds; constructing a new amphitheater at the location of the concessioner stable parking lot; constructing new walk-in, backpacker, and group campgrounds; and removing the existing Backpacker and Group Campgrounds and restoring these areas to natural conditions. These sites consist of prehistoric and historic American Indian habitation sites and campsites, ranging in data potential from low to high. Careful site design and data recovery to retrieve important information, conducted in accordance with the Programmatic Agreement, would reduce the intensity of adverse impacts from moderate to minor.

Surface conditions at two of these sites and on a portion of a third would be restored to natural conditions with the implementation of this action. As such, long-term impacts associated with visitor use would be reduced, ultimately resulting in minor, beneficial impacts to these resources.

Placement of campground facilities within the immediate vicinity of known archeological resources could result in long term, minor, adverse impacts associated with visitor use, including artifact collection and accelerated soil loss. Given the potential for these impacts, sites subject to these actions would be monitored according to the Visitor Experience and Resource Protections Program as outlined in Chapter 2. Through this monitoring program, threats and disturbances would be noted. Every effort would be made to avoid or reduce adverse impacts through changes

in visitor access, relocation of facilities, or archeological data recovery carried out according to the stipulations of the Programmatic Agreement.

Curry Village

Impacts under this alternative would be the same as for Alternatives 2, 3, and 4. With archeological data recovery, resultant impacts would be negligible.

Merced River Restoration

Removing Sugar Pine and Ahwahnee Bridges under this alternative would involve earthmoving activities that would possibly disturb a prehistoric American Indian habitation site with high data potential. If sites could not be avoided, data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information and reduce the intensity of adverse impacts from moderate to minor.

Meadow Restoration

Depending on final project design, realigning or reconstructing the roads and utilities through Bridalveil, El Capitan, and Cook's Meadows under this alternative would involve grading and trenching that would potentially disturb portions of up to four prehistoric American Indian sites (one with a historic-period American Indian component) and three other historic sites. The data potential of the prehistoric sites ranges from low to high, and the data potential of the historic sites is unknown. Data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information, thereby reducing the intensity of adverse impacts from moderate to minor or negligible.

Circulation Changes

As described for Alternative 2, constructing a vehicle check station near El Capitan crossover would involve grading that would disturb portions of a prehistoric and historic American Indian habitation site with high data potential, including historic-era deposits with unknown data potential. Through careful project design and subsequent site-specific environmental compliance, every effort would be made to avoid known archeological sites. Should this prove impossible, data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information prior to construction and would thereby reduce the intensity of adverse impacts from moderate to minor.

Realigning a portion of Southside Drive at its approach to Sentinel Bridge would involve grading that would impact a portion of a prehistoric American Indian habitation site and historic Euro-American village with moderate data potential. Data recovery, carried out in accordance with stipulations of the Programmatic Agreement, would reduce the intensity of adverse impacts from moderate to minor.

Realigning the multi-use paved trail between Yosemite Village and Mirror Lake, as described for Alternatives 2, 3, and 4, would involve minor grading that would disturb a portion of one prehistoric/historic American Indian site with high data potential. Data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information and reduce the intensity of adverse impacts from moderate to minor.

Establishing a new multi-use paved trail between the northern abutment of Sentinel Bridge and Yosemite Village would involve minor grading that could impact an archeological site exhibiting both prehistoric and historic components with high data potential. The park would strive to avoid adverse impacts by siting the trail in such a way as to avoid impacting the site. However, if such impacts were unavoidable, data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information and reduce the intensity of adverse impacts from minor to negligible.

Establishing a new multi-use paved trail between the Ahwahnee and the existing bicycle path to Mirror Lake would involve minor grading that could impact four archeological sites. All four of these sites contain both prehistoric and historic components. Three of the four have high data potential, while the fourth has moderate data potential. The park would strive to locate the trail in such a way as to avoid impacts on the site. However, if such impacts were unavoidable, data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information, and reduce the intensity of adverse impacts from minor to negligible.

Placement of multi-use paved trails within the immediate vicinity of known archeological resources could result in long-term, minor, adverse impacts associated with visitor use, including artifact collection and accelerated soil loss. Given the potential for these impacts, sites subject to these actions would be monitored according to the Visitor Experience and Resource Protection Program as outlined in Chapter 2. Through this monitoring program, threats and disturbances would be noted. Every effort would be made to avoid or reduce adverse impacts through changes in visitor access, relocation of facilities, or archeological data recovery carried out according to the stipulations of the Programmatic Agreement.

General Valley Actions

Impacts would be the same as under Alternative 2, except no group picnicking facilities would be provided at Sentinel Beach. With data recovery excavations, the resultant impact would be negligible.

In addition, developing Yellow Pine Campground for public use under this alternative would not result in any impacts to archeological resources, because no archeological resources are known in the area. Potential adverse impacts to known sites in Yosemite Valley are shown in table 4-129.

Table 4-129
Known Sites in Yosemite Valley Potentially Adversely Impacted by Implementation of Alternative 5

Number of Sites with High Data Potential	Number of Sites with Moderate Data Potential	Number of Sites with Low Data Potential	Number of Sites with Unknown Data Potential
11	12	5	4

Out-of-Valley

El Portal

The following impact analysis is based on general land-use planning actions for El Portal. As described for the other action alternatives, the National Park Service would undertake site-specific design studies and environmental review to evaluate options for new housing and

administrative facilities. These studies would include, as necessary, additional resource surveys (i.e., archeological inventory and testing). The National Park Service would initiate further consultation with the State Historic Preservation Officer, the culturally associated American Indian tribes, and the public, as provided for in the Programmatic Agreement. A complete and detailed assessment of impacts to archeological resources would be presented as part of that review.

As described for Alternatives 2, 3, and 4, several actions at Old El Portal and Village Center (constructing a multi-use paved trail, employee housing, and support facilities) would disturb or destroy portions of up to 14 prehistoric and historic-era archeological sites (11 sites have moderate data potential, one has low data potential, and two have unknown data potential). Through careful project design and subsequent site-specific environmental compliance, every effort would be made to avoid known archeological sites. If these sites could not be avoided, data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information prior to construction, and thereby reduce the intensity of adverse impacts from moderate to minor or negligible.

As described for Alternatives 2, 3, and 4, day-visitor and employee parking would be located in the Middle Road area and would involve major grading and earthmoving activities. These actions would disturb major portions of two archeological sites, one prehistoric American Indian habitation site that also contains historic-era deposits with low data potential, and one historic-era site with unknown data potential. Through careful project design and subsequent site-specific environmental compliance, every effort would be made to avoid known archeological sites. If these sites could not be avoided, data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information prior to construction, and thereby reduce the intensity of adverse impacts from moderate to minor or negligible.

Under this alternative, constructing National Park Service and concessioner administrative facilities, as well as museum collection facilities at Railroad Flat, would involve major grading, trenching, and excavation, which could disturb archeological deposits at portions of one prehistoric/historic American Indian habitation site with low data potential. Data recovery would retrieve important information and reduce the intensity of adverse impacts from minor to negligible (similar to Alternatives 2, 3, and 4).

Constructing housing facilities at Hillside East and West would involve major grading, excavation, and trenching that would destroy major portions of an intact prehistoric/historic American Indian habitation site (with some Euro-American deposits) with high data potential. A site-specific data recovery program, negotiated between the National Park Service, the California State Historic Preservation Officer, and local culturally associated American Indian tribes would recover important information, thereby reducing the intensity of adverse impacts from major to moderate.

Constructing single-family homes and a day care center in Rancheria Flat would entail grading, trenching, and excavation that would potentially disturb intact archeological deposits at two archeological site with moderate data potential. Data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information and reduce the intensity of adverse impacts from moderate to minor.

Constructing high-density housing and support facilities at Hennessey's Ranch would disturb a prehistoric American Indian habitation site and part of a historic-era ranch, both of which were heavily disturbed when the Trailer Village was constructed. Data potential of this site is unknown. Data recovery, carried out in accordance with the Programmatic Agreement, would retrieve important information and reduce the intensity of any adverse impacts.

Removing an abandoned wastewater treatment plant and restoring the area to natural conditions (as described for Alternatives 2, 3, and 4) would be carefully designed to avoid disturbance to intact areas of a prehistoric American Indian habitation site and burial area. These actions would be monitored by archeologists and representatives from culturally associated American Indian tribes, in accordance with the Programmatic Agreement, and negligible impacts to archeological resources would be expected.

Similar to Alternatives 2, 3, and 4, the Johnny Wilson Ranch (Riverside area), previously proposed for high-density housing (NPS 1996a), would not be developed. Instead, these archeological sites and burial area would continue to be relatively inaccessible.

Foresta and McCauley Ranch

As described for Alternatives 2, 3, and 4, grading and trenching associated with construction as replacement for 14 homes destroyed in the 1990 A-Rock Fire at Foresta could possibly disturb intact resources, depending on location. Rehabilitation of the Foresta Campground would also disturb archeological deposits at a portion of an intact American Indian habitation site. Data recovery, carried out in accordance with the Programmatic Agreement, would reduce the intensity of any adverse impacts. Constructing a day-visitor parking lot at Foresta would not impact any known archeological resources.

Constructing National Park Service and concessioner stables, and National Park Service parkwide trails operational facilities to McCauley Ranch would disturb archeological deposits at a portion of a large prehistoric site and historic-era ranch with unknown data potential. Improving access through Foresta to McCauley Ranch and replacing Crane Creek Bridge would possibly disturb five intact prehistoric sites and one historic dump site, all with unknown data potential. If these sites could not be avoided, data recovery, carried out in accordance with the Programmatic Agreement prior to construction, would reduce the intensity of adverse impacts.

Other Out-of-Valley Areas

Establishing day-visitor parking at Henness Ridge under this alternative would disturb two intact historic linear resources: a logging railroad grade, and a historic road. Data recovery would reduce the intensity of adverse impacts from minor to negligible.

As described for Alternatives 2, 3, and 4, reconstructing El Portal Road between the intersection of El Portal Road/Big Oak Flat Road and Pohono Bridge would involve widening the road corridor, potentially removing or disturbing a portion of a large prehistoric and historic-era American Indian habitation site with high data potential. Data recovery would reduce the intensity of adverse impacts from moderate to minor.

As described for Alternatives 2, 3, and 4, removing residences at Cascades would involve minor grading and trenching that could disturb intact deposits at one prehistoric archeological site with

unknown data potential. However, the project would be carefully designed to avoid ground disturbance in intact areas, and would be monitored by archeologists, as stipulated in the Programmatic Agreement, to ensure site protection. By implementing these measures, negligible impact to archeological resources would result.

Removing the Cascades Diversion Dam would not impact any known archeological resources (the same as under Alternatives 2, 3, and 4). Earthmoving and facility removal would be monitored by an archeologist in the event historic archeological features or artifacts associated with construction and use of the dam were discovered during removal.

As described for Alternatives 2, 3, and 4, since the location and design of visitor centers associated with park entrance stations is unknown at this time, it is not possible to predict the potential for impacts to archeological resources. The park would conduct archeological inventories, site evaluations, and data recovery as necessary, and further environmental review. In accordance with the Programmatic Agreement, the National Park Service would first seek to avoid impacts to any archeological resources, and would retrieve important scientific information at sites that could not be avoided, thereby reducing the intensity of any adverse impacts.

Archeological Resources Conclusion

Proposed project undertakings would have varied impacts on as many as 59 known archeological sites, depending on the potential of the archeological sites to yield significant information regarding prehistoric and historic lifeways, and on the nature and design of proposed development. See Chapter 3, Cultural Resources, for descriptions of low, moderate, and high data potential.

In all instances where identified sites could not be avoided and would be disturbed, the park would carry out data recovery excavations in accordance with the Programmatic Agreement to retrieve important scientific information, thereby reducing the intensity of adverse impacts. For some areas, information regarding the nature and importance of archeological resources is unknown. In these instances, the park would first inventory project areas, test/evaluate the significance of identified sites, and carry out appropriate data recovery excavations as necessary prior to construction disturbance.

Cumulative Impacts

Cumulative impacts would be the same as described under Alternative 2, except this alternative would contribute to the loss of regional archeological resources as a consequence of the disturbance or degradation of as many as 59 known archeological sites. To mitigate adverse impacts, important information contained within these sites would be recovered according to stipulations of the Programmatic Agreement. Therefore, with appropriate mitigation, the cumulative adverse impacts associated with implementation of this alternative, in conjunction with other past, present, and reasonably foreseeable future projects, would be minor.

Yosemite Valley

Yosemite Lodge and Vicinity

Impacts under this alternative would be the same as for Alternatives 2, 3, and 4. With mitigation, the resultant adverse impacts would be negligible; and beneficial impacts would be long-term and minor.

Lower Yosemite Falls

Impacts under this alternative would be the same as for Alternative 2, 3, and 4. With mitigation, the resultant adverse impacts would be negligible; and beneficial impacts would be permanent and minor.

Yosemite Village

As described for Alternatives 2, 3, and 4, rehabilitating the historic district housing area would improve habitat conditions for California black oak, a traditionally gathered resource, resulting in a negligible impact. Constructing day-visitor parking at Yosemite Village could disturb or destroy two small gathering areas, contributing resources in the Valleywide ethnographic landscape, depending on design. The National Park Service, in consultation with culturally associated American Indian tribes and in keeping with the Programmatic Agreement, would develop appropriate mitigation strategies for impacts to ethnographic resources. Such strategies could include identifying and assisting in providing access to alternative resource-gathering areas; continuing to provide access to traditional use or spiritual areas; and screening new development from traditional use areas, as well as careful site design and data recovery.

Removing facilities at the Church Bowl Picnic Area, as described for Alternative 2, would remove non-historic facilities from a historic village site, resulting in minor beneficial impacts to ethnographic resources. Removing some facilities and redesigning the National Park Service Maintenance area would restore a known burial area to natural conditions, resulting in minor, beneficial impacts to ethnographic resources.

The Ahwahnee

Impacts under this alternative would be the same as for Alternatives 2, 3, and 4. There would be no impact to ethnographic resources.

Housekeeping

Impacts under this alternative would be the same as for Alternatives 2, 3, and 4. There would be negligible impact.

Campgrounds

Redesigning Lower and North Pines Campgrounds would perpetuate development and visitor use in traditional gathering areas. Constructing new Backpacker and Group Campgrounds and a concessioner stable would bring new development to an area figuring in oral traditions as home to spirits, a contributing element of the Valleywide ethnographic landscape. Constructing a new

walk-in campground near Tenaya Creek, as in Alternatives 2, 3, and 4, would disturb or destroy a portion of one traditional gathering area, also a contributing element of the Valley-wide landscape. These actions would result in long-term, moderate, adverse impacts. The National Park Service, in consultation with culturally associated American Indian tribes, and in accordance with the Programmatic Agreement, would develop appropriate mitigation strategies for impacts to ethnographic resources. Such strategies could include identifying and helping provide access to alternative resource gathering areas, continuing to provide access to traditional use or spiritual areas, and screening new development from traditional use areas to reduce the intensity of adverse impacts from moderate to minor or negligible.

Curry Village

Impacts under this alternative would be the same as for Alternatives 2, 3, and 4. Impacts would be negligible.

Merced River Restoration

Removing Ahwahnee and Sugar Pine Bridges, as well as the raised causeway between these bridges, would have minor, beneficial impacts by partly restoring habitat in a traditional gathering area, a contributing element of the ethnographic landscape. This could allow for the recovery of traditionally used plants and enhance their availability for procurement.

Meadow Restoration

Impacts under this alternative would be the same as for Alternatives 2, 3, and 4. Impacts would be long-term, minor, and beneficial.

Circulation Changes

Constructing a traffic check station near El Capitan crossover would have minor, adverse impacts on the ethnographic landscape by disturbing a portion of a historic village area, as described for Alternative 2. Realigning Southside Drive south of Sentinel Bridge would also disturb a portion of a historic village area, as described for Alternatives 2, 3, and 4. These actions would result in minor, adverse impacts to the Valleywide ethnographic landscape. The National Park Service, in consultation with culturally associated American Indian tribes and in accordance with the Programmatic Agreement, would develop appropriate mitigation strategies for impacts to ethnographic resources. Such strategies could include recovering important archeological data, as well as using any other measures identified during consultation, which would reduce the intensity of adverse impacts from minor to negligible.

Actions and related impacts associated with construction of multi-use paved trails in eastern Yosemite Valley would not impact any ethnographic resources.

General Valley Actions

Removing parking lots and constructing multi-use paved trails and some group picnic sites at Sentinel, El Capitan and Cathedral Picnic Areas (the same as for Alternatives 2, 3, and 4) would concentrate visitor use near and possibly disturb part of a traditional site for gathering, which is a contributing element of the Valleywide ethnographic landscape. These actions would result in a

long-term, minor, adverse impact. Establishing a new picnic area in the vicinity of El Capitan would add facilities and increase visitor use in proximity to a historic village site, resulting in permanent, minor, adverse impacts to the Valleywide ethnographic landscape. The National Park Service, in consultation with culturally associated American Indian tribes and in accordance with the Programmatic Agreement, would develop appropriate mitigation strategies to reduce impacts to ethnographic resources. Such strategies could include identifying and helping provide access to alternative resource-gathering areas; continuing to provide access to traditional use areas; careful site designing and screening; recovering important archeological data; and using any other measures identified during consultation. Mitigation would reduce the intensity of adverse impacts from minor to negligible.

Developing Yellow Pine Campground under this alternative for public group campsites would increase development at a traditional use area, potentially resulting in a long-term, minor, adverse impact. The National Park Service, in consultation with culturally associated American Indian tribes and in accordance with the Programmatic Agreement, would develop appropriate mitigation strategies to reduce the intensity of impacts to ethnographic resources, from minor to negligible. Such strategies could include identifying and helping provide access to alternative resource-gathering areas.

Out-of-Valley

El Portal

As described for Alternatives 2, 3, and 4, the following impact analysis is based on general land-use planning actions for El Portal, and is based on incomplete information about the location and significance of ethnographic properties. The National Park Service would undertake site-specific design studies and environmental review to evaluate options for new housing and administrative facilities in El Portal. These studies would include, as necessary, additional resource surveys (ethnographic resources inventory and evaluation). The National Park Service would initiate further consultation with the State Historical Preservation Office, culturally associated American Indian tribes, and the public, as provided for in the Programmatic Agreement. A complete and detailed assessment of impacts to ethnographic resources would be presented as part of that review.

Constructing studio apartments at Hillside West, apartments or studios at Hillside East, and employee housing at Village Center would destroy a large portion of a historic village area, resulting in a permanent, major, adverse impact. The portions of this historic village site that are known to contain human burials would be protected from development. As described in Alternative 2, mitigation would reduce the intensity of adverse impact to moderate. Constructing single-family homes, apartments, and housing support facilities at Rancheria Flat, Hennessey's Ranch, and Old El Portal, as well as administrative and museum collection facilities at Railroad Flat, would disturb or destroy portions of at least three traditional gathering areas, resulting in long-term, minor adverse impacts. With mitigation, the resultant impacts would be negligible. Removing the abandoned wastewater treatment facility would have beneficial impacts on a prehistoric village and burial area by eliminating modern, intrusive development. To ensure protection of intact deposits and burials, this removal would be designed and implemented

carefully, and the work would be monitored by an archeologist and representatives from culturally associated American Indian tribes.

Other Out-of-Valley Areas

The proposed undertakings in Foresta, McCauley Ranch, Wawona, Henness Ridge, and park entrance stations would have unknown impacts on ethnographic resources, since there is not enough information about the location and significance of ethnographic resources to assess the nature and intensity of impacts. All proposed undertakings would be the subject of future site-specific environmental compliance. The National Park Service, in consultation with culturally associated American Indian tribes and in accordance with the Programmatic Agreement, would develop appropriate mitigating strategies for impacts to ethnographic resources.

As described for Alternatives 2 and 3, the National Park Service consulted with the American Indian Council of Mariposa County, Inc., during planning and preliminary design for the reconstruction of El Portal Road. The proposed reconstruction of the easternmost portion of the road, removal of the Cascades Diversion Dam and screenhouse, and the removal of the four Cascades residences would not impact any known ethnographic resources.

Ethnographic Resources Conclusion

Proposed undertakings would have varied adverse and beneficial impacts (from potentially major to negligible), depending in part on the nature and design of proposed development and the sensitivity of the different traditional use areas. In Yosemite Valley, proposed actions would disturb or destroy parts of up to eight traditional gathering areas; add or expand modern development at eight historic village areas; and add development in at least one area figuring in oral tradition. However, facility removal and ecological restoration would benefit up to five traditional gathering areas by enhancing conditions for plant resources; would remove modern development from three historic village areas; and would re-establish American Indian traditional uses at an individually significant historic village site. In general, actions in Yosemite Valley would have minor, adverse impacts to the Valleywide ethnographic landscape.

In El Portal, proposed actions are designed to maximize administrative, park operations, and residential development. The precise nature and intensity of adverse impacts to ethnographic resources in El Portal, Wawona, Foresta, McCauley, and other out-of-Valley areas is unknown. In El Portal, however, proposed actions would most likely have permanent, moderate to major, adverse impacts by destroying portions of historic villages and traditional gathering areas, and by adding concentrated residential use in some areas that are currently undeveloped. As in Yosemite Valley and other park areas, known burial areas would be protected from disturbance, and modern facilities in burial areas would be removed. The National Park Service would conduct an ethnographic resources inventory and evaluation for El Portal, as well as other out-of-Valley areas, and would continue consulting with culturally associated American Indian tribes to seek ways to avoid, minimize, and mitigate potential adverse impacts to ethnographic resources. These measures could include setting aside some areas for traditional uses; designing new development to avoid the most sensitive areas; screening development from traditional use areas; and directing visitor and residential use away from sensitive areas.

Cumulative Impacts

Cumulative impacts on ethnographic resources would be the same as those described for Alternatives 2, 3, and 4. Minor to moderate cumulative, adverse impacts would result from implementing this alternative, in conjunction with past, present, and reasonably foreseeable future undertakings.

CULTURAL LANDSCAPE RESOURCES (INCLUDING INDIVIDUALLY SIGNIFICANT HISTORIC SITES AND STRUCTURES)

Yosemite Valley

Natural Systems and Features

Under Alternative 5, the general pattern of development throughout the Valley and the historic relationship between the natural and built environment would be retained. Portions of the natural landscape, which has influenced the physical development in Yosemite Valley, would be rehabilitated and restored to natural conditions. The major focus of this effort would be the long-term restoration of the Merced River corridor and the rehabilitation of eight meadows that are historically significant and contribute to the Valley-wide cultural landscape. California black oak woodlands would be rehabilitated and restored to natural conditions, and general environmental restoration would enhance the historic vegetative mosaic of coniferous forest, oak woodlands, and open meadows. These actions would collectively result in a long-term, beneficial, impact to the cultural landscape of the Valley.

Historic Land Use Patterns

Historic land use patterns concentrating visitor services and administration in the east Valley would continue. The National Register Historic Districts and properties of Camp Curry, Yosemite Village, The Ahwahnee, and others would remain and continue to function as they did historically. While camping would remain in the Upper and Lower Pines Campgrounds and Camp 4 (Sunnyside Campground), relocating other Valley campgrounds currently situated along the Merced River would be a change in historic land use patterns, resulting in a minor, adverse impact.

Historic Circulation Systems

Proposed changes to circulation systems throughout Yosemite Valley would result in alterations to both Northside and Southside Drives, both contributing structures to the proposed Yosemite Valley Cultural Landscape Historic District. The proposed changes include the realignment of portions of Northside and Southside Drives, and the conversion of portions of both Northside and Southside Drives into a one-lane vehicle route and bicycle lane. A segment of Northside Drive at Yosemite Lodge would be realigned, resulting in a permanent, minor, adverse impact. The segment of Northside Drive between the east end of Yosemite Valley and El Capitan crossover would be converted to a one-lane vehicle route and bicycle lane. Since this would not change the physical road structure there would be no impact. This would not result in any physical changes to this segment of Northside Drive. The portion of Southside Drive segment

near the Yosemite Chapel would be realigned, resulting in a permanent, minor, adverse impact. The portion of Southside Drive between the east end of the Valley and El Capitan crossover would be converted to a one-lane vehicle route and bicycle lane. However, this would not result in any physical changes to this road segment, and there would be no resultant impact. The minor, adverse impacts associated with realigning portions of contributing roadways would be mitigated by documentation, according to the Programmatic Agreement, reducing the intensity of adverse impacts from minor to negligible.

Removing non-contributing roads from Ahwahnee and Stoneman Meadows would have a minor, beneficial, and permanent impact.

In general, changes to physical features and addition of new structures and facilities within the Valleywide cultural landscape would follow design guidelines consistent with the *Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation* (*Secretary's Standards*; USDOI 1983). In this manner, the potential for impacts resulting from addition of non-historic facilities would be reduced.

Historic Structures

Restoration of the Merced River would result in the removal of Sugar Pine and Ahwahnee Bridges , both listed in the National Register of Historic Places. This would result in the loss of two individually significant historic structures, resulting in a permanent, major, adverse impact. Although the physical structures would be lost, these impacts would be mitigated through documentation and salvage of historic materials, thus reducing the intensity of adverse impacts from major to moderate. Documentation of Sugar Pine and Ahwahnee Bridges has been completed, thus preserving a historical record of the resources.

The individually significant Superintendent's House (Residence 1) and its associated garage would be removed. As in Alternative 1, this would result in the loss of the historic structure; therefore there would be no additional adverse impact. However, this action would result in immediate, rather than eventual, loss. The structures and their setting have already been documented; thus, although the physical structures would be removed, a historical record of this resource has been preserved. In addition, the National Park Service would salvage historic materials as stipulated in the Programmatic Agreement.

Other historic structures that are not individually significant but contribute to the Valleywide cultural landscape would be removed. These structures consist of the concessioner stable and its associated structures, three pedestrian bridges at Lower Yosemite Fall, and riprap, wing, and check dams along the Merced River and its tributaries. In addition, four pedestrian bridges at Lower Yosemite Fall would be rehabilitated or rebuilt. These actions would result in the loss or change in contributing elements of the Valleywide landscape, resulting in a permanent, moderate, adverse impact. Although the physical structures would be lost or changed, these impacts would be mitigated through documentation, thus reducing the intensity of adverse impacts from moderate to minor.

Actions at Yosemite Lodge and Housekeeping Camp would not result in the loss of any historic structures or landscape resources, as there are no historic structures or landscape resources in either of these developed areas.

Historic Districts and Developed Areas

Yosemite Village: The historic design and spatial organization of the Yosemite Village area would be rehabilitated, resulting in the preservation of many historic structures, and redevelopment of non-contributing areas within the district. Many non-contributing structures would be removed or redesigned to be more compatible with the historic character of Yosemite Village, based on design guidelines developed in keeping with the *Secretary's Standards* (USDOI 1983). This would result in a permanent, moderate, beneficial impact. Some existing land uses would change (e.g., removing NPS stable and parkwide administration), but the types of land use historically associated with the village, such as visitor services, education, museum, and employee housing, would remain. In addition, the reestablishment of historic viewsheds from within the village and the protection of the California black oak woodland would enhance the historic character of the developed area, resulting in a permanent, minor, beneficial impact.

Construction of day-visitor parking, a transit center, and a fire station would introduce non-historic facilities adjacent to the Yosemite Village Historic District, and would require the removal of historic structures (Concessioner Headquarters Building, Village Garage and associated apartment, and the Ahwahnee Row houses and apartments) that contribute to the cultural landscape. These actions would result in the loss of historic structures and introduction of non-historic facilities, a permanent, moderate, adverse impact on the cultural landscape and the adjacent Yosemite Village Historic District. The loss of the historic structures would be mitigated by documentation, and salvage of historic materials as stipulated in the Programmatic Agreement. In this manner, a historical record would be preserved even though the structures themselves would cease to exist. In cases where historic structures would be lost, the National Park Service would first consider the possibility of relocation and adaptive reuse in another location within the park. In this manner, the intensity of adverse impacts would be reduced from moderate to minor. The potential impacts associated with introducing non-historic facilities would be reduced or avoided through the use of compatible design, scale, massing, and material, and appropriate screening.

Actions at the National Park Service maintenance area would result in the loss of the National Park Service Operations Building (Fort Yosemite) and thirteen additional historic structures that contribute to the cultural landscape. The loss of these structures would result in a moderate, adverse impact to the Valleywide landscape that would be mitigated through documentation and salvage of historic materials, as stipulated in the Programmatic Agreement. Thus, although the structures themselves would cease to exist, a historical record would be preserved, reducing the intensity of adverse impacts from moderate to minor.

In the Yosemite Village Historic District, individually contributing structures would be retained and some would be rehabilitated for adaptive reuse. The National Park Service Administration Building would be rehabilitated for a new use as a natural history museum. The Museum/Valley District Building would be rehabilitated for use solely as a cultural history museum. Rehabilitation of these structures would follow the *Secretary's Standards* (USDOI 1983), and thus would have negligible impacts on the historic structures and the district itself.

Curry Village and the Camp Curry Historic District: Actions proposed for the Curry Village developed area and the Camp Curry Historic District would result in the loss of historic

structures as well as construction of new facilities within the historic district; collectively, these actions would result in a permanent, major, adverse impact that would be reduced in intensity as described below.

The historic Curry Orchard, the Curry Orchard parking area, 277 historic guest tent cabins, Tresidder Residence, Huff House, Cabin 90 A/B, and some historic comfort stations would be removed, resulting in a permanent, major, adverse impact to the historic district. The intensity of this impact would be reduced by documentation of historic structures as described in the Programmatic Agreement. In this manner, although the physical structures would be lost, a historical record would be preserved. The resultant intensity of these adverse impacts would therefore be moderate.

Other actions in the Curry Village developed area would result in the rehabilitation and adaptive reuse of several individual historic structures. These structures consist of Mother Curry Bungalow, Stoneman Lodge, the 48 cabins-with-bath, Cottage 819, the Lounge, and the Registration Building. Rehabilitation would be accomplished in keeping with the *Secretary's Standards* (USDOI 1983); thus, there would be negligible impact to historic structures.

Construction of 204 new cabins-with-bath would add non-historic facilities within the historic district, resulting in a permanent, major, adverse impact. This impact would be partly reduced through the use of compatible design materials, thus potentially reducing the intensity of adverse impacts from major to moderate. Construction of a campground check station and recreational vehicle dump station would introduce non-historic facilities adjacent to the historic district, potentially resulting in a moderate, adverse impact. This impact would be reduced through use of compatible design and appropriate screening, thus reducing the intensity of the impact from moderate to minor.

The Ahwahnee: Removal of the historic Ahwahnee tennis courts and restoration of the California black oak woodland in this area would result in the loss of a contributing element of The Ahwahnee National Register property; a minor adverse impact. This would be partly mitigated by documentation as specified in the Programmatic Agreement, thus reducing the intensity of impact from minor to negligible. Redevelopment of the existing parking lot would result in a negligible impact. Rehabilitation of the employee dormitory would be carried out in keeping with the *Secretary's Standards* (USDOI 1983), resulting in a negligible impact.

Historic Sites

Actions at Camp 4 (Sunnyside Campground) would result in the loss of five contributing campsites, the addition of five new campsites adjacent to the historic site, and construction of employee housing facilities south of the historic site. These actions will result in a permanent moderate adverse impact. These impacts would be mitigated through documentation of resources to be removed, design of the additional campsites to be compatible with the existing historic site in terms of scale, massing, materials, and orientation, and screening the housing from the historic site. These measures would reduce the intensity of adverse impacts from moderate to minor.

Historic Orchards

The removal of Curry Orchard would result in the loss of this resource, similar to Alternative 1, therefore there would be no additional adverse impact. However, this action would result in this immediate (rather than eventual) loss. The loss of this resource would be mitigated through initiation of a genetic conservation program and documentation of the orchard; thus, a historical record and representative plants would be preserved, although the orchards would cease to exist. Maintaining Lamon and Hutchings Orchards would result in a minor, beneficial impact on the Valleywide cultural landscape.

Out-of-Valley Resources

El Portal

As described for Alternatives 2, 3, and 4, the following impact analysis is based on general land-use planning actions for El Portal area. The National Park Service would undertake site-specific design studies and environmental review to evaluate options for new housing and administrative facilities in El Portal. The National Park Service would initiate further consultation with the State Historical Preservation Office, culturally associated American Indian tribes, and the public, as provided for in the Programmatic Agreement. A complete and detailed assessment of impacts on historic properties would be presented as part of that review.

As described for Alternatives 2, 3, and 4, constructing single-family homes in Old El Portal would not impact any historic resources, nor would constructing housing and a day care center at Rancheria Flat in El Portal (the three historic National Lead Company residences would be retained).

Similar to Alternatives 2, 3, and 4, the construction of apartments at Hillside East and West would not impact any historic resources. Structures built adjacent to El Portal Chapel (the old school) would be designed to be compatible with the historical setting. Constructing high-density housing and support facilities at Hennessey's Ranch would not impact any historic structures. Prior to design, the National Park Service would inventory and evaluate the importance of potential cultural landscape features at this location, remnants of Hennessey's farming operation. If any significant resources could not be avoided in site design, the National Park Service would undertake further environmental review and impact mitigation prior to construction.

The construction of employee and day-visitor parking in the Village Center area, as well as administrative and museum collection facilities at Railroad Flat and a multi-use trail between Rancheria Flat and Village Center (through Hennessey Ranch), would not impact any historic structures (the same as under Alternatives 2, 3, and 4).

Constructing apartments and other community and commercial facilities at El Portal Village Center could impact historic resources (such as the El Portal Market, the Railroad residences, the old El Portal Store, and the El Portal Hotel). The precise nature of impacts on historic resources is unknown, pending the siting and design of the facilities. Every effort would be made to avoid or otherwise mitigate adverse impacts, (e.g., through sensitive, compatible design and the screening of modern development from historic structures). Should avoidance of adverse impacts

be impossible, documentation stipulated in the Programmatic Agreement would reduce the intensity of the adverse impacts.

As described for Alternatives 2, 3, and 4, historic El Portal Hotel would be adaptively rehabilitated or removed. Adaptive rehabilitation would be undertaken in accordance with the *Secretary's Standards* (USDOI 1983). Because removal of the individually significant historic structure would be a major, adverse impact, the National Park Service would follow stipulations of the Programmatic Agreement to reduce the intensity of the adverse impact from major to moderate.

Foresta and McCauley Ranch

At Foresta, there would be no impact to historic resources as a result of establishing day-visitor parking and constructing single-family homes. Access improvements through Foresta to McCauley Ranch, with possible replacement of the Crane Creek Bridge, could (depending upon location and design) adversely affect potential historic resources (i.e., the Foresta Road and Crane Creek Bridge) as a result of loss or significant alternation. Constructing National Park Service stables, as well as National Park Service wilderness utilities and trails maintenance facilities at McCauley, would have unknown impacts on historic resources. The National Park Service would conduct resource inventory and evaluation studies, according to stipulations of the Programmatic Agreement. The National Park Service would avoid adverse impacts to the extent possible, and would mitigate any potential adverse impacts according to stipulations in the Programmatic Agreement.

Merced River Gorge

Impacts under this alternative would be the same as for Alternatives 2, 3, and 4. With mitigation, the resultant impacts would be permanent, moderate, and adverse.

Other Areas

As described for Alternatives 2, 3, and 4, the construction of new visitor centers at the park entrance stations would have an unknown impact on historic resources. The National Park Service would conduct inventory and evaluation studies, according to stipulations of the Programmatic Agreement. The National Park Service would avoid adverse impacts to the extent possible, and would mitigate any potential adverse impacts according to the stipulations of the Programmatic Agreement.

At Wawona, constructing single-family homes would have no impacts on historic resources because there are no historic structures, sites, or landscape resources in the area proposed for housing construction.

Establishing day-visitor parking at Henness Ridge would disturb two intact historic linear resources: a logging railroad grade, and a historic road. The precise nature of impacts on the historic resources is unknown, pending the siting and design of the facilities, which would be the subject of future, tiered, site-specific environmental compliance. Every effort would be made to avoid or otherwise mitigate adverse impacts (through sensitive, compatible design). If avoidance

of adverse impacts was impossible, documentation stipulated in the Programmatic Agreement would reduce the intensity of the adverse impacts.

Cultural Landscape Resources Conclusion

Undertakings in Alternative 5 would have major to minor, beneficial and adverse impacts to the cultural landscape and historic structural resources in Yosemite Valley. Adverse impacts would result from the removal of historic structures, or from the introduction of modern facilities and development either within or adjacent to historic districts; however, new facilities would be designed to be compatible with historic structures and districts.

Many of the actions proposed in this alternative would result in an overall beneficial impact to the large-scale natural systems that historically defined the Valley floor, the Merced River Corridor, and the pattern of open meadows, California black oak woodlands, and coniferous forests. Beneficial impacts would also result from the rehabilitation of existing developed areas, particularly through rehabilitation of the Yosemite Village Historic District. This rehabilitation would incorporate adaptive use of historic structures, removal of non-contributing structures, and new development based on design guidelines to ensure compatibility with the historic district. In general, adaptively using historic buildings would enhance their long-term preservation and would be carried out in accordance with the *Secretary's Standards* (USDOI 1983).

There would be minor, adverse impacts to the Valleywide historic land use patterns as a result of changes such as relocating the river-related campgrounds from the Merced River corridor to Upper and Lower Pines, and changes within the two historic districts.

Changes proposed to the historic circulation system (minor realignments and conversion of one lane of part of Northside and Southside Drives to multi-use paved trail) in the Valley would result in a minor, adverse impact to the cultural landscape. However, the intensity of this impact would be reduced by the use of design guidelines for compatible treatment based on the *Secretary's Standards* (USDOI 1983).

The loss of individually significant historic structures and historic structures that contribute to the significance of the Valleywide cultural landscape would result in permanent, major, adverse impacts. Carrying out standard mitigation measures (e.g., HABS/HAER documentation and salvage of historic materials) under the Programmatic Agreement would reduce the intensity of adverse impacts. In addition, in some cases where historic structures would be removed, the National Park Service would first consider relocation and adaptive reuse in another location within the park.

For some project areas, the impacts on historic properties are unknown until further site-specific historic resource studies have been undertaken, and project designs have been more fully developed. In these instances, the park would carry out any necessary inventories, and evaluations of National Register significance; consultation with the State Historic Preservation Office and culturally associated American Indian tribes and the public; and treatment/mitigation as stipulated in the Programmatic Agreement prior to any construction disturbance.

Cumulative Impacts

Cumulative impacts on historic resources would be the same as under Alternatives 2, 3, and 4. In Yosemite Valley and a regional context, implementation of this alternative would result in minor, cumulative, adverse impacts in conjunction with other past, present, and reasonably foreseeable future actions.

MUSEUM COLLECTION

Under this alternative, the museum collection, research library, and archives would be moved to a new facility in the El Portal area. This facility would be constructed to meet applicable environmental and security control standards for museum collection preservation. This action would benefit the collection by locating them in one geographic area, making them easier to manage, in a facility specifically designed for collection management and preservation. Access to these materials (including ample study space) would be enhanced specifically for researchers, rather than all park visitors, since this location would be somewhat remote for general park visitors. Professional staff would not be readily available to answer the questions of casual visitors, as they are now available to do. There would be some potential for damage and loss to the collection resulting from movement in and out of storage to exhibit areas in Yosemite Valley. Overall, however, these measures would have moderate to major, beneficial impacts on the collections and public/staff use.

Museum Collection Conclusion

Housing the museum, archival, and library collections in a new, central, rehabilitated facility would have moderate to major, beneficial impacts on the materials and would significantly improve the park's effectiveness in managing and protecting these resources. Access to the materials would be enhanced for researchers, with adequate space to carry out research. The park would be able to achieve compliance with the protection and preservation guidelines and standards prescribed by the National Park Service *Museum Handbook* (NPS 1990a) and *Director's Order 28 – Cultural Resource Management* (NPS 1998l), as well as the *Draft Director's Order 24 - Standards for NPS Museum Collections Management* (NPS 1999e). While in transit from storage to exhibit in Yosemite Valley, the objects would be exposed to risk of damage.

Cumulative Impacts

This alternative would have minor, cumulative, beneficial effects on the museum collection and archival materials in conjunction with other past, present, and reasonably foreseeable future projects. Housing the resources in a central facility with adequate environmental and security control systems would assist their protection and long-term preservation. No adverse impacts to the resources would be expected other than when the objects are in transit. It is not reasonable to compare the Yosemite museum collection with that of other repositories or sites, because of the extent and unique nature of these collections. Facility upgrades and improved management of museum collections and archives within the park would incrementally add to the overall effectiveness of regional curation efforts.

SECTION 106 SUMMARY

As described for Alternatives 2, 3, and 4, under regulations of the Advisory Council on Historic Preservation (36 CFR 800.9), addressing the criteria of effect and adverse effect, undertakings proposed under this alternative have the potential to adversely affect significant historic properties. Ethnographic resources would be disturbed or destroyed by construction occurring in traditional plant-gathering areas, historic village sites, and/or places holding special sacred and spiritual significance to American Indians. Historic sites, structures, districts, and cultural landscape features would also be adversely affected by undertakings entailing substantial facility alteration or removal, or the introduction of modern non-contributing development within or in proximity to historic districts and sensitive landscape areas. To mitigate adverse effects, the park would carry out HABS/HAER documentation; the salvage of historic materials; cooperative agreement provisions for traditional plant gathering; or other suitable mitigation in accordance with the Programmatic Agreement.

Many archeological resources having varied potential to yield prehistoric and historic information would be affected by ground-disturbing activities. To avoid adverse effects to archeological resources, the park would carry out data recovery to retrieve important information, in accordance with the Programmatic Agreement.

No adverse effects to the park's museum collections and archives would result from housing materials in a central facility with adequate environmental and security controls, other than while collections are in transit and are at risk. The rehabilitation and adaptive use of historic buildings, restoration of vegetation contributing to historic settings and the cultural landscape, and the removal of non-contributing structures and landscape elements would also have no adverse effect on historic properties. Rehabilitation would be carried out in accordance with the *Secretary's Standards* (USDOI 1983).

For project areas lacking sufficient cultural resource data or design information to adequately assess effects, the park would carry out inventories; evaluate identified resources for National Register significance; and recommend avoidance or appropriate treatment/standard mitigation measures prior to construction disturbance.

Merced Wild and Scenic River

This assessment is based on the *Merced Wild and Scenic River Comprehensive Management Plan/FEIS (Merced River Plan)*, and the management elements of the *Merced River Plan*. The applicable Merced Wild and Scenic River segments are 2 (Yosemite Valley), 3A and 3B (Impoundment and Gorge), 4 (El Portal), and 7 (Wawona). See Vol. IA, Chapter 3, Affected Environment, for further discussion on the management elements of the *Merced River Plan*.

Alternatives have been assessed within a river segment with regard to their: (1) impacts on the Outstandingly Remarkable Values, the values for which the river was designated by Congress; (2) compatibility with classifications; (3) compatibility with the Wild and Scenic Rivers Act Section 7 determination process; (4) consistency with the River Protection Overlay; and (5) consistency with management zoning. The *Merced River Plan*, which established the River Protection Overlay, management zoning, Wild and Scenic Rivers Act Section 7 determination

process, and the Visitor Experience and Resource Protection framework (within the wild and scenic river boundaries), is discussed as a cumulative project.

Consistency of the *Final Yosemite Valley Plan/SEIS* alternatives with the wild and scenic river boundaries are analyzed through the analysis of *Final Yosemite Valley Plan/SEIS* consistency with the *Merced River Plan* management zoning.

YOSEMITE VALLEY (SEGMENT 2)

Outstandingly Remarkable Values Impacts

Outstandingly Remarkable Values for this segment are scenic, geologic processes/conditions, recreation, biological, cultural, and hydrologic processes. A description of the Outstandingly Remarkable Values are found in Vol. II, Appendix B. Potential impacts of this alternative are shown in table 4-130.

Actions to implement the River Protection Overlay would have beneficial impacts on the scenic, recreation, biological, cultural, and hydrologic processes Outstandingly Remarkable Values. The River Protection Overlay prescription would be an important parameter in implementing the actions listed in table 4-130.

The campground-related actions would have both beneficial and adverse impacts on the Outstandingly Remarkable Values. The campground-related actions would have an overall beneficial effect on the scenic Outstandingly Remarkable Value due to restoration of areas visible from the river. These actions would have a beneficial impact on the recreational Outstandingly Remarkable Value because camping opportunities would be retained. There would be a beneficial impact on the hydrologic processes Outstandingly Remarkable Value because of restoration of riparian areas, and because campsites would be removed from close proximity to the river. New campsites within the 100-year floodplain (e.g., Yellow Pines, North Pines, and Upper Pines Campgrounds) would be located outside of the River Protection Overlay and would have minimal, adverse impacts on the flood regime. There would be a beneficial impact on the biological Outstandingly Remarkable Value because restoration of river-related vegetation would occur within the River Protection Overlay, but also an adverse impact because radiating impacts from the campgrounds would degrade the quality of this habitat, and some river-related vegetation outside the River Protection Overlay would continue to be displaced by campsites.

The Housekeeping Camp-related actions would have a long-term, beneficial effect on the scenic Outstandingly Remarkable Value due to restoration of areas visible from the river. Removal of Housekeeping Camp units could have an adverse effect on cultural Outstandingly Remarkable Values due to potential disturbance of river-related archeological resources. The actions at Housekeeping Camp would have a beneficial impact on the biological and hydrologic processes Outstandingly Remarkable Values because restoration of riparian areas and because Housekeeping Camp lodging units would be removed from close proximity to the river. These actions would not adversely impact the recreational Outstandingly Remarkable Value because Housekeeping Camp lodging units would be retained.

Table 4-130 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
Actions to Implement River Protection Overlay					
• Remove Sugar Pine, Ahwahnee, and Yosemite Creek (pedestrian) bridges	Scenic	Potentially improves view of waterfalls, cliffs, and forest/meadow interface from the river by encouraging restoration	Long-term	NA	Minor, beneficial
• Remove campsites, and campground infrastructure from River Protection Overlay at Upper Pines, Lower Pines, North Pines, Upper River, Lower River, and Backpacker's campgrounds • Remove Housekeeping Units from River Protection Overlay • Remove parking from River Protection Overlay at Camp 6 • Remove former Superintendent's House (Residence 1) from River Protection Overlay • Remove picnic area at Swinging Bridge • Restore areas where development is removed from the River Protection Overlay • Restore River Protection Overlay near Yosemite Lodge	Biological	Condition of river-related habitats (e.g., riparian areas and meadows) would be monitored and visitor use managed; restoration of damaged habitat is encouraged	Long-term	NA	Moderate, beneficial
	Cultural	River Protection Overlay specifically accommodates preservation and protection of significant archeological sites, ethnographic resources, historic structures, and landscape features	Long-term	NA	Minor, beneficial
	Hydrologic Processes	Contributes to restoration of natural flood regime; limits unnatural erosion; stabilizes banks (where applicable); allows for the main channel to link with backwater areas, tributaries, and groundwater systems; and allows river to meander more freely (where applicable) by limiting and potentially removing facilities	Long-term	NA	Major, beneficial

Table 4-130 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
Campgrounds					
• A portion of North Pines and Lower Pines Campgrounds would be removed and the area restored • North Pines Campground remains (becomes walk-in campground) • Former Group Campground (currently abandoned) area restored to natural conditions • Backpacker Campground removed and area is restored	Scenic	Removal, construction, and/or reconstruction of facilities (i.e., construction equipment) would be visible from river	Short-term	None	Minor, adverse
	Scenic	Some new walk-in and drive-in sites would be visible from the river	Long-term	None	Minor, adverse
	Scenic	Restoration of these areas to natural conditions enhances scenic interface of river, meadow, and forest	Long-term	NA	Moderate, beneficial
	Biological	Restoration of riparian, meadow, wetland, and river-related vegetation where campgrounds are removed; visitor use of river originating from campgrounds would decrease, resulting in less trampling of riparian habitat	Long-term	NA	Minor, beneficial
• New walk-in sites constructed at Upper Pines, Camp 4 (Sunnyside Campground), Tenaya Creek, Backpackers/South Camp Campgrounds • Upper and Lower River Campgrounds restored to natural conditions, except for area of new picnic area	Biological	Removal of facilities (restrooms, lateral sewer lines, etc.) would result in disturbance to vegetation communities	Short-term	Revegetation, trenching guidelines	Negligible, adverse
	Biological	River-related vegetation at new campsites would be degraded; impacts associated with visitor use/travel would radiate from new campsites	Long-term	Fence to protect sensitive areas, campsite definition, path definition	Moderate, adverse
• Yellow Pine remains (becomes Group walk-in campground)	Cultural	Construction of new campground facilities could result in damage to river-related archeological resources and traditional use areas	Long-term	Archeological excavation & consultation	Minor, adverse
	Cultural	Removal of Upper and Lower River Campgrounds and restoration to natural conditions would improve conditions for traditional gathering	Long-term	NA	Minor, beneficial
	Cultural	Construction of campground facilities could damage traditional use areas	Long-term	Consultation	Minor, adverse
	Hydrologic Processes	Removal and restoration of campgrounds would allow the river to meander more freely; removal of facilities would contribute to restoration of the flood regime	Long-term	NA	Minor, beneficial

Table 4-130 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
	Hydrologic Processes	Some new walk-in sites and pathways at North Pines, Upper Pines, and Yellow Pine Campgrounds would be in the floodplain	Long-term	Pathways designed to minimally affect flood flow	Moderate, adverse
	Hydrologic Processes	Density of visitors at the new campsites would have radiating impacts on the riverbanks due to trampling, resulting in bank destabilization and unnatural erosion	Long-term	Fence sensitive areas, campsite definition, path definition	Minor, adverse
Lodging					
• Remove Housekeeping Camp units in River Protection Overlay and restore area	Scenic	Construction and deconstruction at Yosemite Lodge, Curry Village, and Housekeeping Camp would be visible from the river	Short-term	None	Minor, adverse
• Redevelop Yosemite Lodge area	Scenic	Restored area at Housekeeping Camp and near Yosemite Lodge would be visible from the river, providing enhanced views of interface of river, meadow, and forest	Long-term	NA	Minor, beneficial
• Remove Maple, Juniper, Laurel, Hemlock, and Alder units at Yosemite Lodge from the 100-year floodplain	Recreation	The diversity of recreational opportunities is maintained because of varied lodging opportunities	Long-term	None	Minor, beneficial
• Area where Yosemite Lodge cabins were removed is restored to natural conditions	Biological	Removal of Housekeeping Camp from the River Protection Overlay would allow restoration of riparian vegetation; visitor use of river originating from Housekeeping Camp would decrease, resulting in less trampling of riparian habitat	Long-term	NA	Moderate, beneficial
• Redevelop Curry Village area, including new lodging and parking areas	Biological	Retention of Housekeeping Camp units would result in continued radiating impacts to sensitive riparian areas and habitat fragmentation	Long-term	Fence sensitive areas; direct use to more resilient areas	Adverse impacts described in No Action Alternative continue
	Biological	There would be restoration of river-related vegetation at Yosemite Lodge	Long-term	NA	Moderate, beneficial
	Biological	Construction of lodging units would have radiating impacts (associated with visitor use) to the meadow and riparian communities nearby	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse

Table 4-130 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
	Cultural	Construction and demolition activities at Housekeeping Camp, Yosemite Lodge, and Curry Village could result in damage to archeological resources	Long-term	Archeological excavation	Minor, adverse
	Hydrologic Processes	Removal of Yosemite Lodge units from the floodplain would contribute to the restoration of the natural flood regime	Long-term	NA	Major, beneficial
	Hydrologic Processes	Construction of lodging units would have radiating impacts (associated with visitor use) to the riverbanks nearby, including bank destabilization and unnatural erosion	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse
	Hydrologic Processes	A portion of Housekeeping Camp would continue to impede flood flow	Long-term	None	Adverse impacts described in No Action Alternative continue
Roads					
• One lane of Northside Drive from Yosemite Lodge to El Capitan crossover closed to vehicles and the other lane converted to a multi-use paved trail	Scenic	Retained roads, and the vehicles on them, are visible from riverbank and river; meadows are specifically identified in the scenic Outstandingly Remarkable Value, and roads through meadows impact their scenic quality	Long-term	None	Adverse impacts described in No Action Alternative continue
• One lane of Southside Drive from El Capitan crossover to Swinging Bridge closed to vehicles, and the other lane converted to a multi-use paved trail	Biological	Construction associated with conversion of one lane of Northside and Southside Drives to multi-use trails would result in disturbance to river-related vegetation communities	Short-term	Revegetation	Minor, adverse
• Northside Drive rerouted south of Yosemite Lodge	Biological	Where roads remain, loss of riparian vegetation and river-related habitats would continue; roads interfere with water movement	Long-term	None	Adverse impacts described in No Action Alternative continue
• Retain roads at: - Southside Drive in the Bridalveil Fall Area - Stoneman Meadow - Ahwahnee Meadow - Sentinel Meadow - Cook's Meadow - El Capitan Meadow	Hydrologic Processes	Existing roads and infrastructure in meadows affect flood flow	Long-term	None	Adverse impacts described in No Action Alternative continue
	Hydrologic Processes	Rerouted Northside Drive would be in 100-year floodplain and would slightly impede flood flow (see Water Resources section of this chapter for more information)	Long-term	None	Minor, adverse

Table 4-130 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
El Portal Road Between Cascades Diversion Dam and Pohono Bridge Reconstructed					
[Note: see Segment 3A/3B for Outstandingly Remarkable Value impacts associated with removal of Cascades Diversion Dam]	Scenic	The road is visible from riverbank and river	Long-term	None	Adverse impacts described in No Action Alternative continue
	Scenic	Construction activities would be visible from the river	Short-term	None	Major, adverse
	Recreation	Improvement of the El Portal Road would decrease the possibility of its failure, and the loss of recreational opportunity that would result from road failure	Long-term	NA	Moderate, beneficial
[Note: see Segment 3A/3B for Outstandingly Remarkable Value impacts associated with removal of Cascades Diversion Dam]	Recreation	During construction, approximately 1 mile of the river would be closed to recreational use	Short-term	None	Minor, adverse
	Biological	Retention of this road would continue loss of riparian vegetation and river-related habitats	Long-term	None	Adverse impacts described in No Action Alternative continue
	Biological	Construction activities would result in a temporary loss of vegetation at staging areas and construction areas	Short-term	Revegetation of staging areas and construction areas	Minor, adverse
	Biological	Bank stabilization to protect road could result in permanent loss of river-related vegetation	Long-term	Sustainable design that allows riparian vegetation to become largely re-established	Minor, adverse
	Cultural	Reconstruction would result in loss of historic features associated with El Portal Road, and would potentially result in damage to archeological resources	Long-term	Documentation of features and archeological excavation; pursue designs that maintain road's historic character	Minor, adverse

Table 4-130 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
	Hydrologic Processes	Bank stabilization materials that support portions of this road segment are currently in the river channel, and interfere with the free-flowing condition of the river; these materials would remain in the river channel after the road is reconstructed	Long-term	Pursue designs that minimize impacts to the free-flowing condition of the river	Major, adverse
	Hydrologic Processes	Construction activities would result in temporary impediments to river and/or flood flow	Short-term	Construction occur during low flow; banks are stabilized	Minor, adverse
Bridges					
• Remove the following bridges: - Ahwahnee - Sugar Pine - pedestrian/bicycle bridge north of and parallel to the current Yosemite Creek Bridge	Biological	Where bridges are retained, loss of riparian vegetation and river-related habitats would continue	Long-term	None	Adverse impacts described in No Action Alternative continue
	Biological	At Sugar Pine and Ahwahnee Bridges, river-related environments and habitats would be restored	Long-term	NA	Moderate, beneficial
• Widen or reconstruct Swinging Bridge	Biological	At the pedestrian/bicycle bridge north of and parallel to the current Yosemite Creek Bridge, river-related environments and habitats would be restored	Long-term	NA	Minor, beneficial
• Retain the following bridges: - Housekeeping - Stoneman - Sentinel - Superintendent's - El Capitan - Clark's - Happy Isles (vehicle) - Tenaya Creek - Pohono	Biological	Displacement of riparian vegetation would occur during construction, but riparian vegetation would be restored	Short-term	NA	Negligible, beneficial
	Cultural	Removal of Sugar Pine and Ahwahnee Bridges would result in loss of important historic structures, and change in historic circulation patterns	Long-term	Structures would be documented, thus preserving a historical record	Moderate, adverse
• Convert Yosemite Creek vehicle bridge to multi-use trail bridge	Cultural	Removal of Sugar Pine Bridge may result in damage to archeological resources	Long-term	Archeological documentation	Minor, adverse
• Construct new vehicle bridge at Yosemite Creek (south of existing bridge)	Hydrologic Processes	Reconstruction of Swinging Bridge would improve the hydrologic function at the river by decreasing the footprint in the river at the bridge abutments and pilings	Long-term	NA	Minor, beneficial

Table 4-130 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
[Note: See "Water Resources" section of this chapter for additional information on bridges and the different impact of each bridge.]	Hydrologic Processes	At Stoneman, Superintendent's, and Housekeeping Bridges, the river is prevented from meandering; scouring and unnatural channeling continues; flood flow is impeded	Long-term	None	Adverse impacts described in No Action Alternative continue
	Hydrologic Processes	At Sentinel, Clark's, Happy Isles (vehicle), El Capitan, Yosemite Creek, and Tenaya Creek Bridges, the river is prevented from meandering, scouring and unnatural channeling continues, flood flow is impeded	Long-term	None	Adverse impacts described in No Action Alternative continue
	Hydrologic Processes	At Pohono Bridge, the river is prevented from meandering; scouring and unnatural channeling continues; flood flow is impeded	Long-term	None	Adverse impacts described in No Action Alternative continue
	Hydrologic Processes	Removal of Ahwahnee and Sugar Pine Bridges would contribute to the restoration of the natural flood regime, reduce scouring, and allow the river to more freely meander	Long-term	NA	Major, beneficial
	Hydrologic Processes	A new bridge across Yosemite Creek could impact the creek bank and could impede flood flow	Long-term	Design would minimize hydrologic impacts	Minor, adverse
	Hydrologic Processes	During bridge removal or construction, river flows would be affected	Short-term	None	Minor, adverse
Lamon Orchard Remains, is Maintained as a Historic Orchard					
	Cultural	Rehabilitates and maintains important historic site	Long-term	NA	Moderate, beneficial
	Biological	Degradation of meadow and wetland vegetation continues due to filling and ditching	Long-term	None	Adverse impacts described in No Action Alternative continue
	Hydrologic Processes	Orchard is in floodplain, although impact to flood flow is imperceptible	Long-term	None	Adverse impacts described in No Action Alternative continue

Table 4-130 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
Stock Use and Facilities					
• Concessioner stable removed from Merced Wild and Scenic River boundary (relocated to vicinity of Curry Village) • Private stock use continues; guided trail rides continue	Biological	Stock use spreads non-native species invasive plant and contributes to water quality degradation, which impacts riparian vegetation and river-related environments – these impacts would continue; degradation of water quality via introduction of organic matter originating from stock continues	Long-term	None	Adverse impacts described in No Action Alternative continue
	Cultural	Removal of stable would result in a loss of historic structure	Long-term	Structures would be documented	Minor, adverse
	Hydrologic Processes	Facilities removed from floodplain contribute to the restoration of natural flood regime	Long-term	NA	Moderate, beneficial
Historic Superintendent's House (Residence 1) Removed and Area Restored					
	Biological	Removal of buildings and restoration of site would benefit adjacent river-related vegetation	Long-term	NA	Minor, beneficial
	Cultural	Removal would result in the loss of an important river-related historic structure	Long-term	Structures would be documented	Moderate, adverse
	Hydrologic processes	Removal of buildings would contribute to restoration of flood regime	Long-term	NA	Major, beneficial
Picnic Areas (East Yosemite Valley)					
• Retain Sentinel Picnic Area	Scenic	Redeveloped Sentinel Picnic Area is visible from the river	Long-term	None	Minor, adverse
• Remove Swinging Bridge and Church Bowl Picnic Areas	Biological	Degradation of riparian vegetation and river-related habitats would continue at Sentinel Picnic Area	Long-term	None	Adverse impacts described in No Action Alternative continue
• Construct new picnic areas at Yosemite Village, Lower River area, and Curry Orchard	Biological	Construction of new picnic areas at Yosemite Village, Lower River area, and Curry Orchard may result in loss of river-related vegetation and radiating impacts (social trails, etc.), particularly at Lower River given its proximity to the river	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse
	Biological	Removal and restoration of Swinging Bridge picnic area would benefit river-related environments and habitats	Long term	NA	Moderate, beneficial

Table 4-130 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
	Hydrologic Processes	Construction of new picnic area at Lower River may result in bank destabilization due to radiating impacts (soil compaction, loss of riparian vegetation, etc.)	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse
	Hydrologic Processes	Removal and restoration of Swinging Bridge Picnic Area would stabilize riverbank and restore hydrologic processes by allowing restoration of riparian vegetation	Long-term	NA	Moderate, beneficial
Parking (East Yosemite Valley)					
• 550 parking spaces are located at Yosemite Village (Camp 6), and area within River Protection Overlay restored to natural conditions	Scenic	New parking at Camp 6 would be visible from the river	Long-term	Design would minimize visual impacts	Minor, adverse
• Retain administrative parking at Sentinel Bridge	Scenic	Some parking would be removed from the River Protection Overlay at Camp 6 and less development would be visible from the river	Long-term	NA	Minor, beneficial
• Parking for Yosemite Lodge guests constructed in previously disturbed area in floodplain	Scenic	Sentinel Bridge Parking Area is visible from the riverbank	Long-term	None	Adverse impacts described in No Action Alternative continue
	Biological	Some parking at Camp 6 would be removed from the River Protection Overlay, allowing for restoration of a riparian area	Long-term	NA	Minor, beneficial
	Biological	Parking at Sentinel Bridge would continue to affect riparian area and fragment habitat	Long-term	None	Adverse impacts described in No Action Alternative continue
	Cultural	New parking at Yosemite Lodge would disturb traditional gathering areas	Long-term	Consultation	Minor, adverse
	Hydrologic Processes	New Camp 6 parking would be in 100-year floodplain and would slightly alter flood flow	Long-term	None	Minor, adverse
	Hydrologic Processes	Some new parking at Yosemite Lodge would be in 100-year floodplain and would slightly alter flood flow	Long-term	None	Negligible, adverse
	Hydrologic Processes	Removal of Camp 6 parking from close proximity to river would benefit river processes: meandering, and bank stabilization (through restoration of riparian vegetation)	Long-term	NA	Moderate, beneficial

Table 4-130 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
	Hydrologic Processes	Parking at Sentinel Bridge is in floodplain and would imperceptibly alter flood flow	Long-term	None	Adverse impacts described in No Action Alternative continue
Yosemite Village					
• Retain and rehabilitate Valley Visitor Center in existing location	Scenic	Construction activities at Yosemite Village would be visible from the river	Short-term	None	Minor, adverse
• Redevelop substantial portion of Yosemite Village	Biological	As a center of visitor activity, there would be radiating impacts to river-related habitats from visitor use	Long-term	Fence sensitive areas; direct use to more resilient areas	Minor, adverse
	Cultural	Redevelopment of Yosemite Village could disturb river-related archeological resources	Long-term	Archeological excavation	Minor, adverse
	Hydrologic Processes	A small area in Yosemite Village (former location of Concessioner Headquarters) would be redeveloped in the 100-year floodplain, and would slightly alter flood flow	Long-term	None	Minor, adverse
Trails					
• Construct/realign trails: - along Sentinel crossover between Southside Drive multi-use trail to Yosemite Village via Sentinel Bridge - in Upper and Lower River Campgrounds areas [Note: See also Roads for discussion of multi-use trails at Northside and Southside Drives.]	Biological	Loss of vegetative cover and habitat fragmentation associated with new/realigned trails	Long-term	None	Minor, adverse
	Hydrologic Processes	Segments of new multi-use trail would be within the floodplain, although impact to flood flow would be imperceptible	Long-term		Negligible, adverse

Table 4-130 Impacts to Outstandingly Remarkable Values for Segment 2 (Yosemite Valley)					
Action	**ORV Affected**	**Impact to Outstandingly Remarkable Value**	**Impact Duration**	**Potential Mitigation**	**Impact Magnitude with Mitigation**
West Valley Development (West Of Yellow Pine)					
(see also River Protection Overlay, Parking, Trails, Traveler Information and Traffic Management System, and El Portal Road)	Biological	Redevelopment of Cathedral Picnic Area could disturb riparian vegetation	Long-term	Revegetate	Minor, adverse
• Parking at Bridalveil Fall, Southside Drive in the Bridalveil Fall area, Northside Drive through El Capitan Meadow, and other smaller areas discontinued	Biological	Loss or degradation of river-related vegetative cover increases at some designated trails, social trails, roads (i.e., radiating impacts)	Long-term	None	Minor, adverse
• Cathedral and El Capitan Picnic Areas redeveloped; new picnic area constructed at base of El Capitan in the vicinity of the North American Wall	Cultural	Constructing picnic area at North American Wall could disturb river-related archeological deposits and historic American Indian village	Long-term	Archeological excavation	Minor, adverse
Traveler Information and Traffic Management System Developed					
• Multi-lane traffic check station constructed on Southside Drive near El Capitan crossover, only if required	Biological	Construction of traffic check station would result in loss of river-related vegetation	Long-term	None	Minor, adverse
	Cultural	Construction of traffic check station would damage river-related archeological deposits and traditional gathering areas	Long-term	Archeological excavation	Moderate, adverse

NA = Not Applicable

Actions at Yosemite Lodge have beneficial and adverse impacts on the Outstandingly Remarkable Values. The removal of Yosemite Lodge units, and restoration of the former cabins area and the area between Yosemite Lodge and the Merced River would have a beneficial impact on the biological and hydrologic processes Outstandingly Remarkable Values. The relocation of Northside Drive and construction of parking would have a minor, adverse impact on the hydrologic processes Outstandingly Remarkable Value because they would be placed in the 100-year floodplain, and would alter the 100-year flood event. Also, an indirect beneficial impact would occur because lodging units (which impede flood flow more than roads and parking lots) can be constructed outside of the boundary. As described in the Water Resources section of this chapter, impacts to hydrologic processes would be minimal because flood flow in this area is low velocity, and is not appreciably affected by parking areas or roads. The construction of lodging units would result in minor, adverse, radiating impacts on the meadow and riparian communities inside the boundary.

At Curry Village, cultural Outstandingly Remarkable Values could be adversely affected due to potential disturbance of river-related archeological resources during Curry Village redevelopment. There would be no impact on the hydrologic processes Outstandingly Remarkable Value, because Curry Village is located outside of the floodplain. There would be minor, adverse radiating impacts on river-related vegetation due to trampling.

Reconstruction of the El Portal Road between Pohono Bridge and Cascades Diversion Dam and removal of Cascades Diversion Dam would have both beneficial and adverse impacts on the Outstandingly Remarkable Values (see discussion of dam removal in Segment 3A/3B). The existing road has localized, adverse impacts on the biological Outstandingly Remarkable Value because it displaces river-related vegetation, and to the hydrologic processes Outstandingly Remarkable Value because riprap that supports the road is partially in the river channel. However, since this road segment provides a critical visitor access link, its reconstruction would also be beneficial to the recreation Outstandingly Remarkable Value by maintaining access to Yosemite Valley. [Note: These two actions span river Segments 2, 3A and 3B.]

Removal of bridges would have both beneficial and adverse impacts on the Outstandingly Remarkable Values. These actions would have beneficial impacts on the biological Outstandingly Remarkable Value because the riverbank can be restored, and substantial, beneficial impacts on the hydrologic processes Outstandingly Remarkable Value because the free-flowing condition of the river would be improved, and the river would have increased ability to meander. These actions would have adverse impacts on the cultural Outstandingly Remarkable Value because they result in the loss of important historic structures, and change historic circulation patterns.

The continuation of parking at Camp 6 would have both beneficial and adverse impacts on the Outstandingly Remarkable Values. Removal of parking from close proximity to the river would result in a beneficial impact on the scenic, biological, and hydrologic processes Outstandingly Remarkable Values. Expansion of parking in an area that is already disturbed would have adverse impacts on the biological and hydrologic processes Outstandingly Remarkable Values.

Actions at Yosemite Village would have adverse effects on scenic Outstandingly Remarkable Values because redevelopment activities would be visible from the river. Hydrologic Outstandingly Remarkable Values would be adversely affected due to redevelopment of a small

area of Yosemite Village (not including Camp 6) in the 100-year floodplain. There would be radiating impacts on river-related vegetation due to density of visitor use in the area.

Development of a traffic check station at Taft Toe would have adverse impacts on the Outstandingly Remarkable Values. Construction of a traffic check station would have an adverse effect on the cultural Outstandingly Remarkable Value, since it would damage river-related archeological deposits and traditional gathering areas.

There would continue to be an absence of major development in west Yosemite Valley. Development would be limited to existing roads and parking areas, trails, and a few picnic areas. As a result, limited adverse effects on Outstandingly Remarkable Values would occur in this area, including loss of vegetation and intrusion of new facilities on scenic views, and potential disturbance of river-related cultural resources.

Yosemite Valley (Segment 2) Conclusion

For the actions of this alternative, a long-term, minor, beneficial impact is described for the Outstandingly Remarkable Values, largely due to the removal of facilities that impede flood flow and inhibit the natural meandering of the river; the restoration of substantial areas of high-value resources in the River Protection Overlay and wild and scenic river corridor; the improvement of the scenic interface of river, rock, meadow, and forest; and the maintenance of the diversity of river-related recreational opportunities. The beneficial impact of this alternative is somewhat offset by the adverse impact on the cultural Outstandingly Remarkable Value resulting from the removal of historic structures and potential disturbance of river-related archeological resources.

Segment-wide, this alternative would have a long-term, minor, beneficial impact on the scenic Outstandingly Remarkable Value because of the removal of many facilities visible from the river or riverbank, and improvement of the scenic interface of river, rock, meadow and forest via restoration, campground removal, and road removal/relocation. However, for facilities that are to remain or be redeveloped, some adverse scenic impacts would continue, although to a lesser degree than under the No Action Alternative.

Segment-wide, there are no impacts to the geologic processes/conditions Outstandingly Remarkable Value, because of the absence of actions affecting the U-shaped valley, and moraines of Yosemite Valley. Impacts related to the meandering river are discussed in the Water Resources section of this chapter.

Segment-wide, there would be a long-term, moderate, beneficial impact on the recreation Outstandingly Remarkable Value because the diversity of river-related recreational opportunities would be maintained.

Segment-wide, there would be a long-term, minor, beneficial impact on the biological Outstandingly Remarkable Value because of the reduction of facilities in general, and the restoration of riparian areas and meadows in particular. Although construction of several new facilities (e.g., campsites, roads, multi-use paths, and picnic areas) would pose some adverse, localized impacts on the biological Outstandingly Remarkable Value, these impacts are outweighed by the substantial restoration actions that would take place throughout this segment.

Segment-wide, there would be long-term, minor to moderate, adverse impact on the cultural Outstandingly Remarkable Value because of the removal of river-related historic structures, and potential disturbance of river-related archeological resources. The historic structures that are being removed, particularly bridges, adversely affect the hydrologic processes Outstandingly Remarkable Value, and their removal would have major, beneficial impacts on the hydrologic processes Outstandingly Remarkable Value, and contribute substantially to the restoration of the free-flowing condition of the river.

Segment-wide, there would be long-term, minor, beneficial impact on the hydrologic processes Outstandingly Remarkable Value because of the removal of structures that impede flood flow or inhibit the natural meandering of the river, and the restoration of areas in the Merced River corridor. Removal of structures would contribute substantially to the restoration of the free-flowing condition of the river, and would further the policy established by Congress in the Wild and Scenic Rivers Act to preserve designated rivers in their free-flowing condition. New facilities within the floodplain would have minimal, adverse impacts on the flood regime.

The National Park Service would exert its best efforts to design and reconstruct the El Portal Road between Cascades Diversion Dam and Pohono Bridge with few, if any, additional impacts on the free-flowing condition of the river. If it proves infeasible to design and construct the road in a manner that would avoid direct and adverse impacts to the values for which the river was designated, the National Park Service would report to Congress in accordance with Section 7 of the Wild and Scenic Rivers Act. In either case, further site-specific environmental compliance, including compliance with Section 7 of the Wild and Scenic Rivers Act, would be undertaken for this project.

Cumulative Impacts

Impacts to the Outstandingly Remarkable Values would occur as a result of other past and reasonably foreseeable future actions (see Vol. II, Appendix H for the list of cumulative projects considered in this analysis).

Past Actions

The Merced Wild and Scenic River Comprehensive Management Plan (NPS) established the River Protection Overlay, management zoning, and the Visitor Experience and Resource Protection framework inside the wild and scenic river boundaries. The River Protection Overlay is implemented through this plan, and its beneficial impacts on the Outstandingly Remarkable Values have been assessed as part of the impacts of this alternative. This project also establishes management zoning, which does not directly impact the Outstandingly Remarkable Values. The Visitor Experience and Resource Protection process was designed to protect resources and the visitor experience, and would have a beneficial impact by focusing on protection of Outstandingly Remarkable Values. The Visitor Experience and Resource Protection framework would have a long-term, moderate, beneficial effect on Outstandingly Remarkable Values in this segment.

In 1991, the U.S. Forest Service and the Bureau of Land Management developed a joint South Fork and Merced Wild and Scenic River Implementation Plan (USFS and BLM) for the segments of the main stem and South Fork of the Merced River that are under their jurisdiction.

The plan is a general management plan with many prescriptive goals and few actions. The South Fork and Merced Wild and Scenic River Implementation Plan does not affect the Outstandingly Remarkable Values of this segment.

Reasonably Foreseeable Future Actions

The National Park Service proposes to reconstruct the trail from Happy Isles to Vernal Falls (NPS). This project would have a beneficial impact on the recreation Outstandingly Remarkable Value due to the provision of an improved trail between Happy Isles and Vernal Falls, which contributes to a spectrum of river-related recreational activities. The net effect of this project would be a long-term, minor, beneficial impact on Outstandingly Remarkable Values.

The Eagle Creek Ecological Restoration project (NPS) would restore the confluence of Eagle Creek with the Merced River, and remove rip-rap at the confluence and along the creek. This project would have a long-term, moderate, beneficial impact on the hydrologic processes and biological Outstandingly Remarkable Values.

The past and reasonably foreseeable future projects would have a long-term, moderate, beneficial effect on Outstandingly Remarkable Values due to the establishment of the *Merced River Plan* Visitor Experience and Resource Protection framework; improved river-related recreation opportunities from Happy Isles to Vernal Falls; and restored riparian habitat and hydrologic processes at the Eagle Creek and Merced River confluence.

For the actions of this alternative, a long-term, minor, beneficial impact is described for the Outstandingly Remarkable Values, largely due to the removal of facilities that impede flood flow and inhibit the natural meandering of the river; the restoration of substantial areas of highly valued resources in the River Protection Overlay and wild and scenic river corridor; the improvement of the scenic interface of river, rock, meadow, and forest; and the maintenance of the diversity of river-related recreational opportunities. The cumulative projects would have a long-term, moderate, beneficial effect on Outstandingly Remarkable Values due to the establishment of the *Merced River Plan* Visitor Experience and Resource Protection framework; improved river-related recreational opportunities from Happy Isles to Vernal Falls; and restored riparian habitat and hydrologic processes at the Eagle Creek and Merced River confluence. When the impacts of all of the past and reasonably foreseeable future actions described above are considered in combination with the expected impacts on the Outstandingly Remarkable Values from this alternative, long-term, moderate, beneficial effects on the Outstandingly Remarkable Values of this segment would likely result.

Consistency with the Merced River Plan

Similar to Alternative 2, the actions of this alternative in this segment of the Merced Wild and Scenic River would comply with the *Merced River Plan* and be consistent with its management elements. The collective actions would be consistent with the classification of this segment because accessibility by road or trail would be essentially unchanged and the amount of development in the watershed and on the shorelines would not substantially change, although development on the shorelines would be reduced through removal of facilities in the River Protection Overlay. The individual actions that are considered to be water resources projects,

such as removal of bridges, would be subject to the Section 7 determination process. The River Protection Overlay would be implemented and individual actions would be compatible with the River Protection Overlay prescription, with many facilities being removed from the River Protection Overlay. The individual actions would be consistent with the respective management zones established in the *Merced River Plan*. Some actions, such as the removal of infrastructure from the former Rivers Campground, remove existing facilities or uses that do not conform with the corresponding management zone prescriptions.

IMPOUNDMENT (SEGMENT 3A) AND GORGE (SEGMENT 3B)

Outstandingly Remarkable Values Impacts

Outstandingly Remarkable Values identified for the recreational impoundment segment of the river are geologic processes/conditions, and biological. Outstandingly Remarkable Values identified for the scenic gorge segment of the river are scenic, geologic processes/conditions, recreation, biological, cultural, and hydrologic processes. A description of the Outstandingly Remarkable Values is found in Vol. II, Appendix B.

The impacts of this alternative on the Outstandingly Remarkable Values for this segment would be the same as under Alternative 2 (see Alternative 2, table 4-40, for more details).

Impoundment (Segment 3A) and Gorge (Segment 3B) Conclusion

The impacts of this alternative on the Outstandingly Remarkable Values for this segment would be the same as under Alternative 2. This alternative would have a long-term, moderate to major, beneficial impact on Outstandingly Remarkable Values, largely because the removal of Cascades Diversion Dam and implementation of the River Protection Overlay would substantially improve the free-flowing condition of the river; enhance riparian habitat and rainbow trout movement; and improve views of waterfalls and cliffs. This beneficial impact is somewhat offset by adverse impacts on cultural Outstandingly Remarkable Values associated with the increased risk of damage to historic engineering projects resulting from Cascades Diversion Dam removal, and the removal of Cascades Houses (see Alternative 2 for more details).

Cumulative Impacts

Cumulative impacts under this alternative would be the same as under Alternative 2. For the actions of this alternative, a long-term, moderate to major, beneficial impact is described for these Outstandingly Remarkable Values, largely because the removal of Cascades Diversion Dam and implementation of the River Protection Overlay would substantially improve the free-flowing condition of the river; enhance riparian habitat and rainbow trout movement; and improve views of waterfalls and cliffs. The cumulative projects would have a long-term, minor, adverse impact, largely through introduction of stabilization materials and loss of riparian vegetation. When the impacts of all past and present actions described above are considered in combination with the expected impacts on the Outstandingly Remarkable Values from this alternative, long-term, moderate, beneficial effects to the Outstandingly Remarkable Values of these segments would likely result (see Alternative 2 for more details).

Consistency with the Merced River Plan

The consistency analysis for this alternative would be the same as under Alternative 2. Similar to Alternative 2, the actions of this alternative in this segment of the Merced Wild and Scenic River would comply with the *Merced River Plan*, and would be consistent with its management elements. The collective actions are consistent with the classification of this segment because accessibility by road or trail is essentially unchanged, and the amount of development in the watershed and on the shorelines does not substantially change. The removal of the Cascades Diversion Dam is consistent with the recreational classification of the impoundment segment, and would allow this small segment of river to be classified as scenic. The individual actions that are considered to be water resources projects, such as removal of the Cascades Diversion Dam, would be subject to the Section 7 determination process. The River Protection Overlay is being implemented, and individual actions are compatible with the River Protection Overlay prescription, including the removal of the Cascades Diversion Dam. The individual actions are consistent with the respective management zones established in the *Merced River Plan*.

EL PORTAL (SEGMENT 4)

Outstandingly Remarkable Values Impacts

Outstandingly Remarkable Values identified for this recreational segment of the river are geologic processes/conditions, recreation, biological, cultural, and hydrologic processes.

The impacts of this alternative to the Outstandingly Remarkable Values for this segment would be the same as under Alternative 2 (see Alternative 2, table 4-41, for more details).

El Portal (Segment 4) Conclusion

The impacts of this alternative to the Outstandingly Remarkable Values for this segment would be the same as under Alternative 2. For the actions of this alternative, a long-term, minor, beneficial impact is described for the Outstandingly Remarkable Values of this segment, largely because implementation of the River Protection Overlay would limit development on the riverbank, and contribute to the restoration of sensitive riparian vegetation communities (e.g., at Hennessey's Ranch). In addition, the recreation Outstandingly Remarkable Value would be beneficially affected by improved hiking opportunities along the river. The beneficial impact on Outstandingly Remarkable Values for this segment has been offset by the adverse impacts on the cultural Outstandingly Remarkable Value due to possible loss of historic structures, and possible disturbance of archeological sites (standard cultural resource mitigation measures lessen the magnitude of the cultural resources impacts). (See Alternative 2 for more details.)

Cumulative Impacts

Cumulative impacts under this alternative would be the same as under Alternative 2. For the actions of this alternative, a long-term, minor, beneficial impact is described for the Outstandingly Remarkable Values of this segment, largely because implementation of the River Protection Overlay would limit development on the riverbank, and contribute to the restoration of sensitive riparian vegetation communities (e.g., at Hennessey's Ranch). In addition, the recreation Outstandingly Remarkable Value would be beneficially affected by improved hiking

opportunities along the river. The past and reasonably foreseeable future projects would have a long-term, minor, adverse effect on Outstandingly Remarkable Values due to the adverse impacts on biological and cultural Outstandingly Remarkable Values resulting from the Yosemite View Parcel Land Exchange (NPS), largely due to motel construction in close proximity to the river. The adverse impacts resulting from the loss of riparian vegetation associated with the Yosemite View Parcel Land Exchange would outweigh the potential beneficial impact of this alternative resulting from the enhancement/restoration of existing (albeit degraded) riparian habitat in the River Protection Overlay. Consequently, when the impacts of all of the past and reasonably foreseeable future actions described above are considered in combination with the expected impacts on the Outstandingly Remarkable Values from this alternative, long-term, negligible, adverse effects to the Outstandingly Remarkable Values of this segment would likely result (see Alternative 2 for more details).

Consistency with the Merced River Plan

The consistency analysis for this alternative would be the same as under Alternative 2. Similar to Alternative 2, the actions of this alternative in this segment of the Merced Wild and Scenic River comply with the *Merced River Plan*, and would be consistent with its management elements. The collective actions are consistent with the classification of this segment because accessibility by road or trail is essentially unchanged, and the amount of development in the watershed and on the shoreline does not substantially change. The individual actions that are considered to be water resources projects, such as construction of pedestrian bridges, would be subject to the Section 7 determination process. The River Protection Overlay is being implemented, and individual actions are compatible with the River Protection Overlay prescription, including the removal of Cascades Diversion Dam. The individual actions are consistent with the respective management zones established in the *Merced River Plan*. Some actions, such as the removal of infrastructure from the former Rivers Campground, remove existing facilities or uses that do not conform with the corresponding management zone prescriptions.

WAWONA (SEGMENT 7)

Outstandingly Remarkable Values Impacts

Outstandingly Remarkable Values identified for this scenic segment of the river are scenic, recreation, biological, and cultural.

The impacts of this alternative on the Outstandingly Remarkable Values for this segment would be the same as under Alternative 2 (see Alternative 2, table 4-42, for more details).

Wawona (Segment 7) Conclusion

The impacts of this alternative on the Outstandingly Remarkable Values for this segment would be the same as under Alternative 2. For the actions of this alternative, a long-term, minor, beneficial impact would result for the Outstandingly Remarkable Values of this segment due to the beneficial effects of implementing the River Protection Overlay, including restoration of damaged riparian habitat; improvement of scenic views of Wawona Dome from the river; enhanced public enjoyment of restored resources; and protection of cultural resources. The

beneficial effects of implementing the River Protection Overlay have been somewhat offset by the adverse effects associated with the construction of new employee housing in Wawona (see Alternative 2 for more details).

Cumulative Impacts

Cumulative impacts under this alternative would be the same as under Alternative 2. For the actions of this alternative, a long-term, minor, beneficial impact would result for the Outstandingly Remarkable Values of this segment due to the beneficial effects of implementing the River Protection Overlay, including restoration of damaged riparian habitat; improvement of scenic views of Wawona Dome from the river; enhanced public enjoyment of restored resources; and protection of cultural resources. The past and reasonably foreseeable future projects would have a long-term, minor, beneficial impact on the Outstandingly Remarkable Values of this segment due to the implementation of the *Merced River Plan* Visitor Experience and Resource Protection framework; the reduction of development on the riverbank and restoration of habitat associated with the South Fork Merced River Bridge Replacement (NPS); and the relocation of campsites outside the River Protection Overlay and maintenance of a diversity of river-related recreational activities associated with the Wawona Campground Rehabilitation (NPS). When the impacts of all of the past and reasonably foreseeable future actions described above are considered in combination with the expected impacts to the Outstandingly Remarkable Values from this alternative, a long-term, minor, beneficial impact on the Outstandingly Remarkable Values would result (see Alternative 2 for more details).

Consistency with the Merced River Plan

Similar to Alternative 2, the actions of this alternative in this segment of the Merced Wild and Scenic River would comply with the *Merced River Plan* and be consistent with its management elements. The collective actions would be consistent with the classification of this segment because accessibility by road or trail would be essentially unchanged and the amount of development in the watershed and on the shorelines would not substantially change. The individual actions that are considered to be water resources projects would be subject to the Section 7 determination process. The River Protection Overlay would be implemented and individual actions would be compatible with the River Protection Overlay prescription. The individual actions would be consistent with the respective management zones established in the *Merced River Plan*.

Visitor Experience

Visitor experience is also directly affected by actions influencing natural resources such as, air quality, scenic resources, and cultural resources. Though impacts to these resources are not repeated in the analysis of visitor experience, enhancement or degradation of these resources also enhances or degrades the quality of the visitor experience.

ACCESS

Access to Yosemite Valley

Access to Yosemite Valley by private automobile to east Valley parking would be available to only about 30% of day visitors on a typically busy day (using 1998 visitation levels). Overnight visitors would continue to have the option of driving into the Valley or traveling on tour buses or other modes of travel. Under this alternative, day visitors who could not park in the Valley would have the option to ride shuttle buses to the Valley from parking areas at Henness Ridge, Foresta, or El Portal, or they would ride tour buses or regional transit. Major, adverse impacts to the experiences of a majority of day visitors would result from a reduction in the ability to make spontaneous stops en route to the Valley, extra travel time, and the inconvenience of moving personal items to and from bus stops.

Alternative 5 would provide facilities and services designed to accommodate visitation levels on the majority of summer days. However, day-visitor demand would exceed the capacity of the parking areas on 10 days during the peak season. On these days, some visitors would not be able to find parking in the Valley or at the out-of-Valley parking areas. These visitors would have the option of visiting another part of the park; traveling on existing regional transit and other transportation modes; or visiting the Valley at a different time or on another day. Adequate infrastructure would be in place to accommodate visitor parking in the Valley, in-park shuttles, regional transit, and commercial tour buses, as described for Alternatives 2, 3, and 4.

Access to the Valley by private vehicles would be managed through a traveler information and traffic management system. Impacts would be the same as for Alternatives 2, 3, and 4. Overall, the average visitor would experience a minor increase in the time required to travel to the Valley, compared to Alternative 1.

As described for Alternatives 2, 3, and 4, reconstructing the segment of El Portal Road between Pohono Bridge and the intersection with Big Oak Flat Road (the major access to the Valley) would cause short-term, minor, adverse impacts such as traffic delays for many visitors during construction. Short-term, adverse impacts associated with constructing Valley access routes and implementing the traveler information and traffic management system would include detours, having to learn new routes, and having to learn new procedures as they were phased in. Compared to Alternative 1, these impacts would be of negligible intensity.

Circulation within Yosemite Valley

Access by private vehicle to many Valley destinations would be eliminated, as described for Alternatives 2, 3, and 4. Once their vehicles were parked in a day-visitor lot or lodging area, visitors would be encouraged to leave them parked until they left the Valley. Compared to Alternative 1, the location of day-visitor parking and the transit center in Yosemite Village would provide a major, beneficial impact for orientation and trip planning for all day visitors because of its location in the Village. The requirement for most day visitors to ride shuttle buses would result in a moderate, adverse impact to day visitors.

Changes in access would affect visitors' ability or willingness to undertake some recreational activities, as described for Alternatives 2, 3, and 4. These changes would affect a large number of

day visitors using regional transit, tour buses, and shuttle buses to access the Valley. Changes to circulation within the Valley would largely be the same as described for Alternative 2, except Northside Drive and Southside Drive would continue as one-way roads with one lane converted to a multi-use paved trail from El Capitan crossover to Sentinel Bridge and from Yosemite Lodge to the crossover. Access to the west Valley would be increased for visitors arriving by transit and others due to extending shuttle bus service to the west Valley, resulting in a major, beneficial impact, compared to Alternative 1.

Traffic Congestion, Parking, and Crowding

Traffic would be reduced below existing levels throughout the Valley at all times of the year (unless seasonal displacement appreciably increases traffic during existing slow seasons). Alternative 5 would reduce the volume of daily vehicle traffic associated with travel into and out of the Valley. On typically busy days, the volume of daily vehicle miles traveled would be reduced by 31% (compared to Alternative 1), a minor, beneficial impact on the experience for all visitors because there would be more opportunities for quiet and contemplative recreational experiences. The overall reduction in traffic would result in somewhat improved traffic flow and moderately reduced congestion throughout most of the Valley. Segments of Northside Drive and Southside Drive in the mid-Valley would be reduced to one lane; therefore, traffic flow would be similar to Alternative 1, but with an improvement on Southside Drive during the inbound peak hour.

Under this alternative, 550 day-visitor parking spaces would be provided in the Valley at Yosemite Village. In addition, up to approximately 1,365 spaces would be provided at out-of-Valley locations (Henness Ridge, Foresta, and El Portal). The traveler information and traffic management system would inform visitors of the parking status prior to their arrival. Overnight visitors would continue to have the option to drive to the Valley. Day visitors would be directed to parking areas in the Valley or to out-of-Valley parking areas and ride a shuttle to the Valley. Visitors would experience a minor increase in the time required to travel to the Valley, since many would need to use shuttle buses. As described for Alternatives 2, 3, and 4, frequent shuttle service would provide access to Valley attractions. Similarly, some visitors would experience decreases in overall time required to travel within the Valley, and shuttles could be delayed by slightly greater numbers of private vehicles, compared to Alternative 1.

Like Alternatives 2, 3, and 4, the appearance of crowding in the Valley would be reduced by eliminating roadside parking. Under this alternative, however, moderately lower traffic volumes, improved traffic flow, and reductions in the visual impact of parked vehicles would have a moderate, beneficial impact on the perceived level of crowding and congestion during peak visitation times for all visitors.

Traffic congestion west of El Capitan crossover could increase due to long-term parking at the remaining turnouts, and the potential for increased pass-through traffic, the same as under Alternatives 2, 3, and 4.

Some existing automobile traffic would be replaced with buses, having the same impacts described in Alternative 2. Notably, the movement of visitors in buses could cause some visitors to feel crowded. Most visitors would travel in larger groups because of the emphasis on bus

travel. The overall impact of bus traffic and grouping passengers in buses is expected to have a moderate, adverse impact on the visitor experience, as compared to Alternative 1.

The Visitor Experience and Resources Protection program would protect the diversity of visitor experiences, as in Alternatives 2 and 3, a major, beneficial impact, compared to Alternative 1.

Reliability of the Yosemite Valley Transportation System

Similar to Alternative 2, this alternative would help relieve visitor anxiety and time wasted searching for available parking within the Valley as compared to Alternative 1. This alternative would include a traveler information and traffic management system designed to manage parking areas, and visitors would have convenient and frequent access to expanded shuttle service. The overall impact to visitors would be major and beneficial, from the perspective of their being able to rely on the transportation system.

Access for Visitors with Disabilities

Access and the resulting impacts for visitors with disabilities would be the same as for Alternatives 2, 3, and 4, except motorized access to Northside Drive would remain available, eliminating a minor, adverse impact of those alternatives. Notably, as fully accessible shuttle buses were placed in operation, visitors with disabilities would use the shuttles rather than private vehicles. Some visitors with disabilities would experience a moderate, beneficial impact from the improved accessibility of shuttle services. However, without their private vehicles, other visitors with disabilities would have greater difficulty in moving about the Valley, creating a moderate, adverse impact. Visitors with mobility impairments would not have easy access to locations not directly served by the shuttle bus system. The prescribed universal programmatic accessibility study plan and its implementation would ultimately result in a major, beneficial impact. New accessible trails at popular destination areas would provide access to areas that are not now easily accessible, resulting in moderate, beneficial impacts.

ORIENTATION AND INTERPRETATION

Sense of Arrival

As described for Alternatives 2, 3, and 4, visitor centers and orientation facilities near each principal park entrance would provide some visitors with an improved sense of arrival at the park. For day visitors parking at Yosemite Village under this alternative, the sense of arrival in the Valley would be similar to that offered today, with a moderate walk to reach the visitor center. Visitors parking at out-of-Valley areas would find the arrival experience less well-defined (although views of principal Valley features would provide a sense of arrival). Their sense of arrival in both cases is similar to that offered today—visitors could see significant views en route to the parking facility, but the views would only be marginally interpreted. Impacts of the proposed arrival sequence under Alternative 5 would affect most visitors, and are beneficial but negligible in intensity, compared to Alternative 1.

Wayfinding

Improvements to signs and circulation would improve wayfinding for visitors, the same as under Alternatives 2, 3, and 4. Notably, improved and consistent signing at shuttle bus stops would help orient many visitors. Day visitors would not need to navigate the Valley's existing confusing network of roads, and overnight visitors would be directed to their accommodations by improved signs and printed orientation materials. Moderate, beneficial impacts would result for most Yosemite Valley visitors.

Visitor Centers

As described for Alternatives 2, 3, and 4, visitors would have opportunities to find out about park programs, the availability of services and facilities, directions, permits, reservations, trip-planning services, interpretive themes and a stewardship ethic, and regulations at park entrances as they arrive. Under this alternative, day visitors parking at Yosemite Village would have to walk a moderate distance to the visitor center in Yosemite Village. These impacts would be of major benefit to the majority of park visitors who would like to take advantage of exhibits, museums, trip planning, and other interpretive programs, compared to Alternative 1.

Similar to Alternatives 2, 3, and 4, overnight visitors would find orientation exhibits at their lodging or campground, a beneficial impact, but moderate in intensity.

Exhibits and Programs

Impacts to exhibits and programs, the Nature Center at Happy Isles, museum collections, and trailside exhibits would be similar to those described under Alternatives 2 and 3, except research access to the consolidated museum collection and library would be available in El Portal rather than the Valley, making it less convenient for casual visitors. The present visitor center would be refurbished with new exhibits. Museum collections, now split in many locations, would be reorganized and made more accessible to the public. A natural history museum would be developed in the existing NPS Administration Building, and the cultural history museum in the existing Museum Valley District Building would be expanded. These and other improvements would have a moderate, beneficial impact on the large group of museum-goers and a major, beneficial impact on the small group of researchers.

RECREATION

Auto Touring

Sightseeing in the Valley currently takes place by private vehicle for almost 88% of visitors (Gramann 1992). The current auto touring experience would be altered by less ability to make spontaneous stops, by possible reduction in available turnouts, and by reduction of traffic lanes from two to one on segments of Northside and Southside Drives in the mid-Valley, although the current one-way road system would remain in place. Auto touring that involves parking for extended periods while exploring would be eliminated with the removal of parking at most features and facilities. These actions would result in moderate, adverse impacts on most visitors. However, it should be noted that about 80% of all private vehicle users have indicated support for

adopting such measures as means of bringing about benefits discussed elsewhere (for example, reduced traffic and noise; see Gramann 1992).

Reduced traffic east of El Capitan crossover could result in more relaxed touring, which would be offset by the reduction of one-way traffic lanes from two to one on portions of Northside and Southside Drives, and an increase in the number of buses. This would result in a negligible, positive impact for most visitors, compared to Alternative 1. Signs would need to be placed at turnouts throughout the Valley to identify appropriate uses (e.g., shuttle bus, Valley Floor Tour, short-term parking). Compared to Alternative 1, introducing these urban elements into the auto-touring experience would be an adverse impact that is negligible in intensity and affects most visitors.

Bus Touring

Impacts of sightseeing by shuttle bus would be the same as described for Alternative 2, except that Valley Floor Tours offered by the concessioner and commercial bus tours would continue to have access to Northside Drive (but only one lane would be open for vehicle travel between Camp 4 (Sunnyside Campground) and El Capitan crossover, so buses would still be unable to travel slowly or to make spontaneous stops). This would result in major, adverse impacts compared to Alternative 1.

Walking and Hiking

More Valley trails would be available, particularly through the Upper River and Lower River Campgrounds area and adjacent to Northside and Southside Drives in mid-Valley, with impacts similar to those described under Alternative 2. The trail immediately adjacent to Northside and Southside Drive, however, would not be free of direct impacts from automobile traffic. Impacts from potential increased trail usage and dispersal, conflicts with other users, and greater opportunities for one-way hiking trips, would be the same as under Alternative 2, except that trail rides would continue to be offered, resulting in conflicts similar to Alternative 1. Overall, compared to Alternative 1, impacts would be a moderate benefit to a large group of visitors.

Rerouting the trail segment north of the river at Ahwahnee and Sugar Pine bridges would result in a slightly different path, loss of traditional views, and loss of historic elements due to bridge removal (a negligible, adverse impact, for what is likely to be a moderately sized group).

Bicycling

A new multi-use trail using one existing traffic lane on Northside and Southside Drives in mid-Valley would provide greater recreational opportunities for bicyclists, a major and beneficial impact for this moderately large group (currently 11% of park visitors) (Gramann 1992). Reduced private vehicle traffic and increased bus traffic would reduce noise and traffic views; advanced technology buses would be used for shuttle services, when available, potentially further reducing noise and air quality impact of motorized transportation; this would result in a moderate, beneficial impact compared to Alternative 1.

The adverse impacts of potential crowding (moderate) along multi-use trails and increased accident risk (negligible) would be the same as under Alternatives 2, 3, and 4.

Climbing

The reduction in opportunities for spontaneous access and other aspects of the climbing experience, and related impacts, would be the same as under Alternative 2.

Stock Use

The concessioner stable operation would be relocated under this alternative, and guided stock trips would continue, resulting in negligible, neutral impacts to visitors who take trail rides, compared to Alternative 1.

The Valley Loop Trail would be segmented by closing the trail to horse traffic from the Yosemite Lodge to the Mirror Lake Road. This closure would result in the loss of a Valleywide loop trip opportunity, for a moderate and adverse impact for private stock users. Relocating the concessioner stable would result in negligible, adverse impacts on private stock users.

Picnicking

The lack of private vehicle access to most picnic sites (except near Yosemite Village) would result in the same impacts as described under Alternative 2.

The Swinging Bridge and Church Bowl Picnic Areas would be removed and the North American Wall, Curry Village, and Lower River Picnic Areas would provide new opportunities for picnicking, resulting in negligible and neutral impacts.

River Uses

Changes in raft and kayak access and resulting impacts would be the same as under Alternatives 2, 3, and 4. Notably, lack of private vehicle access to locations along the river would require the use of buses, which would result in moderate, adverse impacts to a moderately large group of visitors.

Swimming

Changes in swimming access and availability would be the same as under Alternative 2. Locations for swimming would be reduced with the revegetation of many riverbanks, and swimmers would be redirected to areas more able to withstand heavy use, creating a minor, adverse impact to this large visitor group (25% of summer visitors) (Gramann 1992). Two areas popular with swimmers—Cathedral Beach and Sentinel Beach—are retained as picnic areas and would be serviced by shuttle buses; a moderate and beneficial impact. Shuttle bus access would tend to redistribute swimming activity around the Valley, a negligible and neutral impact.

Fishing

Changes to fishing quality and access to sites would be the same as under Alternatives 2, 3, and 4. Notably, protection of riverbanks would result in a moderate, beneficial impact for anglers. A moderate, adverse impact would result from decreased river access.

Winter Activities

Ice skating would remain largely unchanged from current conditions, since the ice rink would remain in its current location. Increased winter visitation and greater use of the ice rink could result in a negligible, adverse impact compared to that of Alternative 1.

Photography

Impacts to photographers would be the same as described for Alternative 2; less private vehicle use and a reduction of roadside parking would result in greater opportunities for photographs without vehicles. This would result in an overall moderate, beneficial impact, compared with Alternative 1.

RECREATIONAL ENVIRONMENT

This section covers impacts of Alternative 5 on the overall recreational environment for visitors, including night sky and wilderness experience. Impacts of vehicle-related noise, an important element of the recreational environment, are covered in the Noise section of this chapter. Impacts to scenic resources (as viewed by the visitor) are covered under the Scenic Resources section of this chapter. In general, improvements to natural resources under this alternative would provide a more natural appearance to the Valley, a major and beneficial impact for visitors, compared to Alternative 1.

Night Sky

Concentrated parking at Yosemite Village under this alternative would result in increased lighting needs in an area that is currently unlit. These actions would generally have impacts as in Alternative 2, resulting in a moderate impact relative to Alternative 1.

The addition of out-of-Valley parking areas (Henness Ridge, Foresta, and El Portal) would increase the need for lighting in these areas. These actions would generally have adverse impacts that are moderate to major in intensity.

Changes in the number of lodging units would result in minor, beneficial impacts largely the same as under Alternatives 2, 3, and 4. Adding new housing units at Yosemite Lodge, and reducing housing at Curry Village, would result in minor, adverse, and beneficial impacts, respectively, on the night sky in these areas. Other changes in lighting, including the rehabilitation of obsolete architectural lighting and the relocation of facilities, would be similar to those under Alternative 2 and result in minor, beneficial impacts, relative to Alternative 1. Shifts in camping and changes to the concession stable area would result in moderate but neutral impacts. Potentially adding a check station in mid-Valley could have a major, adverse impact there, though this would be much less than the impact caused by the full parking and transit facility at Taft Toe called for in Alternatives 3 and 4.

Wilderness Access and Wilderness Experience

Access to wilderness areas would be facilitated under this alternative, as described under Alternative 2. Visual impacts would be similar to those described in Alternative 2. Sound impacts would be minor and adverse, similar to those for Alternatives 2, 3, and 4. Clustering of activities within the Valley would have both beneficial and adverse impacts due to decreased and increased

noise levels. Improved access to trailheads would result in a moderate, beneficial impact and increased use of trails would result in a negligible, adverse impact.

VISITOR SERVICES

Camping

The number of campsites would be substantially above current levels (585 campsites compared to 475 sites under Alternative 1, about a 23% increase), resulting in a moderate, beneficial impact.

Improvements in campground conditions due to greater separation of user types, the redesign of campsites, and riverbank restoration would result in largely the same minor to moderate, beneficial impacts as for Alternatives 2, 3, and 4. Camper services would be similar to Alternative 2.

Minor, adverse impacts on river access would result from relocating camping areas away from the river, and negligible, adverse impacts would result from relocating the amphitheater.

Lodging

Compared to existing conditions, there would be fewer opportunities for overnight lodging in the Valley (1,012 lodging units, compared to 1,260 units under Alternative 1, a 20% reduction). This reduction would be the least of the action alternatives, resulting in a moderate, adverse impact on this large visitor group (25% of summer visitors typically stay in Valley lodging).

Substantial increases in economy units with private baths would address the high demand for this type of room. Replacing rustic units with economy units would also provide more comfortable and numerous off-season accommodations. Both actions would result in moderate, beneficial impacts, relative to Alternative 1.

Impacts of other actions, including increasing accessibility of units to visitors with disabilities, would be similar to Alternatives 2, 3, and 4.

At Yosemite Lodge, adding 124 beds (from 245 to 369, or an 50% increase) and the continued use of the area for employee housing could place lodging and housing closer to Camp 4 (Sunnyside Campground). An increase in the developed character of the Lodge area would be a minor, adverse impact to campers as well as Lodge visitors, a moderately large group.

Reducing the number of units at Housekeeping Camp from 264 to 100 (or 62%) would lead to a more natural environment. This would be a moderate, beneficial impact for the moderately large group of visitors who would choose to use this type of accommodation.

At Curry Village, reducing the number of cabins would lead to a more natural environment, with greater privacy and less density. This would have moderate, beneficial impacts for visitors staying in the remaining cabins.

Food and Retail Services

Changes in food and retail services would be substantially the same as those described for Alternative 2, except that the Village Store would remain in its current location, a public service station (for gasoline and other automotive needs) would be constructed in Yosemite Village, and a

snack stand would be rebuilt at Happy Isles, resulting in minor, beneficial impacts (relative to Alternative 1) to most park visitors. The addition of lodging would also provide more convenient opportunities to involve more well-known artists in Art Activity Center programs, a beneficial but minor impact on a small visitor group, compared to Alternative 1. Impacts associated with an employee cafeteria would be the same as described in Alternative 2, except it would be located at Yosemite Lodge.

CONCLUSION

Like Alternatives 2, 3, and 4, Alternative 5 would reduce the spontaneity of travel to and through Yosemite Valley. Access into Yosemite Valley would be more cumbersome than today, with some visitors arriving by car, others by park shuttle bus from out-of-Valley parking areas, and still others by tour or regional transit buses. Under this alternative, day visitors would be directed to the Yosemite Village parking area in the Valley; once this lot was filled, visitors would be directed to lots at Henness Ridge, Foresta, and El Portal, and would ride a shuttle to the Valley. Overall, visitors would experience a minor, adverse impact on the time required to travel to the Valley. On 10 days during the summer, the parking in the Valley and at out-of-Valley locations would not be adequate to meet the needs of day visitors. The traveler information and traffic management system would inform visitors of the parking status prior to their arrival. Overnight visitors would continue to drive to the Valley. Visitors would experience a minor increase in the time required to travel to the Valley. With the day visitor parking and transit facility at Yosemite Village, all visitors would arrive in the Valley close to principal features and facilities. As described for Alternatives 2, 3, and 4, frequent shuttle service would provide access to Valley attractions. Some visitors would experience decreases in overall time required to travel within the Valley.

On most days, visitors would find a more tranquil environment, with somewhat fewer visitors in the east Valley and more visitors in the mid-Valley. Automobile-based experiences in the Valley would be reduced. Visitors on foot and bicycle would find more trails, particularly in mid-Valley. Opportunities for orientation at park entrances would be closer to where many visitors seek them, and greater opportunities would be available for visitors to participate in interpretive programs in the Valley. Recreation, including touring, would be oriented more toward the shuttle bus system, which would be extended to mid-Valley and to out-of-Valley parking areas, and pedestrian and bicycling activities. Opportunities for staying overnight in Yosemite Valley would increase moderately for camping (to 585 sites) and decrease for lodging (to 1,012 beds).

Visitors to Yosemite Valley are varied in their expectations and the individual experiences they seek. Also, the quality of the visitor experience is also dependent on the quality of natural resources, cultural resources, air quality, scenic resources, and other elements of the recreational environment (considered separately in this analysis). Therefore, no determination of a net impact on the visitor experience is attempted here.

CUMULATIVE IMPACTS

Access, Orientation and Interpretation, Recreation, and Recreational Environment

The cumulative impacts described under Alternatives 2, 3, and 4 for traffic, congestion, access, orientation and interpretation, recreational opportunities, and recreational environment would be equally applicable to Alternative 5.

Visitor Services

As described for the other alternatives, the January 1997 flood and subsequent cleanup actions resulted in the loss of 265 lodging units and 284 campsites within Yosemite Valley, displacing visitors to campgrounds or lodging elsewhere in the park or in neighboring communities. This alternative would intensify this impact by further reducing lodging by 248 units, but would somewhat alleviate it by restoring 110 campsites to the Yosemite Valley inventory. Proposed new accommodations in the vicinity of the park and campsites outside Yosemite Valley may also partially alleviate the impact of the reductions, as described for the other alternatives. The reductions in lodging in Alternative 5 would have moderate impacts for the many visitors who would want to stay in Yosemite Valley. The benefit of increases in out-of-park lodging would reduce impacts to visitors, but they would remain adverse and moderate.

The number of campsites in the region and at Yosemite Creek and Tamarack Campgrounds is expected to increase, but the use of the new regional sites by Yosemite day visitors would likely not be great. However, because the increase in number of campsites in Yosemite Valley under this alternative would be a moderate benefit to visitors, the cumulative impact on campground users would likely remain moderate and beneficial.

Transportation

Alternative 5 would maintain most existing transportation patterns in Yosemite Valley. A total of 550 parking spaces for day visitors would be provided in Yosemite Village, and a total of approximately 1,365 out-of-Valley parking spaces would be provided at Henness Ridge, Foresta, and El Portal. Traffic volumes and parking would be managed through a traveler information and traffic management system (similar to Alternatives 2, 3, and 4). When the Valley parking area was full, day visitors would have the option of parking at the remote sites and riding shuttle buses to the Valley. Overnight visitors would continue to have the option to drive their vehicles into the Valley. Many day visitors who parked in the Valley would be able to walk to destinations in the Valley. As with the other action alternatives, shuttle bus services in the Valley would be expanded.

CONDITIONS ON STATE HIGHWAYS OUTSIDE YOSEMITE NATIONAL PARK

The impacts of Alternative 5 on conditions on state highways outside the park would be the same as those described under Alternative 2.

Visitor Access to the Valley

Reconstructing the segment of El Portal Road between Pohono Bridge and the intersection with Big Oak Flat Road would have the same impacts as those discussed under Alternative 2.

Travel Time

The average time that visitors would spend traveling from entrance stations to the Valley Visitor Center in the peak season under Alternative 5 would be approximately 60 minutes. This would constitute an increase of 19 minutes in Valley access travel time as compared to Alternative 1. The resulting long-term impact to travel time would be minor and adverse. Table 4-131 presents average travel times from entrance stations to the Valley Visitor Center by corridor. These average travel times are weighted by access mode, and include waiting time at the transit terminal and at shuttle bus stops.

Table 4-131
Average Travel Time from Entrance Stations to the Valley Visitor Center

Corridor	Average Weighted Travel Time (min)
North (Highway 120)	61
West (Highway 140)	46
South (Highway 41)	73
Overall Average	**60**
Difference from Alternative 1	**19**

Modes of Access

Under Alternative 5, approximately 49% of all Valley visitors (70% of day visitors) on typically busy days would access the Valley by transit. This would be a major increase in transit access share of 29%, constituting a long-term impact to access mode share.

Visitor Circulation within the Valley

Traffic Volume and Vehicle Miles Traveled

The existing Valley road network and traffic circulation patterns would remain unchanged in Alternative 5, although one traffic lane would be converted to use as a multi-use paved trail on Southside Drive from El Capitan crossover to Swinging Bridge and on Northside Drive from Camp 4 (Sunnyside Campground) to El Capitan crossover. Vehicles traveling east of El Capitan crossover would be managed to assure that the number of vehicles did not exceed the capacity of parking and roads. Parking for day visitors (550 spaces) would be provided at Yosemite Village. Day visitors would be directed to the parking area by a new system of directional signs to minimize the amount of circulation on Valley roadways. Visitors would not need to circulate in search of parking spaces. When day visitors and overnight guests park their vehicles, they would be encouraged to walk or use alternative transportation modes, such as the Valley shuttle buses or bicycles to travel within the Valley.

Alternative 5 would result in a moderate, beneficial impact to daily vehicle miles traveled, with a reduction of 31% compared to Alternative 1. Table 4-132 presents daily Valley vehicle miles

traveled by mode and estimated inbound vehicle trips passing the Yosemite Chapel under Alternative 5. Bus trips entering the east Valley at Yosemite Chapel would increase by 239 per day.

Table 4-132
Daily Vehicle Trips
and Total Vehicle Miles Traveled in the Valley on Typically Busy Days

	Inbound Trips Passing the Chapel	Vehicle Miles Traveled
Private Vehicle	3,955	42,762
Bus	316	4,583
Total	**4,271**	**47,345**
Percentage Change from Alternative 1		**-31%**

Modes of Travel

Similar to Alternatives 2, 3, and 4, all visitors would be allowed to circulate by private automobile west of the El Capitan crossover under Alternative 5. In addition, some day visitors and all overnight visitors would have the option to drive to parking areas in the east Valley. However, as under Alternative 2, the share of trips within the Valley by transit under this alternative would be substantially higher than under Alternative 1. With the exception of west Valley circulation, the only visitor trips made by private vehicles within the Valley would be those either entering or leaving. The resulting impact to Valley visitors is expected to be major in both the short- and long-term.

Bus Volumes on Roads

Under Alternative 5, bus service within the Valley would be increased and shuttle buses would operate from remote parking areas to a transit center in the Village. The proposed transit service would result in 4,583 bus miles traveled on major Valley road segments (see table 4-133) a major increase over Alternative 1.

Table 4-133
Daily Bus Trips/Vehicle Miles Traveled in the Valley During the Peak Season

	Round Trips	Bus Miles Traveled
Out-of-Valley Shuttle	213	1,610
Valley Shuttle	261	2,601
Commercial Tours	59	372
Total	**533**	**4,583**

Level of Service

The primary factor affecting traffic flow for Alternative 5 would be a reduction in vehicle travel from the implementation of the traveler information and traffic management system and the change to one lane for traffic on Northside Drive and Southside Drive in the mid-Valley. The level of service for the intersections of Sentinel Road with Northside Drive and Southside Drive would improve to level of service B in both peak hours (see table 4-134). A major improvement would occur in the outbound peak hours at the Sentinel Drive/Northside Drive intersection. The

other intersections would improve to level of service A in both peak periods. Since the traffic volumes on the roadways would be reduced, the level of service would improve slightly for most roadway segments. Southside Drive would improve to level of service C during the inbound peak hour. Northside Drive would improve to level of service C in both peak periods with a major improvement from level of service E in the outbound peak hour. El Portal Road would improve to level of service D during both peak hours.

Table 4-134
Level of Service Summary (Inbound/Outbound)

Intersections					
		Southside Drive/Sentinel Road	**Northside Drive/Sentinel Road**	**Northside Drive/Camp 6 – Village Access**	**Southside Drive/Northside Drive**
Alternative 1		C/B	C/E	A/B	B/A
Alternative 5		B/B	B/B	A/A	A/A
Roadway Segments					
	Pohono Bridge	**El Capitan Bridge**	**El Portal Road (between Pohono Bridge and Big Oak Flat Road intersection)**	**Southside Drive**	**Northside Drive**
Alternative 1	E/E	B/B	E/E	D/C	D/E
Alternative 5	D/D	A/B	D/D	C/C	C/C

Implementing the operational transportation improvements proposed in Alternative 5 would create a long-term, moderate, beneficial impact by improving traffic flow.

CONCLUSION

Under Alternative 5, the average travel time to access the Valley would increase by 19 minutes compared to Alternative 1, resulting in a minor adverse impact to peak season daily visitors. There would be a moderate beneficial impact from a decrease in traffic volumes and a moderate improvement in traffic flow compared to Alternative 1.

Buses entering the Valley would increase to 239 trips per day and there would be a major increase in bus miles traveled per day in the Valley.

CUMULATIVE IMPACTS

The cumulative impacts of Alternative 5 would be similar to those described for Alternative 2.

Noise

VEHICLE NOISE

The major transportation actions affecting sound levels and events in this alternative are:

- Parking for 550 day-visitor vehicles at Yosemite Village
- Northside Drive would be converted to one-lane of vehicle traffic and one-lane of multi-use paved trail from Camp 4 (Sunnyside Campground) to El Capitan crossover;

Southside Drive would be converted in a similar manner from El Capitan crossover to Swinging Bridge

- Traffic entering the east Valley would be managed at El Capitan crossover so as not to exceed the capacity of roads and parking
- Out-of-Valley day-visitor parking and shuttle service would be provided at El Portal, Henness Ridge, and Foresta

Traffic patterns would be the same as those in Alternative 1, but out-of-Valley shuttles would travel on the Valley road network as far east as Yosemite Village. It is assumed that these vehicles would produce sound levels similar to tour buses now operated in the Valley. Changes in sound events would occur along Southside Drive and Northside Drive west of El Capitan crossover, Southside Drive west of Sentinel Drive, Sentinel Drive and Yosemite Village, between Yosemite Village and Yosemite Lodge, west of Yosemite Lodge on Northside Drive, between Sentinel Drive and Curry Village on Southside Drive, and along Northside Drive between Stoneman Bridge and Yosemite Village.

Sound Levels

Sound levels from general traffic in the Valley would be reduced because the volume of vehicle traffic would be lower than in the No Action Alternative. While general traffic volumes would decline, the number of long-distance bus trips would increase, offsetting the noise decreases from general traffic with Alternative 5. Overall, noise levels would not change perceptibly in the Valley except that noise levels along Northside Drive between the Lodge and Yosemite Village would increase during the inbound and outbound peak hours, resulting in long-term, minor, adverse impacts. Unlike Alternatives 2, 3, and 4, there would be no areas in the Valley that would experience long-term, major sound level benefits because traffic would not be completely removed from any roadways. Sound level estimates for Northside Drive and Southside Drive are shown in tables 4-135 and 4-136.

Table 4-135
Equivalent Constant Sound Levels from Traffic Along Northside Drive

Time of Day	Distance from Centerline of Roadway	Alternative 1 (dBA)	Alternative 5 (dBA)
Inbound Peak Hour	50 feet	61	64
	100 feet	57	61
	200 feet	54	57
	400 feet	51	54
Outbound Peak Hour	50 feet	65	65
	100 feet	62	61
	200 feet	59	57
	400 feet	55	54

Note: These numbers are based on measurements taken between Yosemite Village and Yosemite Lodge on a typically busy day.
dBA = decibel

Table 4-136 Equivalent Constant Sound Levels from Traffic Along Southside Drive			
Time of Day	**Distance from Centerline of Roadway**	**Alternative 1 (dBA)**	**Alternative 5 (dBA)**
Inbound Peak Hour	50 feet	64	63
	100 feet	61	60
	200 feet	57	57
	400 feet	54	53
Outbound Peak Hour	50 feet	63	63
	100 feet	59	60
	200 feet	55	57
	400 feet	52	53

Note: These numbers are based on measurements taken near Yosemite Chapel on a typically busy day.
dBA = decibel

Sound Events

Yosemite Valley

The introduction of out-of-Valley shuttles would increase the number of noticeable sound events west of El Capitan crossover and west of Sentinel Bridge from 15 per hour to 33 per hour on Southside Drive. On Northside Drive, the same increase as on Southside Drive would occur between Yosemite Lodge and El Capitan crossover and west of El Capitan crossover. The sound impact in these areas would be long-term, major, and adverse.

A greater concentration of transit vehicles also would be found along Sentinel Drive and in the vicinity of Camp 6 and Yosemite Village. The number of noticeable sound events would increase from 15 per hour to 33 per hour. An additional 13 events which have quieter levels also would occur per hour. The impact of transit sound events would be long-term, major, and adverse in this portion of the Valley.

Between Yosemite Village and Yosemite Lodge, the number of noticeable sound events would increase from 11 to 29 per hour. Additionally, 23 more events which have quieter sound levels would occur along this portion of Northside Drive than with Alternative 1. The impacts in this area from transit sound events would be long-term, major, and adverse.

From Sentinel Bridge to Curry Village, the number of noticeable sound events on Southside Drive would remain the same as in Alternative 1, with 10 additional events which have quieter sound levels per hour. The impact in this area would be negligible. The portion of Northside Drive from Stoneman Bridge to Yosemite Village would experience no change in noticeable sound events and it would have an increase of lesser sound events from 10 to 20 events. The impacts of these sound changes would be long-term and negligible.

Out-of-Valley

Very noticeable sound events would increase at the out-of-Valley parking areas as a result of shuttle bus service to and from Yosemite Valley. The number of added sound events during the peak travel hours on typically busy days would be 10 at El Portal, 10 at Henness Ridge, and 16 at Foresta. The impacts from the changes in sound events would be long-term, moderate, and

adverse at El Portal and Henness Ridge. The impacts would be long-term, major, and adverse at Foresta.

Vehicle Noise Conclusion

This alternative would introduce additional long-distance bus traffic onto the Valley roadway system. Because the existing traffic patterns would be maintained with this alternative, the adverse impacts of the sound of the buses would be heard along all roadways from Yosemite Village to the west. Overall sound levels are expected to remain essentially unchanged, with negligible impacts in the long term. Individual sound events, however, would increase, which would have long-term, major, adverse impacts on the sound environment in most parts of the Valley. Increases in bus-related sound events would result in long-term, moderate to major, and adverse impacts at the out-of-Valley parking areas, with major, adverse impacts occurring at Foresta.

Cumulative Impacts

The existing shuttle buses are currently being replaced with advanced technology buses that could reduce the intensity of sound events along the shuttle routes. Possible increase in regional transit service by the Yosemite Area Regional Transit System (inter-agency) would possibly cause a larger number of sound events along the same routes. These two actions would have cumulative impacts on sound levels along the same routes. These two actions would have cumulative impacts on sound levels in the Valley similar to those described in Alternative 2 (long-term, beneficial). Alternative 5 would not change the vehicle types or operating characteristics of either the new shuttle buses or the YARTS buses.

NONVEHICLE NOISE

Yosemite Valley

Housing

The reduction of 525 beds in the Valley would result in an overall reduction in housing-related ambient noise levels, the least among the action alternatives. Housing-related noise at Curry Village would change in character due to the transition from canvas-sided cabins to hard-sided cabins and improved dining facilities, and would decrease overall due to reduction in total beds. Housing-related noise would be eliminated at the concessioner stable near North Pines. Housing-related noise at Yosemite Lodge would be eliminated due to the removal of the modular housing units. Housing-related noise would remain the same at the Yosemite Village Historic District. Housing related-noise at Yosemite Village and The Ahwahnee would be slightly reduced, due to reductions in employee housing units. Overall, a long-term, moderate, beneficial impact would be experienced by residents and visitors.

National Park Service and Primary Concessioner Operations

The relocation of some operational functions (e.g., parkwide maintenance functions, wildland fire, National Park Service headquarters, concession headquarters, etc.) would result in an overall reduction in operations-related noise. The National Park Service maintenance area would be substantially changed, but ambient noise level would not likely change, due to other activities

moved into the area. The National Park Service stable would remain in its existing location, and ambient noise level would not change. The concessioner stable would be relocated; its ambient noise level would not change but would occur in another location. A long-term, minor, beneficial impact, compared to the No Action Alternative, would be experienced by residents and visitors.

Transit Center and Day-Visitor Parking

There would be a minor increase in nonvehicle noise associated with parking facilities in east Yosemite Valley due to more formalized use of the area facility maintenance, and visitor activities at the facility. Visitor conversation would represent the most typical nonvehicle noise in this area (60 dB; FICN 1992), and would typically be half as loud as loud as associated vehicle activity. A long-term, minor, adverse impact would be experienced primarily by visitors, but also by residents.

Lodging

Lodging-related noise at Housekeeping Camp would decrease due to the reduction of 102 units, possibly a minor benefit. Lodging-related noise at Yosemite Lodge would increase as a result of the addition of 195 lodging units, potentially a moderate, adverse impact. Lodging-related noise at Curry Village would be reduced due to the reduction in number of tent cabins, an impact similar to that of Alternative 2, a moderate benefit. Lodging-related noise at The Ahwahnee would not change. In aggregate, a long-term, negligible, adverse impact would be experienced by visitors.

Campgrounds

Campground-related noise would increase overall, compared to Alternative 1, as a result of the increase of 238 campsites. Campground-related noise would be slightly reduced at Lower Pines and North Pines Campgrounds with the reduction in campsites and would be eliminated at Backpackers Campground with the removal of the campground. Campground-related noise would increase at Upper Pines, with the increase of campsites, and would be reintroduced into the Upper and Lower River areas, with the re-establishment of campsites. Campground-related noise would be introduced at the Tenaya Creek Campground walk-in sites and at South Camp backpacker and group camp, and would remain the same at Camp 4 (Sunnyside Campground). A long-term, moderate, adverse impact would be experienced primarily by visitors, but also by residents.

Picnic Areas

Noise related to picnic areas would be similar to that of Alternative 2, except that an additional picnic area would be established at Curry Orchard. This would result in an additional adverse impact, compared to the No Action Alternative. In sum, a long-term, negligible, adverse impact would be experienced by visitors.

Trails

Trail-related noise would be introduced at the new multi-use paved trails and bike paths in west Yosemite Valley. Although one lane of Northside Drive would be closed to vehicle traffic and designated a multi-use paved trail, peak noise levels along this road would be similar to those in

Alternative 1. The impacts of nonvehicle noise would be negligible. Valleywide, a long-term, minor, adverse impact would be experienced by visitors due to the introduction of new trails.

Construction Impacts

Construction-related noise impacts would be similar to those under Alternative 2, except that activities related to developing a traffic check station would be located at El Capitan Crossover. Types of construction noise would be the same. Overall, peak nonvehicle noises during construction and deconstruction would have short-term, major, adverse impacts, affecting both visitors and residents.

Out-of-Valley Areas

El Portal

HOUSING

Housing-related noise would be the same as under Alternative 2: new housing areas would have long-term, moderate, adverse impacts; existing housing areas would have long-term, minor, and adverse impacts.

NATIONAL PARK SERVICE AND PRIMARY CONCESSIONER OPERATIONS

Operations-related noise would be similar to that of Alternative 2 (long-term, moderate, adverse).

OUT-OF-VALLEY PARKING

An increase in noise would be associated with the out-of-Valley parking facility, similar to that of Alternative 2. Visitor conversation would represent the most typical nonvehicle noise in this area (60 dB; FICN 1992), and would typically be half as loud as associated vehicle activity. However, with only 270 parking spaces, the increase of ambient noise levels would not be quite as great, as under the No Action Alternative. Impacts would be long-term, moderate, and adverse.

TRAILS

Trail-related noise impacts would be similar to Alternative 2 (long-term, negligible, adverse).

Wawona

HOUSING

Housing-related noise impacts would be similar to that of Alternative 2 (long-term, minor, adverse). Operational impacts would be the same as Alternative 1.

Foresta

HOUSING

Housing-related noise impacts would be similar to Alternative 2 (long-term, minor, adverse).

National Park Service and Primary Concessioner Operations

Operations-related noise would not change, compared to the No Action Alternative. Noise associated with the existing National Park Service stock operations (e.g., pasture) would continue.

Out-of-Valley Parking

Noise associated with the out-of-Valley parking facility would increase due to maintenance and visitor activities at the facility. Visitor conversation would represent the most typical nonvehicle noise in this area (60 dB; FICN 1992), and would typically be half as loud as associated vehicle activity. A long-term, moderate, adverse impact would be experienced by visitors and residents.

Henness Ridge

Out-of-Valley Parking

Noise associated with the out-of-Valley parking facility would increase due to maintenance of the facility and visitor activity at the facility. As in Foresta, visitor conversation would represent the most typical nonvehicle noise in this area (60 dB; FICN 1992) and would typically be half as loud as associated vehicle activity. A long-term, moderate, adverse impact would be experienced by visitors.

South Landing, Badger Pass, and Hazel Green

No additional transit or administrative facilities are proposed in these areas. Therefore, Alternative 5 would have no noise impacts.

Construction Impacts for Out-of-Valley Locations

Construction-related noises in El Portal and other out-of-Valley locations would include the same types of noises, and with similar effects as described above for Yosemite Valley. During construction, short-term, major, adverse impacts would be experienced by residents and visitors.

Nonvehicle Noise Conclusion

Alternative 5 would be similar to Alternative 1, in that the impacts of nonvehicle noise on the human environment would be concentrated primarily around development areas. Much like Alternative 2, Alternative 5 would reduce housing units in Yosemite Valley would result in reductions in ambient noise levels, a moderate benefit. Likewise, increases in housing numbers in El Portal and Wawona would result in minor, adverse impacts. New trails would put typical trail-related noises into new areas, but these impacts would be minor. Increases in campsite and lodging numbers would result in long-term, moderate, adverse effects. National Park Service and concession operations in Yosemite Valley would be reduced, but with light maintenance for transit being in the Valley, benefits would be moderate. Overall, the nonvehicle noises would be reduced in Yosemite Valley, and benefits would be moderate and long-term. The greatest increases in noise would be in El Portal and the other out-of-Valley staging areas in Foresta and Henness Ridge, where adverse impacts would be moderate and long-term.

Cumulative Impacts

The projects that would have cumulative impacts would be the same as those described in Alternative 2. When considering the overall minor, beneficial impacts of Alternative 5 in combination with the more dominant noises associated with other projects, sources, and vehicles, cumulative impacts of nonvehicle noise in Alternative 5 would remain long-term, minor to moderate, beneficial.

Social and Economic Environments

The social and economic environments, for purposes of this discussion, include characteristics of the affected communities in the region, visitor populations and trends, revenues and expenditures affecting regional economies in connection with employment, visitor expenditures, construction spending, and concessioners and cooperators. Impacts of Alternative 5 on these social and economic environments are discussed below.

LOCAL COMMUNITIES

Potential impacts of Alternative 5 on the communities of Yosemite Valley, El Portal, Foresta, Wawona, and Yosemite West are discussed in this section. Factors with the potential to affect the social and economic environments of each of these communities are population, housing location, types and condition of housing, distance of employee commutes from outlying areas, community services and amenities, and the community infrastructure.

Yosemite Valley

Under this alternative, 525 beds would be removed from Yosemite Valley. Impacts on social and community services would be largely the same as described under Alternative 2.

The proposed relocation of employees from Yosemite Valley to El Portal, including National Park Service and Yosemite Concessions Service headquarters and associated employees, would reduce the resident population by almost half, and alter the character of the remaining residential population. About 50% of upper-level concession management and professional staff would be relocated. Even though the plan does not designate housing occupancy and award criteria, it is projected that most of the employees moved to El Portal and/or Wawona would be year-round employees. As a result, a greater proportion of the employees remaining in Yosemite Valley would be seasonal staff.

El Portal

Under this alternative, 351 employees, mostly primary concessioner employees, would be relocated from Yosemite Valley into new housing in El Portal. An additional 389 bed spaces would be constructed to meet future and currently unmet demand for employee housing. In addition, 80 El Portal residents currently living at the Trailer Village, Arch Rock, or Cascades would be relocated into new housing facilities in El Portal. The total net increase in El Portal's residential employee population would be 740 (351 plus 389).

The park's existing primary concessioner, Yosemite Concession Services, was the primary source of employee demographic information. No similar information was available from the other park

concessioners or the National Park Service. More than 95% of the new housing in El Portal would be occupied by primary concessioner employees. Therefore, Yosemite Concession Services employee demographic information has been used to project the demographics for all future park employees who would be housed in El Portal under this alternative.

Based on current demographics of the park employee population, it is estimated that approximately 20% of the permanent employee population would be married. In addition, approximately 15% of employee spouses are not employed within the park. Therefore under this alternative, an additional 22 spouses would be expected to relocate to El Portal ($740 \times 20\% \times 15\%$). Of these 22 spouses, approximately 10 would be relocated from the Valley, and 12 would be married to new employees.

According to Yosemite Concession Services, under this alternative, 73 managerial personnel currently living in managerial housing would be relocated from the Valley to El Portal, while 17 would remain in Yosemite Valley. Yosemite Concession Services' current managerial population is approximately 210 employees. While a proportion of these staff live outside the park, many managerial staff currently live in non-managerial housing accommodations within the Valley. Yosemite Concession Services managerial staff have an estimated 80 children. Approximately 65 children are expected to be relocated from Yosemite Valley. Of the 389 future new employees, 47 are projected to be managerial staff. Based on the current employee demographics, these staff would bring an additional 18 children to El Portal.

Including relocated employees, new employees, spouses, and children, the total increase in El Portal's residential population under this alternative is projected to be 845 ($740 + 22 + 65 + 18$). It is also expected that 10% of the employees housed in El Portal would be seasonal employees. Therefore, the winter residential population in El Portal would be approximately 761 ($845 \times 90\%$).

The National Park Service estimates that the existing summer population of El Portal (from the park boundary to the confluence of the South Fork of the Merced River) is approximately 3,000, and the existing winter population is approximately 760. Under this alternative, changes in employee housing would result in about a 28% increase in El Portal's summer population, and a 100% increase in the winter population. Both would cause long-term, major, adverse impacts on the El Portal social environment, although it is expected that this projected population growth would occur gradually.

Wawona

Impacts to the Wawona community would be the same as under Alternative 2.

Foresta

The impacts of reconstructing 14 homes lost in the A-Rock fire would be as described in Alternative 2.

The location of approximately 660 parking spaces near Foresta would cause an increase in traffic in the area. However, most traffic would be confined to the road segments located between the Big Oak Flat Road and the Old Coulterville Road. Notwithstanding, Foresta residents would

experience additional traffic congestion in the area. The location of parking would not cause a change to the demographics at Foresta; however, some change to the level of solitude could be expected. These impacts would be the same as described in Alternative 2.

Cascades and Arch Rock

The impacts to the Cascades and Arch Rock communities are expected to be as described under Alternative 2.

Yosemite West

The location of 370 parking spaces at Henness Ridge near Yosemite West would cause an increase in local traffic from transit related shuttle buses and other vehicles. Some congestion may occur during commuting hours; however, length of commute is not expected to increase. Transit related impacts are fully evaluated in the Transportation section of this chapter. The placement of parking at Yosemite West is not expected to affect the demographics of the community or alter the services, amenities, or infrastructure. Therefore, based upon this evaluation, impacts to the social environment of Yosemite West would be long-term, minor (slightly perceptible), and adverse.

Services and Infrastructure

Impacts to services and infrastructure under this alternative are expected to be the same as those described under Alternative 2, with the exceptions noted below.

Schools and Child Care

Approximately 65 children of concession employees would be relocated from Yosemite Valley to El Portal. In addition, 18 children are expected to be added to the local population from the future growth in managerial staff at the park. This variance is not expected to change impact intensity, duration, or type on county schools and local child care facilities.

Law Enforcement

Relocation of concession employees is expected to increase the law enforcement requirements in El Portal, and correspondingly reduce those within Yosemite Valley. Based on the population shift from Yosemite Valley and future employee growth, it is estimated that approximately 37 arrests could occur in El Portal that would otherwise have been expected to occur within the Valley. Also, the addition of 389 new employees also would be expected to add approximately 41 additional arrests a year. This would have a long-term, moderate, adverse impact on law enforcement services. However, these projections do not consider the beneficial impacts that improvements to employee living conditions and/or the quality of concession employees (attracted by the improved housing) may have in reducing future law enforcement incidents and arrests necessary in El Portal and throughout the park.

The proposed satellite parking lot in El Portal would provide day-visitor parking for up to 335 vehicles. Therefore, impacts on county law enforcement are projected to be the same as described under Alternative 2.

The impact on and cost of providing additional law enforcement services would be the same as described under Alternative 2; a long-term, moderate, adverse impact on the county would be expected.

Other Services

Impacts on the county court system would be the same as for Alternative 2, and would be expected to be long-term, moderate, and adverse. Although a minor increase in the fire incidence rate could occur under this alternative (due to the number of new buildings constructed), the impact to fire protection services provided by Mariposa County to the entire El Portal area would be the same as described under Alternative 2.

Local Communities Conclusions

Impacts to Yosemite Valley would be as described under Alternative 2. The impacts to El Portal would be as described under Alternative 2, except as noted below.

Changes in the employee population residing in El Portal would result in about a 28% increase in El Portal's summer population, and a 100% increase in the winter population. Both would cause long-term, major, adverse impacts on the El Portal social environment, although it is expected that this projected population growth would be gradual.

The impact on Wawona would be the same as described under Alternative 2.

Impacts to the social environment in Foresta would be the same as described in Alternative 3.

With 370 parking spaces at Henness Ridge, impacts to the social environment of Yosemite West would be long-term, minor, and adverse.

Cumulative Impacts

The potential cumulative impacts resulting from actions in this alternative are the same as those described under Alternative 2.

VISITOR POPULATION

Day Visitors

Under this alternative, it is projected that on the busiest summer days, up to 12,350 day visitors could be accommodated by the proposed parking and transit facilities. This level of visitation exceeds the 1998 summer season daily visitation, which averaged 10,950 visitors. As discussed in Appendix J, 1998 visitation has been used as the baseline condition for the impact analysis. In addition, for purposes of the analysis, it has also been assumed that future Yosemite visitor demand would not change. This is a conservative assumption that recognizes the uncertainties of future visitation. As a result, under this alternative, no change in future day visitation is projected. Considerable additional day-visitor capacity would exist, and future day visitation growth could be accommodated if future visitor demand increased.

Currently, park visitation peaks on weekends during the summer. As a result, it may be possible that during the busiest peak days, the proposed parking and transit facilities may be unable to

accommodate all the visitors that otherwise may have entered the park under Alternative 1. In this case, some visitors may be displaced from accessing the park during typically busy days. However, this adverse impact could be mitigated by future traveler information and traffic management systems. These systems could forewarn potential visitors when day-visitor parking is approaching capacity, and encourage and direct visitors to visit during nonpeak periods. In this case, no net reduction in total visitation would occur, because peak period visitation would theoretically be shifted to less busy days (i.e. weekdays).

Overnight Visitors

Under this alternative, several changes to the park's lodging facilities are proposed. The total number of Valley lodging units would be reduced from 1,260 to 1,012 units, a decrease of 248 lodging units, which represents a 19.7% decrease in lodging capacity. While a variety of types of lodging would remain, the number of rustic lodging units would decrease by nearly 64%, and the number of economy units would increase by nearly 147%. In addition, 110 new campsites are proposed.

Lodging

YOSEMITE LODGE

The addition of 124 new motel rooms at Yosemite Lodge is proposed, increasing the total number of rooms at the lodge to 369. This total would be less than the 495 rooms that operated at Yosemite Lodge before the 1997 flood (although many of those were rooms without bathrooms).

It is estimated that the additional rooms would have an 92% occupancy rate. This reflects the strong, year-round demand for Yosemite Lodge accommodations and is consistent with past Yosemite Lodge occupancy during 1994, 1996, and 1998. As a result, approximately 39,800 additional room-nights would be gained by the Yosemite Lodge expansion. This increase would allow nearly 126,300 additional visitors to stay overnight in the Valley annually (assuming an average of 3.17 guests per room).

CURRY VILLAGE

Lodging at Curry Village would be the same as described in Alternative 3.

HOUSEKEEPING CAMP

Lodging at Housekeeping Camp would be the same as described in Alternative 2.

CHANGES IN LODGING TYPES

In addition to reducing the Valley's lodging capacity, the lodging changes proposed under this alternative also would alter the mix of lodging styles and prices available to future park visitors. The predominant changes are: (1) a reduction in rustic-style accommodations from 691 to 250 units (at Housekeeping Camp and the Curry Village tent cabins)—a loss of 441 units representing a 63.8% decrease in capacity; (2) growth in economy accommodations from 181 to 447 units at Yosemite Lodge and Curry Village—a gain of 266 units representing a 147%

increase in capacity; and (3) a decrease in mid-scale accommodations from 265 to 192 units—a decrease of 73 units representing a 27.5% decrease in capacity.

The number of visitors expected to be gained or displaced by the proposed lodging changes has been estimated previously by location. In addition, some visitors may be impacted by the changes to the mix of lodging types available in the Valley. Overnight visitors would be impacted if replacement lodging alternatives are different from the lost facilities. However, if replacement lodging units were considered comparable by most overnight guests, then the new facilities would not likely impact their overnight lodging experience.

While many overnight visitors may have a strong preference for the rustic lodging facilities, this alternative would provide several substitutes. For cost-conscious visitors, or those wanting an outdoor experience, the additional 110 Valley camping sites offer a possible alternative. For other overnight visitors (including those displaced by the removal of Curry Village tent cabins), the additional economy units may provide an adequate substitute that provides similar value and experience.

Based on past occupancy levels, rustic-style accommodations have the lowest average annual occupancy of the Valley's lodging facilities. In contrast, Yosemite Lodge generally operates near capacity year-round, and reservations are booked months in advance. This suggests that current visitor demand is comparatively weak for the rustic facilities. Therefore, the removal of the less popular lodging facilities could possibly be more than offset by new replacement facilities that are more popular with the majority of park visitors. This would represent a long-term, minor, beneficial impact.

Camping

Under this alternative, 110 additional campsites would be built, for a total of 585 campsites within Yosemite Valley. This represents a 23% increase over the current 475 Valley campsites. The total number of campsites would still be less than the 806 campsites that existed in the Valley before the 1997 flood.

Based on pre-flood visitor demand for Valley campsites, it is estimated that the new campsites would have an average occupancy rate of nearly 85%, and that they would operate between mid-April and mid-October. Accordingly, it is estimated that approximately 15,800 overnight campsite stays would be gained, which would allow an additional 67,300 visitors to camp overnight within the Valley annually (assuming an average of 4 overnight visitors per campsite). This would represent a major, long-term, beneficial impact.

Table 4-137 summarizes the overnight visitation changes expected under this alternative. A major net increase in overnight park visitation is projected. The combined impact of the proposed lodging and campsite changes is estimated to be a net increase in 38,400 room-nights annually. This represents an additional 120,600 overnight visitor stays within Yosemite Valley annually, which equates to a 10.1% increase from 1998 overnight visitation (1.2 million overnight visitors). These overnight visitation increases are based on the expected high level of visitor demand for the additional Yosemite Lodging facilities and campsites. This increase represents a long-term, major, beneficial impact on park overnight visitation.

Table 4-137 Estimated Potential Overnight Visitation Impacts			
Lodging	**Change in Capacity**	**Projected Change in Room-Nights**	**Projected Change in Overnight Visitor Stays**
Yosemite Lodge	124	39,800	126,300
Curry Village	(208)	200	600
Housekeeping Camp	(164)	(18,400)	(73,600)
Camping	110	16,800	67,300
TOTAL	**(138)**	**38,400**	**120,600**

Note: These are conservative future estimates of overnight visitation demand, because they are based on the pre-flood demand for in-park lodging. As a result, they do not assume any visitor demand increases from factors such as reduced vehicle congestion, environmental restoration, improved lodging facilities, or population growth.
Negative amounts are denoted by ( ).

Minority and Low-Income Visitors/Environmental Justice

Impacts on minority and low-income visitors would be similar as described under Alternative 2 except that under this alternative a major increase in camping units is proposed which would lessen the adverse impacts associated with the overall decrease in rustic-style accommodations.

Visitor Population Conclusion

Under this alternative, Yosemite Valley's lodging capacity is proposed to decrease by 138 lodging units, yet a net increase of 120,600 visitor overnight stays annually is projected. This is equivalent to a 10.1% increase from 1998 overnight visitation, which represents a long-term, major, beneficial impact. Day visitation would remain unchanged. Due to the limitations of available data and the potential influence of other factors, impacts to low-income and minority visitors are qualitatively determined to be long-term, minor, and beneficial.

REGIONAL ECONOMIES

Visitor Spending

No changes in Yosemite visitor spending behavior are projected, since this alternative proposes no major changes that would alter the type of goods and services available to visitors. Furthermore, no major change in the character of the park visitor population is expected. Therefore, visitor spending patterns and estimates based primarily on the 1998 Yosemite Area Regional Transportation System (YARTS) survey have been used to estimate future visitor spending behavior.

The primary effects on visitor spending within the region would be related to changes in park visitor population projected under this alternative. As discussed, the increase in overnight visitation within the park is the only impact on park visitation associated with this alternative. It is projected that approximately 120,600 additional visitor overnight stays would be gained under this alternative. To be conservative, it is assumed that these overnight visitors to the park would replace an equal number of day visitors; therefore, no net change in park visitation is expected. Visitor spending in the affected region would be affected because the typical spending behavior of park overnight visitors and day visitors differ. Any changes in visitor spending in the affected counties would impact output and employment in those counties, particularly within their lodging, food and beverage, retail, and transit sectors.

It is possible that these additional park overnighters could be attracted away from lodging in the region outside the park. If these vacated rooms are not occupied by new visitors or day visitors, relocation of these overnight guests from lodging outside the park into the Valley would have no net economic effect on the region's economy, because no new spending would be attracted into the area. However, given the high demand for lodging in the region (especially during the peak season), it is expected that some day visitors would likely choose to stay overnight in the region. As a result, the net economic impact on the regional economy from the additional overnight stays would be the net increase in daily visitor spending of $35.76 per capita ($61.30 – $25.54, the difference between overnight spending and day-visitor spending) multiplied by the increased overnight visitation (120,600), which would equate to approximately $4.3 million in visitor spending. This represents a long-term, moderate, beneficial impact to Yosemite visitor spending.

This is a conservative estimate of the beneficial spending impact on the county economy. The additional lodging capacity proposed under this alternative would still be lower than the Valley's pre-flood levels; therefore, it might be expected that increasing the Valley lodging capacity would bring back overnight visitors to the park who otherwise would remain displaced by the 1997 flood. The analysis has conservatively assumed that the additional overnight visitors will be gained from current day visitors; therefore, no net change in park visitation is expected. However, if instead new park visitors were attracted to stay overnight in the park, there would be an even greater growth in visitor spending.

There would still be potential for future growth in day visitation under this alternative. It is estimated that an additional 43,400 day visitors per month could be accommodated during weekdays in July and August in the Valley. In addition to visitor spending growth based on increased park visitation, the region also could increase visitor spending by encouraging more of the existing park visitors to stay longer or to stay overnight in the region. Increased length of stay would increase visitor spending, which would have a beneficial impact on the region's economy.

Table 4-138 presents the estimated impact on Yosemite visitor spending in each of the affected counties caused by changes in lodging and camping facilities. It indicates that, except in Mariposa County, the estimated impacts of this alternative on Yosemite visitor spending within the affected region counties would be negligible. In Mariposa County, Yosemite visitor spending would be expected to increase by approximately 3.1% over current levels which would represent a long-term, moderate, beneficial impact. Overall, Yosemite visitor spending within the five-county region would be expected to increase by about 1.8%; this would have a long-term, minor, beneficial impact on Yosemite visitor spending within the regional economy.

Table 4-138
Estimated Visitor Spending Impacts

County	Estimated Total Yosemite Visitor Spending ($million/yr)	Estimated Impact on Spending ($million/yr)	Impact on Spending as a Percentage of Total Yosemite Visitor Spending
Madera	$38.1	($0.10)	(0.2%)
Mariposa	$143.4	$4.48	3.1%
Merced	$4.8	($0.03)	(0.6%)
Mono	$30.8	($0.06)	(0.2%)
Tuolumne	$22.2	$0.02	0.1%
All	**$239.3**	$4.31	1.8%

Note: All monetary figures are in 1998 constant dollars. Totals may not add up exactly due to rounding.

Increasing the overnight lodging capacity would increase the future total overnight visitation within the Valley. This would have a minor, long-term, beneficial impact on Yosemite visitor spending by increasing the number of visitors (and hence visitor spending) that can be accommodated overnight in the Valley.

Table 4-139 shows the total direct and secondary visitor spending impacts anticipated under this alternative. The anticipated change in overnight capacity and associated visitor spending would cause total regional output to increase by about $6.52 million dollars annually. Most of this change would be driven by an approximately $6.8 million increase in the annual output of Mariposa County. The portion of this spending expected to occur in the county's lodging sector would result in an approximately $349,500, or 7%, increase in the county's recent average annual hotel occupancy tax revenues, a long-term, major, beneficial impact.

Table 4-139 further indicates that impacts to employment in Madera, Merced, Mono, and Tuolumne Counties would be negligible. Mariposa County would experience an increase of about 120 jobs, an approximately 1.5% increase in recent countywide employment. This represents a long-term, minor, beneficial impact to Mariposa County.

Table 4-139
Estimated Total (Direct and Secondary) Visitor Spending Impacts

County	Estimated Impact on Spending ($million/yr)	Estimated Spending Associated Impact on Annual Output ($million/yr)	Estimated Spending Associated Impact on Annual Employment (FTE)
Madera	($0.10)	($0.15)	(2.7)
Mariposa	$4.48	$6.82	120.4
Merced	($0.03)	($0.05)	(0.8)
Mono	($0.06)	($0.10)	(1.7)
Tuolumne	$0.02	$0.03	1.4
All	**$4.31**	**$6.52**	**116.6**

Note: All monetary figures are in 1998 constant dollars. Totals may not add up exactly due to rounding.
FTE = Full Time Equivalents

Construction Spending and Employment

Construction costs proposed under this alternative total approximately $482.0 million in 2000 dollars. In 1998 dollars, this cost corresponds to approximately $454 million. The development cost estimates include about $21.8 million for a bus fleet in 1998 dollars. This spending is expected to occur outside the region. In addition, a considerable portion of the other construction spending would occur outside the affected region. As a result, total expected construction spending within the five-county affected region is estimated to be approximately $280.1 million. Table 4-140 presents the expected average annual construction spending the affected region by five-year phase. The table also shows the total regional output and employment impacts expected to result from those expenditures.

During the first five-year phase of project implementation, project construction spending would generate an estimated $35.2 million of additional output per year in the five-county region's construction sector. This is equivalent to a 4.9% increase over recent regional construction-sector output, and represents a short-term, moderate, beneficial impact. During the same period, project construction spending would cause total annual industrial output (direct and secondary) in the

region to increase by approximately $50.3 million in 1998 dollars (including construction- and nonconstruction-sector output). This is equivalent to a 0.4% increase over recent regional industrial output, and represents a short-term, negligible, beneficial impact.

Table 4-140 also shows that during the first five-year phase of project implementation, project construction spending would generate an estimated 409 full-time-equivalent jobs in the region's construction sector. This is equivalent to an almost 4.5% increase over recent regional construction-sector employment and represents a short-term, moderate, beneficial impact. During the same period, project construction spending would cause the region's total employment (direct and secondary) to increase by an estimated 628 jobs (including construction- and nonconstruction-sector jobs). This translates to a 0.38% increase in total employment in the region and represents a short-term, negligible, beneficial impact.

Table 4-140
Estimated Average Annual Construction Spending and Associated Output/Employment Impacts

Period (Years)	Average Annual Construction Spending ($million/yr)	Direct Construction Sector Output Impacts ($million/yr)	Total Construction Spending-Associated Output Impacts[1] ($million/yr)	Direct Construction Sector Employment Impacts (FTE)	Total Construction Spending-Associated Employment Impacts[2] (FTE)
1-5	35.2	35.2	50.3	409	628
6-10	17.2	17.2	24.6	200	307
11-15	3.6	3.6	5.1	41	63
Total	**280.1**	**280.1**	**400.3**		

Note: All monetary figures are in 1998 constant dollars Totals may not add up exactly due to rounding.
1. Impacts include both direct and indirect spending-related impacts. Cost estimates exclude estimated engineering/planning costs.
2. Total impacts include both direct and indirect spending-related impacts. Employment impacts expressed in terms of Full Time Equivalents (FTE).

Table 4-141 presents the project's expected annual construction spending schedule within Mariposa County. The table also shows the countywide output and employment impacts expected to result from those expenditures. During the first five-year phase of project implementation, project construction spending would generate an estimated $7.7 million of output per year in Mariposa County's construction sector. This is equivalent to an approximately 22% increase over recent output in that sector, and represents a short-term, major, beneficial impact. During the same period, project construction spending would cause total annual industrial output (direct and secondary) in the county to increase by approximately $11.0 million in 1998 dollars. This is equivalent to a 2.2% increase in the county's total industrial output, and represents a short-term, minor, beneficial impact.

Table 4-141 also shows that during the first five-year phase of project implementation, project construction spending would generate an estimated 92 full-time-equivalent jobs in Mariposa County's construction sector. This is equivalent to an approximately 20% increase in recent employment in that sector, and represents a short-term, major, beneficial impact. During the same period, project construction spending in the county would cause the county's total employment (direct and secondary) to increase by an estimated 140 jobs. This translates to about a 1.7% increase in total employment in the county, and represents a short-term, minor, beneficial impact.

Output and employment generated would decrease by more than 50% during the second five-year construction phase and 90% during the final five-year construction phase, when compared to the first five-year construction phase. All regional output and employment impacts would end after 15 years.

Table 4-141
Estimated Average Annual Construction Spending and Associated Output Employment Impacts (Mariposa County)

Period (Years)	Average Annual Construction Spending ($million/yr)	Direct Construction Sector Output Impacts ($million/yr)	Total Construction Spending-Associated Output Impacts[1] ($million/ yr)	Direct Construction Sector Employment Impacts (FTE)	Total Construction Spending-Associated Employment Impacts[2] (FTE)
1 - 5	7.7	7.7	11.0	92	140
6 - 10	3.8	3.8	5.4	45	69
11 - 15	0.8	0.8	1.1	9	14
Total	**61.1**	**61.1**	**87.7**		

Note: All monetary figures are in 1998 constant dollars. Totals may not add up exactly due to rounding.
1. Impacts include both direct and indirect spending-related impacts. Cost estimates exclude estimated engineering/planning costs.
2. Total impacts include both direct and indirect spending-related impacts. Employment impacts expressed in terms of Full Time Equivalents (FTE).

Following implementation of projects proposed under Alternative 5, it is expected that approximately $18.2 million (1998 dollars) would be spent annually within the affected region to operate and maintain the park's new visitor in-Valley transit shuttle system, to meet the staffing requirements of expanded park visitor facilities and employee housing, and to pay for additional operation and maintenance expenses incurred by the concessioner associated with new employee housing and visitor facilities. Table 4-142 indicates that this spending would generate about $27.6 million of output per year, and 441 jobs within the affected region. This represents a long-term, negligible, beneficial impact on the region's economy.

The table also indicates that new park-operations–related spending is expected to generate $13.8 million dollars in additional output per year within Mariposa County. This would represent a 2.7% increase over recent county output, a long-term, moderate, beneficial impact to the county's economy. Furthermore, park-operations–related employment is expected to increase employment in Mariposa County by 267 jobs (including 131 National Park Service positions), a 3.3% increase over recent county employment levels. This represents a long-term, moderate, beneficial impact on the county's economy.

Table 4-142
Estimated Average Annual Park and in-Valley Transit System Operations (1998 Dollars)

County(s) (In park)	Annual Park and Transit System Spending[1] ($million/yr)	Total Operation Spending Associated Output Impacts[2] ($million/yr)	Additional National Park Service Employees (FTE)	Total Operation Spending Associated Employment Impacts[3] (FTE)
Mariposa	$8.5	$13.8	131	267.1
Yosemite Region	$18.2	$27.6	131	441.1

Note: All monetary figures are in 1998 constant dollars. Totals may not add up exactly due to rounding.
1. Spending in Mariposa County calculated as the sum of estimated increased project-associated National Park Service operating costs and estimated spending on in-Valley component of tranist operations.
2. Includes direct and secondary output (includes new National Park Service employee spending).
3. Includes direct and secondary employment (includes new National Park Service employee spending).
FTE = Full Time Equivalents

Other Revenues

Detailed analysis on the retail spending habits of National Park Service and Yosemite Concession Services employees is unavailable; therefore, the quantitative extent of retail trade resulting from employees living in Yosemite Valley, Wawona, or at the El Portal Administrative Site is not known. However, it is known that many employees do rely on local stores for groceries and other items. It is not known where other trade occurs. Experience indicates that it is likely that employees living in the Valley or El Portal travel either south or west along Highways 140 or 41 to the communities of Mariposa, Oakhurst, Merced, or Fresno to purchase supplies they cannot obtain in the park. Although it is not possible to quantitatively assess how this alternative would affect retail and sales revenues in Mariposa County, some qualitative assessments can be made.

No changes to employees' income are expected to be associated with relocations (except for the additional income from the housing incentives), and no changes in employee spending behavior are expected. However, Mariposa County's economy may experience long-term, minor benefits if: (1) relocated employees shift some of their spending to Mariposa and Merced from Oakhurst and Fresno, (2) there is net growth in the park employee population, and (3) employee spending increases as a result of increased income from housing incentives.

Mariposa County's economy may experience long-term, negligible, adverse impacts if employees who relocate to Wawona shift some of their spending from Mariposa to Oakhurst. These changes to Mariposa County's economy may be offset if: (1) there is net growth in the park employee population, and (2) employee spending increases as a result of increased income from housing incentives.

Under this alternative, approximately 487 park employees and family members (420 employees, 12 spouses, and 55 children) would be relocated from the Valley to El Portal. Although retail facilities in El Portal are limited, most of the relocated employees would continue to work within the Valley and would likely purchase goods there. Employees relocated to El Portal would also be approximately 30 minutes closer to Mariposa and Merced and approximately the same distance from Oakhurst and Fresno. As a result, relocated employees would have comparable access to spending opportunities and may be expected to shift some of their spending to Mariposa. While the magnitude of any such changes in employee spending cannot be estimated, the impacts to Mariposa and Madera Counties are expected to be long-term, negligible, and beneficial.

Under this alternative, additional housing for 254 new park employees would likely increase spending incrementally. In addition, housing for 24 new employees not currently living in the Valley would be developed at Wawona. Spending by these additional park employees, for the most part, would represent new spending income for Mariposa County (although because many would be seasonal employees, the spending benefits to the county would be limited). The primary direct benefit to the county's economy would be from additional sales tax revenues from this employee spending.

The potential financial impacts on Mariposa's economy from the proposed housing changes at Wawona would be negligible. The local spending and tax impacts (such as local sales and real estate taxes) would have a negligible beneficial impact on Mariposa's economy and the tax impacts associated with the relocated housing are expected to be negligible.

Spending by these park employees would mostly represent new spending income for Mariposa County (although many would be seasonal employees, so the spending benefits to the county would be limited). The primary direct benefit to the county's economy would be from additional sales tax revenues from this employee spending.

Mariposa County currently assesses a 1.25% tax on all retail and restaurant sales within the county, including the majority of the conccessioner's sales within Yosemite National Park. The average concessioner employee's wages are low, and it is estimated that the annual earnings of the employees would be approximately $4.8 million. Of these wages, only a small proportion would be available for purchasing taxable goods and services in the region. Even if 10% of their gross income was spent on purchasing goods within Mariposa County, the sales tax revenues would be only $4,800, which would have a long-term, negligible, beneficial impact on the county's economy.

The primary concessioner would be expected to pay a total of approximately $500,000 in housing incentives annually for employees relocating out of the Valley to El Portal and Wawona. Any additional spending generated by this additional revenue would also have a long-term, negligible, beneficial impact on the county's economy.

Overall, the future change in local sales tax revenues is projected to be negligible, because no appreciable change in local spending by park employees is expected as a result of this alternative.

Mariposa County does not individually tax employees of the park's primary concessioner for possessory interest. Instead, the county assesses Yosemite Concession Services operations annually to determine its possessory tax payment owed to the county. If Yosemite Concession Services financial situation is impacted adversely by this alternative, then its possessory tax payments to the county are expected to decrease. However, the magnitude of Yosemite Concession Services current possessory tax payments to the county is proprietary information, and the county would not project the magnitude of the likely change to its revenues under this alternative. It is possible, though, that long-term, major, adverse impacts to the county's tax revenues could occur if Yosemite Concession Services concession operations are significantly affected.

No county building or permit fees would be generated by the proposed construction on federal land within Mariposa County. However, the county's possessory interest tax revenues would be affected by net changes to permanent National Park Service and non- Yosemite Concession Services employees' housing facilities. The county assesses possessory interest taxes to these park employees based on the value of their housing. Under this alternative, the National Park Service would add approximately 30 bed spaces for permanent National Park Service and non- Yosemite Concession Services employees. Currently, the Mariposa County Assessors Office estimates that the annual possessory tax revenues associated with the properties to be removed are approximately $7,000. The assessed value of the replacement employee housing is estimated to be $2.5 million, which would result in approximately $25,000 in possessory tax revenues to Mariposa annually. Therefore, it is projected that the county would obtain net possessory tax revenues of $18,000 once all the replacement housing for the National Park Service and other concessioner employees is completed. This additional revenue would have a long-term, negligible, beneficial impact on the county's tax revenues.

The new employee housing in El Portal and Wawona is planned to primarily accommodate permanent hourly workers who otherwise would be housed in the tent cabins within the Valley. These employees are not likely to be able to afford unsubsidized housing. Any increase in the demand for private housing would be associated with the small population of middle and upper management Yosemite Concession Services employees. It is expected that only the 90 managerial concessioner employees currently living in the Valley would be able to consider purchasing a home locally. Relocation of Yosemite Concession Services headquarters would reduce the commute time for any concession office staff living in privately owned housing in Mariposa.

Even if a number of concession employees purchase private homes as a result of the proposed employee housing changes, there would only be a net increase in the county's real estate tax revenues if house prices had risen since the property was purchased previously. According to local real estate agents, after a period of appreciation in local home values during the early and mid-1980s, local house prices have not changed much over the last 10 years. As a result, the net tax revenue impact to the county from any house sales would be long-term, negligible, and beneficial.

Regional Housing

Of the 403 additional employees anticipated as part of this alternative, a minimum of 49 employees could be required to seek housing outside the park. The adjacent areas of Mariposa, Madera, and Tuolumne counties have been assessed for their ability to accommodate these private housing needs. Although Mono County is included in some analysis in this chapter, it is not included here because it is unlikely that the employees associated with this alternative would seek housing in Mono County due to its distance from the Valley, and the seasonal closing of Highway 120 (Tioga Pass Road). The addition of a minimum of 49 employees seeking private housing would bring the total number of employees privately housed from its current level of 563 to 617.

As indicated on table 3-32, population growth in Mariposa, Madera and Tuolumne counties is projected to increase between the years 2000 and 2020 by approximately 9,500 (or 47%), 80,100 (or 60%) and 31,300 (or 47%), respectively. The need for additional employees associated with this alternative will occur gradually over a 15–20 year period as various elements of the plan are implemented. Therefore, the addition of 49 employees in the region as a result of this alternative represents approximately 0.04% of this projected regional growth over this timeframe.

Based upon economic and demographic information for these three counties provided by the State of California Department of Finance (California Department of Finance 2000), Mariposa, Madera, and Tuolumne counties have an existing single family and multi-family housing stock of 9,146, 39,018 and 28,252 units, respectively, and existing housing vacancy rates of approximately 27.2% (2,487 units), 8% (2,466 units) and 28.8% (8,136 units), respectively, based on 1999 data. These vacancy rates have remained at these levels since 1990. In addition, new single family and multi-family housing authorizations in 1998 for each of these three counties were 71, 633 and 413, respectively. Assuming these trends in housing data presented above continue into the future for these three counties, accommodating a minimum of 49 employees in private housing in the three-county region would be feasible. Therefore, the addition of a minimum of 49 employees

privately housed in the region would have a negligible, long-term, adverse affect on regional housing demands.

Again, the National Park Service does not have jurisdictional authority over the potential use of private lands in the region outside Yosemite National Park. Therefore, additional housing requirements to accommodate the 369 new employees associated with this alternative could be met within areas under its jurisdictional authority in Yosemite Valley, El Portal, Wawona, and Foresta.

Regional Economies Conclusion

Economic impacts of this alternative on the affected environment would result primarily from project construction spending. During the first five years of development, over $35 million in annual spending would expand the regional economy by about $50.6 million of output. This would represent a short-term, negligible, beneficial impact. In Mariposa County, however, the estimated $11.1 million project-related increase in annual output during the first five years of implementation would have a short-term, minor, beneficial impact on the county's overall economy. In addition, during the first five years of development, it is estimated that approximately 630 total jobs would be generated in the affected region. This represents a short-term, negligible, beneficial impact on regional employment. In Mariposa County, however, the estimated 141 jobs generated directly and secondarily by project spending would have a short-term, minor, beneficial impact on that county's employment.

Impacts on employment would occur as new jobs are created from construction spending and visitor spending. Assuming the unemployed labor force in the Yosemite region would fill the majority of these new jobs, unemployment rates would drop significantly under this alternative. This would represent a short-term, major, beneficial impact on the region's economy. Housing impacts would be negligible, based on the assumption that new jobs would be filled by existing residents of the Yosemite region.

Redevelopment of the park's lodging and campsite facilities also would impact the regional economy by changing visitor spending in the region. Completion of these visitor facility changes is expected to occur 10 years after the start of project construction. During this 10-year period, overnight capacity of the park would not be allowed to fall below current levels. Once full build-out is completed, it is estimated that annual visitor spending would increase by about $8.9 million in 1998 dollars.

Project-related increases in regional spending by Yosemite visitors is expected to have a beneficial output, and employment impacts of Alternative 5 would result from expansion of National Park Service operations and the new park visitor transit system.

The overall economic impacts of the changes in visitor spending and operational spending to the regional economy would be long-term, minor, and beneficial. This impact would result primarily from the long-term, moderate, beneficial impact associated with the spending and employment effects from the increased park operations.

For Mariposa County, the overall economic impacts of the changes would be long-term, major, and beneficial. This overall impact would result from the combined effect of the moderate,

beneficial impact from increased visitor spending, and the moderate, beneficial impact from increased park operations.

The overall combined economic impacts of this spending change on the surrounding counties would be long-term, negligible, and beneficial. This beneficial impact would result from a long-term, moderate, beneficial impact in Mariposa County and a long-term, negligible, beneficial impact in Tuolumne County. In fact, each of the other surrounding counties would experience a long-term, negligible, adverse impact on their economies from the expected spending change. Adverse impacts to these counties, however, may decrease as the counties attract additional park visitors to replace the day visitors who converted to in-park overnight visitors as a result of increased in-park capacity.

Assuming that housing trends in Mariposa, Madera and Tuolumne Counties continue in the future as they have in the recent past, accommodating a minimum of 49 employees in private housing in the three-county region would be feasible and have a negligible, long-term, adverse affect on regional housing demands.

Cumulative Impacts

Although none of the projects identified in Appendix H would be expected to attract additional visitors to the park, these projects would be expected to change the lodging patterns of the visitor population. As described under Alternative 1, the new lodging units identified in Appendix H would be expected to accommodate approximately 525,500 overnight stays per year, and these stays would be filled by park visitors who would otherwise have been day visitors. Under Alternative 5, therefore, the increase in lodging capacity in the Valley would be augmented by the new lodging units in the region. Combined with the net increase of 120,600 stays described above, the cumulative impact would be an increase of approximately 646,100 overnight stays per year.

Visitor Spending

In addition to the increase in lodging capacity in the Valley under this alternative, there would be an increase in lodging capacity from the projects described in Appendix H. As described under Alternative 1, the projects in Appendix H would generate approximately $18.8 million in direct annual visitor spending in the region. Thus, the total annual change in visitor spending would be approximately $23.1 million under this alternative.[2] This represents a long-term, moderate, beneficial impact on the regional economy.

Secondary impacts generated by $23.1 million in additional visitor spending is estimated to be $12.4 million. At full build-out, therefore, the total estimated impact on annual output under this alternative would be $35.5 million, a long-term, minor, beneficial impact on the regional economy. If new visitors are attracted to the region by the increase in lodging capacity, visitor spending would be higher, and the impact would be greater.

[2] Assuming the proposed changes in Alternative 5 would cause overnight visitor spending to increase by $4.31 million when all lodging and camping construction/removal is complete.

While project-related increases in regional spending by Yosemite visitors are expected to have a beneficial impact on the Yosemite region, the majority of the expected beneficial output and employment impacts of Alternative 5 would result from expansion of National Park Service operations and the new park visitor transit system.

Construction Spending

Local construction spending from the projects identified in Appendix H is estimated to average $255.0 million annually. Under this alternative, an additional $18.7 million per year in local construction spending would occur on average from the proposed renovation of campsites, and the development and relocation of housing, parking, and other structures. Total construction spending on the projects under this alternative and from projects described in Appendix H would be approximately $272.1 million per year.

Additional construction spending would generate secondary output impacts as a result of local spending on material inputs and wage spending by project labor. For annual construction spending of $272.1 million, secondary impacts would be estimated at approximately $116.8 million. The total change in annual output (direct and secondary) would therefore be $388.9 million, a short-term, major, beneficial impact on overall industrial output in the region. Of this increase, approximately 87% is associated with housing construction in Merced County.

New park-operations-related spending is expected to generate an additional $27.6 million in output per year in the Yosemite Region.

Employment

The equivalent of up to 731 jobs would be supported by the increase in visitor spending in the region. In addition, the equivalent of approximately 2,900 to 9,200 full-time jobs would be supported each year from construction spending in the region. An additional 441 jobs would be generated by new park-operations–related spending. Much of the general labor and raw materials would probably come from local sources. Unemployed labor (i.e., the available workforce) in the surrounding region (22,180), would considerably outnumber the projected number of new jobs created from construction and visitor spending. A labor shortage is not anticipated because of the large number of unemployed workers in the region. However, employment needs could also be met by residents of counties outside the affected region, such as Fresno, particularly for the large construction projects in Merced County such as the proposed housing development and University of California, Merced Campus development. In such a case, the economic benefits identified would instead be gained outside the region.

As discussed under Alternative 1, several other projects would create temporary and full-time employment opportunities within the region in the reasonably foreseeable future. Because the local workforce is expected to fill the new employment opportunities, no significant influx of workers is expected; therefore, no new housing is projected to be needed to accommodate employment impacts from this alternative or cumulative impact scenario.

Overall, impacts on employment would occur as new jobs are created from visitor spending, construction spending and operations spending. Assuming the unemployed labor force in the Yosemite region would fill the majority of these new jobs, unemployment rates would drop under

this alternative. This would represent a short-term, major, beneficial impact on the region's economy. Under the assumption that new jobs would be filled by existing residents of the Yosemite region, there would be no impact on housing in the region.

CONCESSIONERS AND COOPERATORS

Yosemite Concession Services

The changes to park facilities and operations proposed under this alternative would affect both Yosemite Concession Services' operations and its finances. The National Park Service planning staff used detailed information provided by the current concessioner to analyze existing concessioner operations and the proposed alternatives to estimate future operational and financial impacts on the concessioner within the park. The impact analysis assumes that there would be no change in park visitation and visitor spending behavior, to make conservative projections of the concessioner's future operational and financial conditions.

- It is expected that the majority of in-Valley housing would be for seasonal employees. The reduced number of housing units that would remain in Yosemite Valley would have an adverse impact on current or any future concessioner because there would be insufficient housing for a full shift of employees to be based in the Valley. In-Valley employee housing should be sufficient to provide housing for approximately 80% of employees necessary to staff concession operations for one shift. As a result, the concessioner's ability to meet visitor service needs under circumstances such as road closures or other commuting difficulties (such as fire or flood conditions preventing employees from commuting in and out of the Valley) would be reduced. This would represent a long-term, minor, and adverse impact on the concessioner's future operations.
- It is expected that future out-of-Valley employee housing would be occupied predominantly by year-round employees. These employees also would be required to commute into the Valley using an employee transit system. However, from a visitor service perspective, year-round employees should ideally remain close to the work site for maximum guest service benefit and operational needs. As a result, the concessioner's ability to meet visitor service demand would be reduced, because its best and most reliable employees would be housed in El Portal.
- It is expected that several adverse impacts could remain after proposed employee housing changes were implemented under this alternative. The concessioner's ability to recruit qualified and experienced management personnel may continue to be constrained by the limited availability of housing. Because a major proportion of the employee housing would be relocated to El Portal, one of the concessioner's greatest recruiting attractions would be reduced: namely, enabling employees to live, work, and recreate in Yosemite Valley. However, future housing designs would attempt to accommodate future employee housing needs. Furthermore, the quality of all new replacement housing would be improved compared to the current housing facilities. The combined impact of these factors would be expected to have a long-term, minor, adverse impact on the concessioner operations.

- Relocation of the Village Garage to El Portal would adversely affect the concessioner's towing service. Disabled vehicles would need to be towed to El Portal and, as a result, would increase the response time for its towing service. Additional heavy-duty tow trucks would have to be purchased, operated, and maintained to provide roadside assistance to buses and other large vehicles (e.g., shuttle bus and recreational vehicles) over longer distances. This would represent a long-term, minor, adverse impact on the concessioner's future operations.

Three types of financial impacts are expected under this alternative: (1) changes to the concessioner's gross revenue (sales receipts) and profitability, (2) employee housing and relocation-related cost increases including furniture, fixtures, and equipment (FF&E) expenses, and (3) annual repair and maintenance cost on new facilities. The magnitude of these impacts would depend on whether the impacts occur during the remainder of the current concessioner's contract (i.e., until 2008) or under a subsequent contract. The estimated financial impacts discussed below are expressed in terms of stabilized annual revenues and costs. These impacts are also generally represented as net impacts compared to the concessioner's 1998 financial conditions.

Gross revenue impacts reflect changes to the concessioner's sales resulting from the proposed change to visitor services. The furniture, fixtures, and equipment (FF&E) impact represents the initial cost of outfitting the proposed new facilities to make them operational and the subsequent replacements of the new fixtures and facilities as they wear out (typically after seven years of use).[3] Maintenance and employee housing cost impacts represent the additional expenditures necessary to operate under the new configuration of facilities. The profit impact clearly shows the financial impacts on the concessioner's business because it includes changes in both annual revenues and costs.

The impact analysis includes an evaluation of whether concessioner profits will be adequate to allow the concessioner to earn a reasonable return relative to its investment and operating risk. To evaluate the impact of the *Yosemite Valley Plan* alternatives on the concessioner, the analysis began by evaluating the concessioner's current capacity to earn a profit and then considered how each aspect of the *Yosemite Valley Plan* alternatives would impact that capacity.

The concessioner's profit capacity may be understood as consisting of two components—its present profit plus the amount of its federal contribution. In other words, the concessioner's financial contribution to the federal government represents the amount of money it is able to pay after earning a reasonable return. It is important to note that this judgment is based on the fact that the current Yosemite concessioner obtained the concession contract in a fair market competition in which it presumably is retaining reasonable profits that are neither insufficient nor excessive.

[3]The series of periodic future investments in furniture, fixtures & equipment can be viewed as equivalent to an annual average investment. In this way, the annual impact of the furniture, fixtures & equipment expense increase can be represented in the concessioner's resulting profit performance. Indeed, if the furniture, fixtures & equipment purchases are financed with debt, as might be expected, the debt service would be an annual cost.

If the changes in concessioner operations induced by the *Yosemite Valley Plan* do not erode all of the concessioner's ability to make financial payments to the government, a reasonable profit will remain available to the concessioner. On the other hand, if the *Yosemite Valley Plan* eliminates the concessioner's ability to make any federal contribution, the concessioner may still earn a reasonable return as long as its profits are not also eroded. However, if the concessioner was unable to make any payments to the federal government and was also unable to earn a reasonable profit, that situation could not be sustained. The concessioner would choose to discontinue operations.

The total profit impact on the next concessioner's operations associated with the proposed alternative is projected to be an annual decrease in its profits of $8.1 million. This projection is based on the combined profit impacts associated with: (1) changes to the concessioner's gross revenue (sales receipts) and profitability, (2) employee housing and relocation-related cost increases including furniture, fixtures, and equipment, and (3) annual repair and maintenance costs on new facilities.

The changes to visitor services proposed under this alternative are projected to generate additional net profits of $2.9 million annually. These profits would be obtained from annual revenue increases of approximately $4.0 million. The profit gains would primarily result from increasing the highly profitable Yosemite Lodge accommodations and adding to the number of campsites within the Valley.

Future employee housing and relocation cost increases are projected to be approximately $5.0 million per year. These consist primarily of increases in the annual costs for furniture, fixtures, and equipment (FF&E) replacement ($1.3 million, including the cost of capital for this expenditure), heat and utilities ($0.8 million), employee transportation ($0.6 million), insurance ($0.5 million), and wage increases to encourage employees to relocate out of the Valley ($0.5 million). Additional housing-related staff needs are estimated to cost less than $0.3 million. Other associated costs total approximately $0.9 million. It is estimated that annual repair and maintenance of the new concession-related facilities would cost approximately $6.0 million. Therefore, the impact on the next concessioner's resulting total profit is projected to be an annual loss of $8.1 million ($2.9 million – $5.0 million – $6.0 million = –$8.1 million).

In summary, based on the analysis of proposed changes under this alternative, future concession operations would be expected to experience a $9.2 million decrease in annual profits. This loss could be offset by reducing the current or any future concessioner's federal contribution from its current level of $9.9 million annually to cover the concessioner's projected profit reduction. In this case, it is estimated that the current or any future concessioner would be able to make a net contribution of approximately $1.8 million to the federal government annually. This would represent a long-term, negligible, adverse impact on concession operations.

Table 4-143 shows the projected financial impacts to Yosemite Concession Services under Alternative 5.

Table 4-143 Projected Annual Financial Impacts ($ Million)			
Impact	**Alt 1**	**Alt 5**	**Net Change**
Revenue	$0	$4.0	$4.0
Profit from Operations	$0	($8.1)	($8.1)
Concessioner's Govt. Contribution	$9.9	$9.9	$0
Net Profit Impact & Govt. Contribution	**$9.9**	**$1.8**	**($8.1)**

Note: All figures are in 1998 constant dollars.

The projected revenue impact would represent a 4.6% increase in the concessioner's 1998 revenues, which would be a long-term, moderate, beneficial impact. If the concessioner's governmental contribution were used to offset the projected profit losses from its operations, then this alternative would have a negligible, adverse impact on the concession operations. However, the annual financial return to the federal government from the concession operations would be reduced from $9.9 million to $1.8 million, a reduction of 82%, which would represent a long-term, major, adverse impact to the federal government.

Yosemite Medical Clinic

Under this alternative, Yosemite Medical Clinic would remain in its existing location. Also, under Alternative 5, it is projected that approximately 38,400 additional room-nights would add 120,600 overnight stays annually within the Valley. This represents an increase of approximately 7.7% in park overnight stays, and corresponds to a 3.3% increase in total park visitation (compared to 1998 visitation levels). However, this increase is still less than the average pre-flood levels and would represent a long-term, moderate, beneficial impact to the Clinic.

Although relocation to El Portal might encourage some employees to seek medical attention at other clinics outside the park, the majority of these employees would continue to work in the Valley, and may continue to seek medical attention at the Valley Medical Clinic. However, the net effect and future magnitude of these impacts on the concessioner's future sales cannot be quantified.

The Ansel Adams Gallery

Under this alternative, The Ansel Adams Gallery would remain in its current location. Numerous modifications are proposed for the Yosemite Village Area: development of a new transit center in Yosemite Village near the Yosemite Village Store, expansion of fast food facilities at the Village Grill and Degnan's, removal of public parking throughout the Yosemite Village area, and the transformation of the Yosemite Village area as an interpretive hub. Day-visitor parking (550 spaces) would be developed at Camp 6 adjoining Yosemite Village.

Removal of nearby parking could reduce the Gallery's annual sales. Currently most visitors take their purchases with them. Many visitors may be reluctant to make purchases if they must use the shuttle buses to return to their cars or overnight accommodations. However, the transit center would be a central component of the future Valley and out-of-Valley shuttle systems. It is expected that more park visitors would pass through the area, making Yosemite Village an increasingly important part of most park visitors' travel itineraries. Also under this alternative, day-visitor parking would be located within walking distance of the Gallery. Therefore, it is

expected that this alternative would have a long-term, minor, beneficial impact on the Ansel Adams Gallery by attracting more potential customers.

In addition, any changes in the park's annual visitation may be expected to have a corresponding effect on sales by altering the Gallery's customer base. However, the net effects and future magnitude of these impacts on the concessioner's future sales cannot be quantified.

Yosemite Association

Employee housing is the primary issue affecting the Yosemite Association's future operations. The Association currently experiences a shortage of employee housing, and any increase in future employees would increase the problem. This alternative proposes that some housing would be available for Yosemite Association employees; if this occurred it would have a long-term, moderate, beneficial impact on the Association's ability to recruit and retain staff.

The proposed changes to the Valley Visitor Center are expected to produce mainly long-term, moderate, beneficial impacts to the Yosemite Association. Under this alternative, the visitor center may be redesigned.

To provide a larger and more readily accessible space which would improve the Association's ability to provide effective information and orientation service, as well as retail sales, it is expected that annual sales at the new visitor center may increase due to the improved facilities and visitor experience. This would represent a long-term, minor, beneficial impact to the Association.

Under this alternative, the Yosemite Association's Valley office would be converted for use as a natural history museum. This would allow improvement of the existing cultural history museum within the existing museum building. The Yosemite Association expects these changes to have a long-term, moderate, beneficial impact on its finances because it would be able to enlarge and improve the existing Museum Store and open an additional store at the new national history museum.

Increases in Yosemite Association retail sales may require hiring additional retail employees. While the Yosemite Association cannot project the necessary staff increase, it does expect costs to be covered by the increased sales. This would cause a long-term, minor, adverse impact, as staff increases would exacerbate the housing problems noted above.

Yosemite Institute

Numerous impacts to the Yosemite Institute are expected due to proposed changes to overnight accommodations, administrative park operations, transportation, research library, archives, and museum.

Overnight Accommodations

The reduction in the number of Curry Village tent cabins and elimination of cabins without baths may affect the Yosemite Institute, which currently occupies approximately 80 units between September and June. Under this alternative, additional economy accommodations are proposed at Curry Village, adding 149 units suitable for Yosemite Institute use throughout the winter. As a result, lodging capacity for Yosemite Institute participants is expected to be adequate.

It is expected that Yosemite Institute would be required to pay higher room rates to Yosemite Concession Services for rooms with bath. Based on Yosemite Concession Services' current rate structure and depending on the availability of the remaining Curry Village tent cabins for Yosemite Institute's use in September and June, it is estimated that the Institute's average lodging costs would increase between 16% and 25%. This is equivalent to an average lodging cost increase of $1.80 to $2.70 per person per night. Based on an average annual total of 40,122 person-nights spent in Yosemite Concession Services accommodations by Yosemite Institute participants, Yosemite Institute's total lodging costs may be expected to increase between $72,000 to $108,000 (in 1999 dollars). This would represent a long-term, moderate, adverse impact on Yosemite Institute's program.

Transportation

Proposed transportation plans would have a long-term, negligible, adverse impact on Yosemite Institute's program, because most participants rely on commercial buses for their transportation needs, and all student visitors are overnight visitors. Yosemite Institute employees would welcome the opportunity to use public transportation to and from locations outside the Valley.

Administrative Park Operations

Under this alternative, Yosemite Institute's administrative offices would be relocated outside the Valley into government provided facilities in El Portal. The National Park Service would work with the Yosemite Institute and the primary concessioner to provide adequate facilities for the Institute's field operations that operate in the Valley during the off-season. These facilities would provide an adequate staging area and base of operations for the Yosemite Institute to perform the essential support for its field operations. Relocation of the administrative park operations would represent a long-term, minor, adverse impact on Yosemite Institute's education programs.

El Portal Chevron Station

Under this alternative, the overall number of visitors entering along Highway 140 is not expected to change. The majority of day visitors would continue to drive into the park or use the park transit system from the out-of-Valley parking sites. It is expected that there would be a moderate increase in visitors using transit or tour buses to access the Valley. Growth in bus traffic would increase the demand for diesel fuel, which would be expected to have a long-term, minor, beneficial impact on the station's revenues. Correspondingly, the use of transit buses by day visitors parking at the El Portal satellite parking facilities would reduce the number of visitor vehicles using the station. Visitor fuel sales may therefore be expected to decrease; this would have a long-term, minor, adverse impact on the station's annual revenues.

In addition, while the proposed increase in employees living in El Portal would generate a moderate increase in demand for automotive fuel, these gains would likely be offset by the reduction in the number of employees commuting daily into the Valley. Instead, these employees would be required to use the employee transit system. Overall, it is expected that this alternative would have a long-term, minor, adverse impact on the El Portal Chevron concession.

El Portal Market

Under this alternative, the El Portal Market would remain at its current location, and its facilities and operations would be unchanged throughout the term of the existing contract. The store's primary source of customers is from park visitor traffic along Highway 140. It is expected that the use of transit or tour buses by day visitors would reduce private vehicle traffic and thus potential customers.

Although past population increases have not resulted in increased sales at the market, it is possible that the increase in employee housing at El Portal would result in a minor increase in revenues. Therefore, overall this alternative is expected to have a long-term, negligible, adverse impact on El Portal Market's sales.

Concessioners and Cooperators Conclusion

The operational and financial impacts to the primary concessioner would be as described above, including, a $8.1 million decrease in annual profits. This loss could be offset by reducing the current or any future concessioner's federal contribution from its current level of $9.9 million annually to cover the concessioner's projected profit reduction. In this case, it is estimated that the current or any future concessioner would be able to realize a reasonable profit and contribute approximately $1.8 million to the federal government annually. This would represent a long-term, negligible, adverse impact on concession operation.

Projected increases in park visitation is expected to have a long-term, moderate, beneficial impact on the Yosemite Medical Clinic.

The net impacts from proposed changes in visitor parking and visitation on the Ansel Adams Gallery are indeterminate.

The proposed changes to visitor interpretation facilities are expected to have a long-term, major, beneficial impact on the Yosemite Association by providing improved and increased retail sales opportunities. However, associated increases in employees and the limited employee housing for the Yosemite Association staff may have a long-term, moderate, adverse impact on the organization.

Long-term adverse impacts to the Yosemite Institute are expected from the proposed changes to overnight accommodations and park facilities. Reductions in Curry Village tent cabins would have a moderate adverse impact, because program participants would need to use other newly built but more expensive lodging facilities. Relocation of the program's administrative office out of the Valley is expected to have a long-term, minor, adverse impact.

The proposed changes to visitor access and relocation of employee housing would have a long-term, minor, adverse impact on the El Portal Chevron Station, and a negligible adverse impact on the El Portal Market.

Cumulative Impacts

Yosemite Concession Services

The cumulative impacts would be the same as described under Alternative 1. The primary concessioner would be expected to assume costs of future "repair and maintenance" on *existing* park facilities used for its operations, an estimated annual cost of $1.7 million. As a result, under this alternative, a total cumulative impact resulting in a net federal contribution of $0.1 million by the concessioner is projected. This figure is the difference between a $1.8 million projected federal contribution by the concessioner, and the $1.7 million repair and maintenance cost on existing park facilities used by the concessioner. This would represent a long-term, negligible, adverse impact on the concessioner because its net profits would be unaffected by the reduction in its future federal contribution.

Other Concessioners and Cooperators

The cumulative impacts would be the same as described under Alternative 1.

Park Operations

NATIONAL PARK SERVICE OPERATIONS

Superintendent's Office

This alternative would have no impact on the Superintendent's office staff or its annual funding requirements.

Maintenance Operations

Buildings and Grounds

To provide the levels of service considered necessary, it is estimated that approximately 25 additional buildings and grounds personnel would be needed under this alternative. This would represent approximately $937,000 for additional salary and operations costs annually. Construction of new shuttle bus stops, buildings, housing units, out of valley parking lots, picnic areas, and changes in building functions from administrative to public use would require additional custodial service and facility maintenance.

The rehabilitation of historic districts would require additional staffing and associated funding.

The traveler information and traffic management system, once implemented, could displace visitors to outlying districts or expand visitation to off-peak seasons. This would be a long-term, minor, adverse impact on buildings and grounds operations in outlying districts, in that the levels of maintenance and custodial services required for peak season operations would be needed for a longer period of the year.

Roads and Trails

To provide the levels of service considered necessary, it is estimated that approximately 29 additional roads and trails personnel would be needed. This would represent approximately $1,087,500 for additional salary and operations costs annually.

A new parking lot in the east Valley would require additional maintenance (equipment and staffing) for snow removal. Three new parking lots in out-of-Valley locations (two of which are located above the traditional snowline in the spring and fall seasons) would require maintenance equipment and staffing, primarily for snow removal.

An increase in trails in the Valley and El Portal would create additional workload that would affect the trails and forestry operation. Snow removal in the winter and hazard tree removal and trail repairs throughout the year would continue for the life of the new trail system.

If the stable were to move to McCauley Ranch it would increase the travel time for packers to get to Valley trailheads but would decrease travel times to destinations in the Tioga Road corridor. Additional staffing and salary would be required to provide more pack trips or longer work shifts, to cover additional travel time for pack trips leaving from Yosemite Valley trail heads.

Demand for trash pickup in the El Portal area and out-of-Valley parking areas would increase due to the relocation of administration functions, and the increase in the number of housing units and visitor-use areas.

Utilities

It is estimated that approximately six additional utilities personnel would be needed to provide appropriate levels of service. This would represent approximately $225,000 in additional salary and operations costs annually. Moving the parkwide functions to El Portal and retaining only a Valley shop space, constructing new buildings, and relocating utilities out of highly valued resource areas would impact the Utilities Branch. New service connections and, in the case of the out-of-Valley parking areas, entirely new utility systems would require an increase in the annual maintenance and operational costs to provide these additional levels of service and to meet state and federal regulations for public utility systems.

Moving the stable to McCauley Ranch would increase the travel time for the back country utilities operation to Valley trailheads but would decrease travel times to destinations in the Tioga Road corridor. However, there would be an impact to the backcountry utilities operation due to increased logistic maneuvering when leaving from Yosemite Valley trailheads.

The overall impact to maintenance operations would be long-term, moderate, and adverse until funding is provided to meet the need. When funded, the impacts would be long-term, negligible, and neutral.

Visitor and Resource Operations

Visitor and Resource Protection

It is estimated that approximately 27 additional visitor protection personnel would be needed to provide prescribed levels of service. This would represent approximately $1,012,500 in additional

salary and operations costs annually. Newly restored areas would need to be protected, security for the newly constructed museum expansion would need to be provided, and regular patrols of out-of-Valley parking areas would be needed.

Relocating the base of operations for Search and Rescue from Yosemite Valley to El Portal would have the potential for long-term, minor, adverse effects upon incident costs, in that activities in Yosemite Valley, where most complex rescues occur, would have more logistical costs than under Alternative 1, because coordination of Yosemite Valley operations would be more difficult, while coordination of activities in other parts of the park would potentially improve.

Interpretation

Greatly expanded interpretive and educational facilities and programs would require a large increase in staffing for the Interpretation Division. The new museum and library with expanded public access would also require increased staffing. The Interpretation Division would have to operate additional visitor contact facilities and conduct additional interpretive programs. It is estimated that approximately 30 additional interpretive personnel would be needed to provide prescribed levels of service. This would represent approximately $1,125,000 in additional salary and operations costs annually.

Resources Management

Restoration of impacted areas, continued monitoring of restoration efforts, mitigation measures to facilitate restoration resulting from changing visitor-use patterns, and expanded efforts working with the six culturally associated American Indian tribal groups would require an increase in staffing. Staffing and funding would be needed to implement the Visitor Experience and Resource Protection (VERP) program. It is estimated that approximately seven additional resources management personnel would be needed to provide prescribed levels of service. This would represent approximately $262,500 for additional salary and operating costs annually. Overall, impacts to visitors would be long-term, moderate, and adverse until fully funded. Once funded, the impacts would be long-term, negligible, and neutral.

Administration

Valley administrative operations would be shifted to El Portal. This would have a long-term, minor, adverse impact on administration operations as a result of increases in logistic maneuvering. Administrative operations would be increased by five positions and $187,700 to support park operations.

Concessions Management

Management and monitoring of new concession operations and facilities would require two additional staff at $75,000 annually. This would have a short-term, moderate, adverse impact on concessions management, in that there would be an increase in costs for increasing the level of service required under this alternative during the period when concession services would be revised and refined.

Depending on the location chosen by the park's principal concessioner for its headquarters, coordination and communication would potentially be more difficult than under Alternative 1. However, adverse the impact of communication and coordination difficulties would likely be moderate over the short term, reducing to minor as both operations adjust to the new working environment.

Concessioners and Cooperators

Impacts on park concessioners are evaluated in the Social and Economic Environments section of this chapter.

Transit Operations

The annual recurring costs for operations and maintenance of the bus fleet for this alternative would be $8,448,000. This cost would be long-term, major, and adverse impact to this operation until fully funded. Once funded, the impacts would be long-term, negligible, and neutral.

Conclusion

This alternative would require that approximately 131 additional park personnel be added to current staffing levels in the Maintenance Operations, Protection Operations, Interpretation, Resources Management, and Administrative Divisions. This would require an additional $4,912,500 annually (or approximately $37,500 per person) in additional park funding for salary and operations costs above those discussed under Alternative 1. The cost for the additional park personnel would represent a long-term, moderate, adverse impact until funded. Once funded, there would be a long-term, negligible, and neutral impact to these operations.

Cumulative Impacts

Cumulative impacts would result from other park planning projects and regional activities. There could be a moderate increase in the workloads of the Maintenance Operations, Interpretation, and Resources Management Divisions as a result of the transit system developed by Yosemite Area Regional Transit System (inter-agency) due to increased needs in facility maintenance, custodial services, visitor education, and resource monitoring. This would be a long-term, moderate, adverse impact because of workload increases. YARTS operations would result in a long-term, minor, beneficial impact on protection operations due to the alleviation of traffic congestion. These moderate effects, in combination with the major impacts of implementing in-park and in-Valley transit systems, would result in adverse operational impacts that are long-term and major compared to Alternative 1.

The redesign of the South Entrance and Mariposa Grove areas would increase the workload of the Protection Operations, Maintenance Operations, and Resources Management Divisions in the short term during initial planning and implementation. This would be a short-term, minor, adverse impact. This project would require a long-term commitment from and create an increased workload for the Interpretation Division. This project would have a major, adverse impact on the workload of the Interpretation Division. The Protection Operations and Maintenance Operations Divisions would achieve long-term, moderate, benefits when the project is completed due to decreased workloads for their operations. These effects, when considered in

combination with the major impact of providing more interpretive services at improved visitor information centers, would result in long-term, moderate, and adverse operational impacts.

Fire management planning and wilderness management planning would require an increase in the workloads of the Protection Operations and Resources Management Divisions. This would have short-term, major, adverse impacts on both divisions. The workload of fire management staff would increase over the long term as a result of this planning effort. This alternative would create the need for planning, design, and program refinement, which would also have short-term, major, adverse impacts; cumulative adverse impacts would remain short-term, but major.

Numerous proposed residential and commercial developments along each entrance corridor would have no long-term, major impacts on operations, assuming that a traveler information and traffic management system would be developed and that the park would not provide emergency services to those areas. Should the park be required to provide emergency services to these areas, there would be some impacts unless cooperative agreements were adopted and financial support was available from involved county governments. Short-term, moderate to major, adverse impacts would be expected during times of construction. Considered in combination with the actions in this alternative, adverse effects upon Protection Operations would remain moderate to major and long term.

A research station for the University of California, campus at Merced (UC Merced) would have a long-term, moderate to major benefit resulting from educational and research support and the creation of a viable recruitment pool for new employees.

Many other in-park actions such as major campground rehabilitation, development concept planning, and water treatment plant rehabilitation (including water and wastewater improvements at Tuolumne Meadows and White Wolf) would have short-term, major, adverse impacts on staff availability during times of construction or development. When considered in combination with the actions in this alternative, the cumulative effect of these activities on park operations would remain major and adverse, but of a short-term duration.

Energy Consumption

Under Alternative 5, housing beds would be relocated from Yosemite Valley to El Portal, Wawona, and Foresta, and additional beds would be added to El Portal and Wawona to accommodate present unmet needs and potential future growth as a result of operational changes associated with this alternative. Table 4-144 summarizes existing housing (Alternative 1) and estimated propane consumption and analogous data for Alternative 5.

Under Alternative 5, there would be an increase of about 340% in propane consumption in El Portal, a 275% increase in Wawona, a small increase in Foresta, and a decrease of about 40% in the Valley. However, when combined, the overall propane consumption increase as a result of implementation of Alternative 5 would be 79,110 gallons per year, or 23%, which would represent a moderate, long-term, adverse impact on propane consumption.

Table 4-144 Changes in Housing and Propane Consumption				
	Alternative 1		Alternative 5	
Location	No. of Beds	Propane (gal/yr)	No. of Beds	Propane (gal/yr)
Yosemite Valley	1,277	260,510	752	153,400
El Portal	290	59,160	1,007	205,400
Wawona	112	22,850	310	63,240
Foresta	4	810	14	2,860
Cascades and Arch Rock	12	2,450	0	0
Total	**1,695**	**345,790**	**2,083**	**424,900**

Table 4-145 lists estimated fuel consumption for visitor-related travel to and from the Valley due to the Alternative 5 transportation plans, and for additional out-of-Valley employee commuting due to the relocation of residences from the Valley to El Portal and Wawona. By 2015, Alternative 5 would result in a 44% decrease in visitor-related gasoline consumption and a 120% increase in diesel (or alternative) fuel consumption. This increase would be associated with new shuttle buses operating from out-of-Valley day-visitor parking areas and the expanded Valley shuttle service.

A 44% decrease in gasoline consumption by the year 2015 would represent a savings of 1,080,800 gallons over Alternative 1, whereas the 120% increase in diesel (or alternative) fuel consumption would represent an increase of 258,200 gallons over Alternative 1. Overall Alternative 5 by the year 2015 would yield a combined savings of 822,600 gallons of fuel. This is a net decrease from Alternative 1 in motor fuel consumption of approximately 30% and would represent a moderate, long-term, beneficial impact. Similar energy savings would be achieved for years 2005 and 2010 as well.

Table 4-145 Vehicle Fuel Consumption			
	Total (Gal/Yr)		Total Fuel Consumption (Gal/Yr)
Alternative	Gasoline	Diesel or Alternative Fuel	
2000			
Alternative 1	2,905,800	230,200	3,136,000
Alternative 5	NA	NA	NA
2005			
Alternative 1	2,695,100	224,500	2,920,600
Alternative 5	1,521,600	494,200	2,015,800
2010			
Alternative 1	2,555,400	219,100	2,774,500
Alternative 5	1,442,200	483,000	1,925,200
2015			
Alternative 1	2,480,800	213,800	2,694,600
Alternative 5	1,400,000	472,000	1,872,000

CONCLUSION

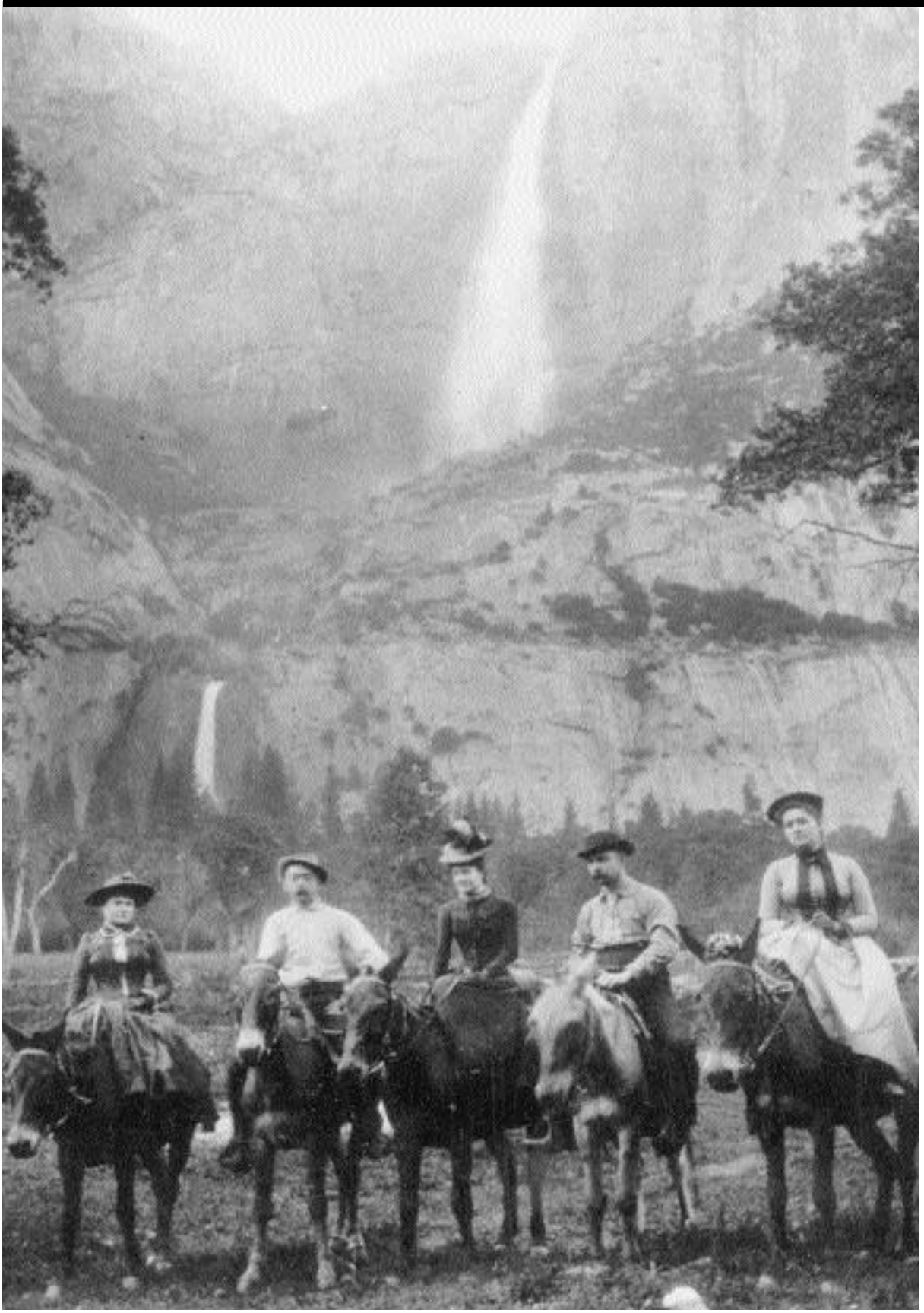
Employee housing space-heating consumption would decrease in the Valley, but would increase at El Portal and Wawona during the 2000-2015 time frame. Overall, there would be a minor

increase in total housing units for Alternative 5 and an associated minor, long-term, adverse impact on home energy consumption.

The reduction in gasoline consumption in 2015 relative to Alternative 1 reflects the shift by park visitors from private vehicles to shuttle buses, as well as a fleet turnover to vehicles with improved fuel economy over time. The increase in diesel (or alternative) fuel consumption would be attributable to the deployment of shuttle buses for visitors. The combined motor fuel savings for Alternative 5 in the years 2005, 2010 and 2015 would represent a moderate, beneficial, long-term impact.

CUMULATIVE IMPACTS

Other actions in the immediate area and greater San Joaquin Valley may have cumulative impacts. The cumulative impact on energy consumption under Alternative 5 would be associated with new housing and lodging developments outside the park. A moderate, long-term, adverse impact would result from these reasonably foreseeable future projects in the region, as described for Alternative 2. Alternative 5, however, would represent minimal contribution to the overall cumulative impact, because the net increase in employee housing for Alternative 5 would be only about 1% of new housing projected for the region.



Unavoidable Adverse Impacts

Final Yosemite Valley Plan

Supplemental EIS

Photo on previous page by Gustav Fagerstrom, courtesy of Yosemite Museum

The first tourist excursion into Yosemite Valley occurred in 1855. By the 1870s, hotels had been built to accommodate tourists hardy enough to endure the dusty, multi-day journey. This tourist party pose in front of Yosemite Falls in about 1875.

UNAVOIDABLE ADVERSE IMPACTS

The following discussion identifies impacts to resources associated with the implementation of each alternative. These impacts have been identified as being unavoidable, moderate to major, and adverse.

Alternative 1

Generally, Alternative 1 would result in continued degradation of natural resources due to continued use and existing development. Existing structures would remain within highly valued resource areas such as wetlands, meadows, riparian areas, and California black oak woodlands. Existing bridges would also continue to impede flood flows and channel movement. Visitation levels would also continue to grow, resulting in more crowding, congestion, and delays for visitors. The potential risk for unavoidable adverse impacts to structures and human life would continue within the floodplain and rockfall zones.

CULTURAL RESOURCES

The Superintendent's House (Residence 1) would be allowed to deteriorate, leading to its eventual loss.

Alternative 2

No appreciable, unavoidable, adverse impacts on scenic, geologic hazards, or energy consumption would take place under this alternative.

WATER RESOURCES

The Camp 6 parking area would be situated within a portion of the floodplain that could experience high-velocity, deep flows during a flood event such as were observed during the January 1997 flood. This parking facility could impede the river's ability to naturally migrate and change course during extreme flood events and reduce the area available to the river for sediment deposition. In addition, impacts to riverbank stability (soils compaction, accelerated erosion, and vegetation loss) could occur due to the radiating effects associated with the increased concentration of visitors. Overall, development of a parking facility in the Camp 6 area could result in localizedadverse impacts on hydrology and floodplain values.

FLOODPLAINS

The construction of 657 employee beds in the 100-year floodplain at Hennessey's Ranch would have long-term, adverse impact due to the presence of people in the floodplain at night; however, risk to property and human safety would be mitigated through the extension and elevation of the existing levee. (see also Water Resources above)

WETLANDS

In Yosemite Valley up to 141 acres of wetland would be restored, however, Alternative 2 would adversely impact up to approximately 23 acres of potential wetland areas, resulting in direct

wetland loss and indirect impacts on wetland hydrology. These impacts would occur from proposed new development (12 acres) and redevelopment of facilities (11 acres). Impacts to these potential wetland areas would be minimized to the extent feasible during facility design and site layout once the potential wetland areas have been fully delineated. There would be no net-loss of wetlands.

SOILS

Alternative 2 would develop and therefore adversely affect 69 acres of soil within the Valley and up to 80 acres of soil in out-of-Valley areas, the majority of which would occur within non-highly valued resource soil types. These adverse impacts would include soil removal, profile mixing, compaction, and erosion as a result of new development activities. Impacts to highly valued resource soils would be minimized to the extent feasible during facility design and site layout.

VEGETATION

Alternative 2 would impact 75 acres of vegetation within the Valley, 54 acres of which would occur within non-highly valued resource vegetation types. Up to 80 acres of vegetation would be impacted in out-of-Valley areas. These adverse impacts would include loss of vegetation and degradation of vegetation communities from new development and changes in visitor use. In Yosemite Valley and out-of-Valley areas, impacts to highly valued resource vegetation types would be minimized to the extent feasible, and special consideration would be given to retaining natural topography, native soils, and large trees during facility design and site layout.

WILDLIFE

Unavoidable adverse effects on wildlife would be caused by loss or degradation of 75 acres of habitat in Yosemite Valley, 54 acres of which would occur in non-highly valued resource habitat types. Up to 80 acres of habitat would be affected in out-of-Valley areas. Wildlife would be affected by habitat fragmentation, local reductions in food, cover, and reproductive sites at project locations, and by the disturbance from increased human use of these areas. To the extent feasible, impact to wildlife would be minimized through site design to avoid highly valued resource habitats, by the preservation of features important to wildlife (e.g., snags), and control of human access to sensitive habitats.

SPECIAL-STATUS WILDLIFE SPECIES

Alternative 2 would potentially have adverse effects on three special-status wildlife species. These effects would occur through removal or degradation of habitat (thus affecting the availability of food, cover, and reproductive sites), habitat fragmentation, and through an increase in human disturbance in the vicinity of developments. To the extent feasible, these impacts would be minimized through site-specific surveys for special-status species, and site designs limiting the effects on species found in the areas of potential development.

SPECIAL-STATUS PLANT SPECIES

Alternative 2 would result in the potential loss or degradation of habitat with moderate to major, adverse effects for three park rare species. These impacts would occur as a result of new

development, including parking facilities. These impacts would be mitigated to the extent practicable through site-specific surveys and design to avoid impacts to individuals found in development areas.

Air Quality

Under this alternative there would be short-term adverse impact to air quality due to the increased emissions of nitrogen oxide which is attributed to the operation of shuttle buses from the three out-of-Valley parking areas and the expanded in-Valley shuttle fleet. Nitrogen oxide would also increase with the use of compressed natural gas fueled buses.

Cultural Resources

Alternative 2 would result in the potential destruction of the majority of one archeological site with high data potential, and one historic village site in El Portal. Development in Yosemite Valley and El Portal would result in the potential loss of many traditional gathering areas. It would also result in the loss of historic structures such as the individually significant Stoneman and Sugar Pine Bridges, the concessioner's stable, and many other contributing elements of the cultural landscape. As with Alternative 1, the Superintendent's House (Residence 1) would be lost. The Camp Curry Historic District also would be changed substantially, resulting in the loss of a majority of the character-defining tent cabins. Actions in the Merced River gorge would result in the removal of six of the remaining seven elements of the Yosemite Hydroelectric Power Plant historic property. However, the National Park Service would pursue a data recovery program, including an inventory and evaluation of impact areas, continue consultation with culturally associated American Indian tribes, and examine alternative uses for historic structures in an effort to avoid, minimize, and mitigate impacts. In keeping with the Programmatic Agreement, the National Park Service would continue to consult with the State Historic Preservation Office during continued studies, the creation of site-specific designs, and project implementation.

Merced Wild and Scenic River

Reconstruction of the El Portal Road between the Cascades Diversion Dam and Pohono Bridge could, depending on design, have a long-term, adverse impact on the hydrologic processes Outstandingly Remarkable Value due to the continued presence of bank stabilization materials in the river channel. The reconstruction of the El Portal Road and the removal of the Cascades Diversion Dam would have a short-term, adverse impact on the scenic Outstandingly Remarkable Value. The removal of historic bridges (i.e., Sugar Pine and Stoneman) would have long-term, moderate, adverse impacts on the cultural Outstandingly Remarkable Value because river-related historic structures would be lost and could have short-term, adverse impacts to the scenic and hydrologic processes Outstandingly Remarkable Value, due to the presence of construction equipment in and near the river. The relocation of the former Superintendent's House (Residence 1) would have a long-term, moderate, adverse impact on the cultural Outstandingly Remarkable Value because the structure would be moved away from the river, an important consideration in the original placement of the historic structure. The construction of a new parking facility in Yosemite Village (Camp 6) could have a long-term, adverse impact on the

scenic Outstandingly Remarkable Value depending on design. The possible construction of a traffic check station would have a long-term, adverse impact on the cultural Outstandingly Remarkable Value due to the possible disturbance of ethnographic gathering areas and a river-related archeological site.

Visitor Experience

This alternative would have impacts on visitor experience, including an increase in the amount of time required for day visitors to travel to the Valley, some loss of private vehicle access to east Valley destinations, and the inconvenience of having to carry personal possessions instead of relying on private vehicles as transport and storage devices. This would result from many day visitors having to park in out-of-Valley areas and enter the Valley by shuttle during peak season. Lodging units would decrease to 961, but campsites would increase to 500. The net effect would be a reduction of the overnight visitor capacity of Yosemite Valley. The impacts related to discontinuation of commercial stock rides would be long-term and adverse. Difficult access for raft and kayak users could lead to their displacement; this impact would be long-term and adverse. The potential development of a traffic check station at Taft Toe could result in a long-term, adverse impact on the night sky.

Transportation

Alternative 2 would result in an increase in the average travel time necessary for day visitors to access the Valley from the entrance stations (an additional 21 minutes on average). This increase would be caused by having to wait at transit facilities and shuttle stops, and by the longer travel times on buses.

Noise

This alternative would result in an increased number of sound events as a result of an increased number of bus trips west of El Capitan crossover, along Southside Drive west of Sentinel Bridge, on Sentinel Drive, Yosemite Village and in the out-of-Valley parking locations.

Social and Economic Environments

Alternative 2 would cause increases in population growth in the local communities of El Portal and Wawona, and would have an adverse impact on the local social environment, including law enforcement and court services, medical services to park employees, the elementary school system, and child care operations. In Foresta, the social environment would experience adverse impacts associated with visitor parking facilities if they are to be developed. Limited housing for Yosemite Association employees would have an adverse impact.

Park Operations

Under this alternative, the profit level of the primary concessioner would be reduced to the point that an additional $3 million annually would need to be mitigated. If the concessioner is unable to make a fair and reasonable profit from its operations, the concessioner would presumably choose to discontinue operations in the absence of measures to mitigate this economic impact. Some of these measures, if selected, could adversely affect park operations. Two such mitigation measures

would include (1) changing the distribution of park entrance fee revenues and (2) providing relief from building repair and maintenance costs. If either or both of these measures were to be used to offset impacts to the primary concessioner, National Park Service operating costs would increase. For example, the National Park Service would be responsible for funding the building repair and maintenance costs no longer allocated to the primary concessioner. If entrance fees were allocated to the concessioner and diverted from other projects, either those projects would not go forward or the National Park Service would have to secure additional park operating funds.

Alternative 3

No appreciable, unavoidable, adverse impacts on water resources, air quality, geologic hazards, transportation, park operations, or energy consumption would take place under this alternative.

FLOODPLAINS

The construction of 656 employee beds in the 100-year floodplain at Hennessey's Ranch would have a long-term, adverse impact, due to the presence of people in the floodplain at night; however, risk to property and human safety would be mitigated through the extension and elevation of the existing levee.

WETLANDS

In Yosemite Valley there would be 156 acres of wetland restored; however, alternative 3 would adversely affect up to approximately 17 acres of potential wetland areas, resulting in direct wetland loss and indirect impacts on wetland hydrology. These impacts would occur from proposed new development (7 acres) and redevelopment of facilities (10 acres). In addition, impacts to wetland areas in the vicinity of Taft Toe would be expected as a result of the radiating effects of increased visitor presence. Impacts to these potential wetland areas would be minimized to the extent feasible during facility design and site layout once the potential wetland areas have been fully delineated. There would be no net-loss of wetlands.

SOILS

Alternative 3 would impact 98 acres of soil within the Valley and less than 40 acres of soil in the out-of-Valley areas, the majority of which would occur within non-highly valued resource soil types. These adverse impacts would include soil removal, profile mixing, compaction, and erosion as a result of new development activities. Impacts to highly valued resource soils would be minimized to the extent feasible during facility design and site layout.

VEGETATION

Alternative 3 would affect 99 acres of vegetation within the Valley, the majority of which (85 acres) would occur within non-highly valued resource vegetation types. Up to 37 acres of vegetation in out-of-Valley areas would also be impacted. These adverse impacts would include loss of vegetation and degradation of vegetation communities from new development and changes in visitor use. Impacts to highly valued resource vegetation types would be minimized to the

extent feasible, and special consideration would be given to retaining natural topography, native soils, and large trees during facility design and site layout.

WILDLIFE

Unavoidable adverse impacts on wildlife would be caused by loss or degradation of 99 acres of habitat in Yosemite Valley, 85 acres of which would occur in non-highly valued resource habitat types. Up to 37 acres of habitat would be affected in out-of-Valley areas. Wildlife would be affected by habitat fragmentation, local reductions in food, cover, and reproductive sites at project locations, and by the disturbance from increased human use of these areas. To the extent feasible, impact to wildlife would be minimized through site design to avoid highly valued resource habitats, by the preservation of features important to wildlife (e.g., snags), and control of human access to sensitive habitats.

SPECIAL-STATUS WILDLIFE SPECIES

Alternative 3 would potentially have adverse effects on one special-status wildlife species. These effects would occur through removal or degradation of habitat (thus affecting the availability of food, cover, and reproductive sites), habitat fragmentation, and through an increase in human disturbance in the vicinity of developments. To the extent feasible, these impacts would be minimized through site-specific surveys for special-status species, and site designs limiting the effects on species found in the areas of potential development.

SPECIAL-STATUS PLANT SPECIES

Alternative 3 would result in the potential loss or degradation of habitat for two park rare species. These impacts would occur as a result of new development including parking facilities. However, these impacts would be mitigated to the extent practicable through site-specific surveys and designs to avoid impacts to individuals found within areas of potential development.

SCENIC RESOURCES

Alternative 3 would affect 99 acres of scenic resources due to vegetation loss. However, these impacts would occur in areas adjacent to existing development, limiting the amount of new development that would be noticeable, with the exception of the new parking/transit facility and visitor center at Taft Toe which would be adverse, major, and long-term.

NOISE

This alternative would result in an increased amount of nonvehicle noise events in the new housing areas proposed in El Portal. The number of sound events as a result of an increased number of bus trips east of El Capitan crossover, along Southside Drive, and Yosemite Village.

CULTURAL RESOURCES

Alternative 3 would result in the potential destruction of the majority of one archeological site, and one historic village with high data potential in El Portal. Development in El Portal and Yosemite Valley would also damage or destroy gathering areas and historic villages. Individually significant historic structures, Stoneman Bridge, and Sugar Pine Bridge would be lost. Many

contributing elements of the cultural landscape would be lost such as the Ahwahnee Row Houses, NPS maintenance facilities, and the concessioner stables, among others. The Camp Curry Historic District would be substantially changed, resulting in the loss of a majority of the character-defining tent cabins and other contributing structures. The historic land use and spatial organization of the Valley would be substantially altered with the addition of day-visitor parking and transit and orientation facilities at Taft Toe. Removal of the Cascades Diversion Dam, screenhouse, and residences would result in the loss of six of the remaining seven elements of the Yosemite Hydroelectric Power Plant historic property. However, the National Park Service would pursue a data recovery program, including an inventory and evaluation of impact areas, continue consultation with culturally associated American Indian tribes, and examine alternative uses for historic structures in an effort to avoid, minimize, and mitigate impacts. In keeping with the Programmatic Agreement, the National Park Service would continue to consult with the State Historic Preservation Office (SHPO) during continued studies, the creation of site-specific designs, and project implementation.

Merced Wild and Scenic River

The reconstruction of the El Portal Road between the Cascades Diversion Dam and Pohono Bridge could, depending on design, have a long-term, adverse impact on the hydrologic processes Outstandingly Remarkable Value due to the continued presence of bank stabilization materials in the river channel. The reconstruction of the El Portal Road and the removal of the Cascades Diversion Dam would have short-term, adverse impacts on the scenic Outstandingly Remarkable Value. The removal of historic bridges (i.e., Sugar Pine, Stoneman, Superintendent's, and Housekeeping) would have long-term, adverse impacts on the cultural Outstandingly Remarkable Value because river-related historic structures would be lost and could have short-term, adverse impacts to the scenic and hydrologic processes Outstandingly Remarkable Value, due to the presence of construction equipment in and near the river. The removal of the former Superintendent's House (Residence 1) and Lamon Orchard would have long-term, adverse impacts on the cultural Outstandingly Remarkable Value because river-related historic resources would be lost. The possible construction of a traffic check station would have a long-term, adverse impact on the cultural Outstandingly Remarkable Value due to possible disturbance to ethnographic gathering areas and a river-related archeological site. The discontinuation of private stock use would have a long-term, adverse impact on the recreation Outstandingly Remarkable Value because the diversity of river-related recreational opportunities would be diminished.

Visitor Experience

This alternative would have impacts on visitor experience including the need for most visitors to travel by means other than their private vehicles to destinations within the Valley. This would also result in some loss of private vehicle access to east Valley destinations and the inconvenience of having to carry personal possessions instead of relying on private vehicles as transport and storage devices. The number of campsites would decrease to 449 and lodging units would decrease to 982, resulting in fewer units and sites available for overnight users. The impacts related to discontinuation of commercial stock rides would be long-term and adverse. Difficult access for raft and kayak users as well as anglers could lead to their displacement; this would be long-term

and adverse. The development of a parking and transit facility at Taft Toe would result in a long-term, adverse impact on the night sky.

Social and Economic Environments

Alternative 3 would cause increases in population growth in El Portal that would have an adverse impact on the local social environment, including law enforcement and court services, medical services to park employees, the elementary school system, and child care operations.

Alternative 4

No appreciable, unavoidable, adverse impacts on geologic hazards, water resources, park operations, or energy consumption would take place under this alternative.

Floodplains

The construction of 656 employee beds in the 100-year floodplain at Hennessey's Ranch would have a moderate, adverse impact, due to the presence of people in the floodplain at night; however, risk to property and human safety would be mitigated through the extension and elevation of the existing levee.

Wetlands

In Yosemite Valley there would be 149 acres of wetland restored; however, Alternative 4 would adversely affect up to approximately 18 acres of potential wetland areas resulting in direct wetland loss and indirect impacts on wetland hydrology. These impacts would occur from proposed new development (7 acres) and redevelopment of facilities (11 acres). In addition, impacts to wetland areas in the vicinity of Taft Toe would be expected as a result of the radiating effects of increased visitor presence in this area. Impacts to these potential wetland areas would be minimized to the extent feasible during facility design and site layout once the potential wetland areas have been fully delineated. There would be no net loss of wetlands.

Soils

Alternative 4 would affect 98 acres of soil within the Valley and up to 70 acres of soil in out-of-Valley areas, the majority of which would occur within non-highly valued resource soil types. These adverse impacts would include soil removal, profile mixing, compaction, and erosion as a result of new development activities. Impacts to highly valued resource soils would be minimized to the extent feasible during facility design and site layout.

Vegetation

Alternative 4 would impact 102 acres of vegetation within the Valley, of which 88 acres would occur within non-highly valued resource vegetation types. Up to 70 acres of vegetation in out-of-Valley areas would also be impacted. These adverse impacts would include loss of vegetation and degradation of vegetation communities from new development and changes in visitor use. In Yosemite Valley, impacts to highly valued resource vegetation types would be minimized to the extent feasible and special consideration would be given to retaining natural topography, native soils and large trees during facility design and site layout.

WILDLIFE

Unavoidable, adverse impacts on wildlife would be caused by loss or degradation of 102 acres of habitat in Yosemite Valley, 88 acres of which would occur on non-highly valued resource habitat types. Up to 70 acres of habitat would be affected in out-of-Valley areas. Wildlife would be affected by habitat fragmentation, local reductions in food, cover, and reproductive sites at project locations, and by the disturbance from increased human use of these areas. To the extent feasible, impact to wildlife could be minimized through site design to avoid highly valued resource habitats, by the preservation of features important to wildlife (e.g., snags), and control of human access to sensitive habitats.

SPECIAL-STATUS WILDLIFE SPECIES

Alternative 4 would potentially have adverse effects on 2 special-status wildlife species. These effects would occur through removal or degradation of habitat (thus affecting the availability of food, cover, and reproductive sites), habitat fragmentation, and through an increase in human disturbance in the vicinity of developments. To the extent feasible, these impacts would be minimized through site-specific surveys for special-status species, and site designs limiting the effects on species found in the areas of potential development.

SPECIAL-STATUS PLANT SPECIES

Alternative 4 would result in the potential loss or degradation of habitat for three park rare species. These impacts would occur as a result of new development including parking facilities. However, these impacts would be mitigated to the extent practicable through site-specific surveys and designs to avoid impacts to species occurring in these development areas.

AIR QUALITY

Under this alternative there would be short-term adverse impact to air quality due to the increased emissions of nitrogen oxide which is attributed to the operation of shuttle buses from the three out-of-Valley parking areas and the expanded in-Valley shuttle fleet. Nitrogen oxide would also increase with the use of compressed natural gas fueled buses.

SCENIC RESOURCES

Alternative 4 would affect 99 acres of scenic resources due to vegetation loss. However, these impacts would occur in areas adjacent to existing development, limiting the amount of new development that would be noticeable, with the exception of the new parking/transit center and visitor center at Taft Toe which would be adverse, major, and long-term.

CULTURAL RESOURCES

Alternative 4 would result in the potential destruction of the majority of one archeological site, and one historic village with high data potential in El Portal. Development in El Portal and Yosemite Valley would also damage or destroy gathering areas and historic villages. It would also result in the loss of individually significant historic structures such as the Stoneman and Sugar Pine Bridges. In addition, many contributing elements of the cultural landscape would be lost (such as the Ahwahnee Row Houses, National Park Service maintenance facilities, and the

concessioner stables). The Camp Curry Historic District would be substantially altered, resulting in the loss of a majority of the character-defining tent cabins and other contributing structures. The historic spatial organization and land-use patterns in the cultural landscape would be altered substantially with the addition of day-visitor parking, transit, and orientation facilities at Taft Toe. Removal of the Cascades Diversion Dam and residences would result in the loss of six of the remaining seven elements of the Yosemite Hydroelectric Power Plant historic property. However, the National Park Service would pursue a data recovery program, including an inventory and evaluation of impact areas, continue consultation with culturally associated American Indian tribes, and examine alternative uses for historic structures in an effort to avoid, minimize, and mitigate impacts. In keeping with the Programmatic Agreement, the National Park Service would continue to consult with the State Historic Preservation Office (SHPO) during continued studies, the creation of site-specific designs, and project implementation.

MERCED WILD AND SCENIC RIVER

The reconstruction of the El Portal Road between the Cascades Diversion Dam and Pohono Bridge could, depending on design, have a long-term, adverse impact on the hydrologic processes Outstandingly Remarkable Value due to the continued presence of bank stabilization materials in the river channel. The reconstruction of the El Portal Road and the removal of the Cascades Diversion Dam would have a short-term, adverse impact on the scenic Outstandingly Remarkable Value. The removal of historic bridges (i.e., Sugar Pine, Stoneman, Superintendent's, and Housekeeping) would have long-term, adverse impacts on the cultural Outstandingly Remarkable Value because river-related historic structures would be lost and could have short-term, adverse impacts to the scenic and hydrologic processes Outstandingly Remarkable Values due to the presence of construction equipment in and near the river. The removal of the former Superintendent's House (Residence 1) would have a long-term, adverse impact on the cultural Outstandingly Remarkable Value because a river-related historic structure would be lost. The possible construction of a traffic check station would have a long-term, adverse impact on the cultural Outstandingly Remarkable Value due to possible disturbance to ethnographic gathering areas and a river-related archeological site.

VISITOR EXPERIENCE

This alternative would have impacts on visitor experience, including an increase in the amount of time necessary to travel to the Valley caused by the need to park at Taft Toe or out-of-Valley areas and access the Valley by shuttle. This would also result in some loss of private vehicle access to east Valley destinations and the inconvenience of having to carry personal possessions instead of relying on private vehicles as transport and storage devices. The number of campsites would decrease to 441 and lodging units would decrease to 982, resulting in fewer units and sites available for overnight users. The impacts related to discontinuation of commercial stock rides would be long-term and adverse. Difficult access for raft and kayak users as well as anglers could lead to their displacement; this would be long-term and adverse. The development of a parking and transit facility at Taft Toe would result in a long-term, adverse impact on the night sky.

Transportation

Alternative 4 would result in an increase in travel time needed to access the Valley from the entrance stations (additional 29 minutes on average). This increase would be caused by having to wait at transit facilities and shuttle stops for buses.

Noise

This alternative would result in an increased number of sound events as a result of an increased number of bus trips west of El Capitan crossover, along Southside Drive west of Sentinel Bridge, on Sentinel Drive, Yosemite Village and in the out-of-Valley parking locations.

Social and Economic Environments

Alternative 4 would cause increases in population growth in El Portal that would have an adverse effect on the local social environment, including law enforcement and court services, medical services to park employees, the elementary school system, and child care operations.

Alternative 5

No appreciable, unavoidable, adverse impacts on geologic hazards, scenic, transportation, park operations, or energy consumption would take place under this alternative.

Water Resources

The Camp 6 parking area would be situated within a portion of the floodplain that could experience high-velocity, deep flows during a flood event such as were observed during the January 1997 flood. This parking facility could impede the river's ability to naturally migrate and change course during extreme flood events and reduce the area available to the river for sediment deposition. In addition, impacts to riverbank stability (soils compaction, accelerated erosion, and vegetation loss) could occur due to the radiating effects associated with the increased concentration of visitors. Overall, development of a parking facility in the Camp 6 area could result in localized, long-term, adverse impacts on hydrology and floodplain values.

Floodplains

The construction of 656 employee beds in the 100-year floodplain at Hennessey's Ranch would be a long-term moderate, adverse impact, due to the presence of people in the floodplain at night; however, risk to property and human safety would be mitigated through the extension and elevation of the existing levee.

Wetlands

In Yosemite Valley there would be 131 acres of wetland restored; however, Alternative 5 would adversely affect up to approximately 27 acres of potential wetland areas resulting in direct wetland loss and indirect impacts on wetland hydrology. These impacts would occur from proposed new development (12 acres) and redevelopment of facilities (15 acres). Impacts on these potential wetland areas would be minimized to the extent feasible during facility design and site layout once the potential wetland areas have been fully delineated. There would be no net loss of wetlands.

SOILS

Alternative 5 would have impacts to 67 acres of soil within the Valley and up to 80 acres of soil in the out of Valley areas, the majority of which would occur within non-highly valued resource soil types. These adverse impacts would include soil removal, profile mixing, compaction, and erosion as a result of new development activities. Impacts on highly valued resource soils would be minimized to the extent feasible during facility design and site layout.

VEGETATION

Alternative 5 would impact 69 acres of vegetation within the Valley, of which 53 acres would occur within non-highly valued resource vegetation types. Up to 78 acres of vegetation in the out-of-Valley areas, would also be impacted. These adverse impacts would include loss of vegetation and degradation of vegetation communities from new development and changes in visitor use. In Yosemite Valley, impacts to highly valued resource vegetation types would be minimized to the extent feasible, and special consideration would be given to retaining natural topography, native soils, and large trees during facility design and site layout.

WILDLIFE

Unavoidable, adverse impacts on wildlife would be caused by loss or degradation of 69 acres of habitat in Yosemite Valley, 53 acres of which would occur in non-highly valued resource habitat types. Up to 78 acres of habitat would be affected in out-of-Valley areas. Wildlife would be affected by habitat fragmentation, local reductions in food, cover, and reproductive sites at project locations, and by the disturbance from increased human use of these areas. To the extent feasible, impact to wildlife could be minimized through site design to avoid highly valued resource habitats, by the preservation of features important to wildlife (e.g., snags), and control of human access to sensitive habitats.

SPECIAL-STATUS WILDLIFE SPECIES

Alternative 5 would potentially have adverse effects on 3 special-status wildlife species. These effects would occur through removal or degradation of habitat (thus affecting the availability of food, cover, and reproductive sites), habitat fragmentation, and through an increase in human disturbance in the vicinity of developments. To the extent feasible, these impacts would be minimized through site-specific surveys for special-status species, and site designs limiting the effects on species found in the areas of potential development.

SPECIAL-STATUS PLANT SPECIES

Alternative 5 would result in the potential loss or degradation of habitat for three park rare species. These impacts would occur as a result of new development including parking facilities. However, these impacts would be mitigated to the extent practicable through site-specific surveys and design to avoid impacts to individual plants occurring in these development areas.

AIR QUALITY

Under this alternative there would be short-term adverse impact to air quality due to the increased emissions of nitrogen oxide which is attributed to the operation of shuttle buses from

the three out-of-Valley parking areas and the expanded in-Valley shuttle fleet. Nitrogen oxide would also increase with the use of compressed natural gas fueled buses.

Cultural Resources

Alternative 5 would result in the potential destruction of the majority of one archeological site, and one historic village with high data potential in El Portal. Development in El Portal and Yosemite Valley would also damage or destroy gathering areas and historic villages. It would also result in loss of individually significant historic structures such as the Sugar Pine and Ahwahnee Bridges. Many contributing elements of the cultural landscape would be lost, including the Ahwahnee Row Houses, NPS maintenance facilities, and the concessioner stables. The Camp Curry Historic District would be substantially changed, resulting in the loss of a majority of the character-defining tent cabins and other contributing structures. Removal of the Cascades Diversion Dam and residences would result in the loss of six of the remaining seven elements of the Yosemite Hydroelectric Power Plant historic property. However, the National Park Service would pursue a data recovery program, including an inventory and evaluation of impact areas, continue consultation with culturally associated American Indian tribes, and examine alternative uses for historic structures in an effort to avoid, minimize, and mitigate impacts. In keeping with the Programmatic Agreement, the National Park Service would continue to consult with the State Historic Preservation Office (SHPO) during continued studies, the creation of site-specific designs, and project implementation.

Merced Wild and Scenic River

The reconstruction of the El Portal Road between the Cascades Diversion Dam and Pohono Bridge could, depending on design, have a long-term, adverse impact on the hydrologic processes Outstandingly Remarkable Value due to the continued presence of bank stabilization materials in the river channel. The reconstruction of the El Portal Road and the removal of the Cascades Diversion Dam would have short-term, adverse impacts on the scenic Outstandingly Remarkable Value. The construction of new campsites would have long-term, adverse impacts on the hydrologic processes and biological Outstandingly Remarkable Values due to occupation of the 100-year floodplain, loss of river-related vegetation, and radiating impacts to the river from the concentration of visitors. The removal of historic bridges (i.e., Sugar Pine and Ahwahnee) would have long-term, moderate, adverse impacts on the cultural Outstandingly Remarkable Value because river-related historic structures would be lost and could have short-term, adverse impacts to the scenic and hydrologic processes Outstandingly Remarkable Value due to the presence of construction equipment in and near the river. The removal of the former Superintendent's House (Residence 1) would have a long-term, adverse impact on the cultural Outstandingly Remarkable Value because a river-related historic structure would be lost. The possible construction of a traffic check station would have a long-term, adverse impact on the cultural Outstandingly Remarkable Value due to possible disturbance to ethnographic gathering areas and a river-related archeological site.

Noise

This alternative would result in an increased number of sound events as a result of an increased number of bus trips west of El Capitan crossover, along Southside Drive west of Sentinel Bridge, on Sentinel Drive, Yosemite Village and in the out-of-Valley parking locations.

Visitor Experience

This alternative would have impacts on visitor experience, including an increase in the amount of time necessary to travel to the Valley caused by the need for many day visitors to park in out-of-Valley areas and access the Valley by shuttle. This would also result in some loss of private vehicle access to east Valley destinations and the inconvenience of having to carry personal possessions instead of relying on private vehicles as transport and storage devices. Difficult access for raft and kayak users as well as anglers could lead to their displacement; this would be long-term and adverse. Impacts due to the loss of lodging would be long-term and adverse. The potential development of a traffic check station at Taft Toe could result in a long-term, adverse impact on the night sky.

Social and Economic Environments

Alternative 5 would cause increases in population growth in the local communities of El Portal and Wawona and would have an adverse impact on the local social environments, including law enforcement and court services, medical services to park employees, the elementary school system, and child care operations. In Foresta, the social environment would experience adverse impacts associated with parking facilities.

Irreversible and Irretrievable Commitments of Resources

Final Yosemite Valley Plan

Supplemental EIS

Photo on previous page courtesy of NPS

For thousands of years, native people regularly burned Yosemite Valley's meadows to keep them open. The last 100 years of fire suppression has contributed to a change in vegetation, including conifer invasion into meadows. Yosemite National Park's fire crews now periodically start fires, reintroducing this natural process back into the ecosystem.

Irreversible and Irretrievable Commitments of Resources

The irretrievable and irreversible commitments of resources that are associated with each alternative are summarized below. Irreversible commitments are those that cannot be reversed, except perhaps in the extreme long-term. Irretrievable commitments are those that are lost for a period of time.

Alternative 1

The irretrievable and irreversible commitments of resources associated with Alternative 1 are limited to the consumption of energy resources, because no specific actions would be taken to change any of the natural or cultural resources, visitor experience, or park operations.

Energy Consumption

Propane consumption would continue at an estimated rate of 260,000 gallons per year through the year 2015. The estimated combined annual motor fuel consumption in 2000 would be 3,136,000 gallons. This amount would be expected to decrease to an annual amount of 2,694,600 gallons of motor fuel by the year 2015 due to the incremental replacement of the vehicle fleet with vehicles having improved fuel economy.

Alternative 2

Under this alternative, no appreciable irreversible or irretrievable commitments of resources would be associated with water resources, floodplains, air quality, geologic hazards, scenic resources, noise, visitor experience, transportation, social and economic environments, park operations, or energy resources.

Wetlands

Up to approximately 23 acres of potential wetlands in Yosemite Valley would be adversely affected as a result of the construction and redevelopment of new facilities. This represents an irretrievable commitment of this resource for at least the duration of this alternative. However, it would be possible to rehabilitate impacted wetland areas and return them to their preconstruction state at some point in the future.

Soils

Up to 69 acres of soil would be adversely affected under this alternative as a result of the construction of new facilities in Yosemite Valley, and approximately eight acres of this impact would occur within highly valued resource soils. This represents an irretrievable commitment of this resource for at least the duration of this alternative. However, it would be possible to rehabilitate these impacted soil types and return them to their preconstruction state at some point in the future.

VEGETATION

Up to 75 acres of vegetation would be adversely affected in Yosemite Valley under this alternative as a result of the construction of new facilities. However, only 21 of these acres impacted would occur within highly valued resource vegetation types. About 80 acres would be affected outside of Yosemite Valley. This represents an irretrievable commitment of this resource for at least the duration of this alternative. However, it would be possible to rehabilitate impacted vegetation types and restore them to their preconstruction state at some point in the future.

WILDLIFE

Up to 75 acres of wildlife habitat would be adversely affected in Yosemite Valley under this alternative as a result of the redevelopment and construction of facilities. Approximately 21 of these acres would be highly valued resource habitat types. Approximately 80 acres would be affected outside of Yosemite Valley. Removal and degradation of habitat would affect the availability of food, cover, and reproductive sites for wildlife, and result in associated indirect human impacts from the use of the development. This represents an irretrievable commitment of these resources for at least the duration of this alternative. It would, however, be possible to restore impacted habitats to some semblance of their preconstruction state at some point in the future.

SPECIAL-STATUS WILDLIFE SPECIES

Adverse effects on 3 special-status wildlife species would have an irreversible impact as long as development under this alternative occupies habitat and causes local human disturbance. It would be possible to reverse these impacts at some future date if the development was removed and some semblance of the natural habitat was restored.

SPECIAL-STATUS PLANT SPECIES

Adverse and irretrievable impacts would occur to two park rare species. Trillium and common juniper would be affected by new development within existing populations. It would be possible to reverse these impacts at some future date if the development was removed and the habitat for these species was restored to natural conditions. Irreversible impacts would occur to one park rare species. Individual planted giant sequoias in Yosemite Valley could be removed during restoration and possibly redevelopment actions. None of these actions would affect the overall sustainability of giant sequoias within the park's three naturally occurring groves, with negligible overall impacts on this species.

CULTURAL RESOURCES

The removal of historic structures and contributing elements of the cultural landscape plus the disturbance of archeological sites would have an irreversible impact. However, prior to the removal or disturbance of these resources, documentation and data recovery would be completed, thus maintaining the historical record and limiting the impact to the loss of the physical structure and historic associations. The disruption and destruction of traditional gathering areas and historic village sites also would have irreversible impacts; however, the National Park Service

would continue to consult with associated American Indian tribes in an effort to minimize these impacts.

Merced Wild and Scenic River

The bank stabilization that may, depending on design, be necessary to reconstruct the El Portal Road between the Cascades Diversion Dam and Pohono Bridge would result in an irretrievable impact to the hydrologic process Outstandingly Remarkable Value because a portion of the river channel would be displaced by the stabilization material. The removal of historic bridges (i.e., Sugar Pine and Stoneman) would have an irreversible adverse impact to the cultural Outstandingly Remarkable Value.

Energy Consumption

Estimated annual propane consumption for the years 2000-2015 would be 405,800 gallons. The estimated combined annual motor fuel consumption by the year 2015 is 1,688,300 gallons.

Alternative 3

Under this alternative, no appreciable irreversible or irretrievable commitments of resources would be associated with water resources; floodplains; air quality; geologic hazards; scenic resources; noise; visitor experience; transportation; social and economic environments; or park operations. The irreversible and irretrievable impacts to special-status vegetation species, and to cultural resources would be the same as described for Alternative 2.

Wetlands

Up to approximately 17 acres of potential wetlands in Yosemite Valley would be affected as the result of the construction and redevelopment of new facilities. This represents an irretrievable commitment of this resource for at least the duration of this alternative. However, it would be possible to rehabilitate impacted wetland areas and return them to their preconstruction state at some point in the future.

Soils

Up to 98 acres of soil would be adversely affected under this alternative as a result of the construction of new facilities in Yosemite Valley. However, none of this impact would occur within highly valued resource soils. This represents an irretrievable commitment of this resource for at least the duration of this alternative. However, it would be possible to rehabilitate these impacted soil types and return them to their preconstruction state at some point in the future.

Vegetation

Up to 99 acres of vegetation in Yosemite Valley would be adversely affected under this alternative as a result of the construction of new facilities. However, approximately 14 of these impacted acres would occur within highly valued resource vegetation types. About 37 acres of vegetation would be affected outside Yosemite Valley. This represents an irretrievable commitment of this resource for at least the duration of this alternative. However, it would be possible to rehabilitate

impacted vegetation types and return them to their preconstruction state at some point in the future.

Wildlife

Up to 99 acres of wildlife habitat would be adversely affected in Yosemite Valley under this alternative as a result of the redevelopment and construction of facilities. Approximately 14 acres of this impacted area would occur in highly valued resource habitat types. Approximately 37 acres of habitat would be affected outside Yosemite Valley. Removal and degradation of habitat would affect the availability of food, cover, and reproductive sites for wildlife resulting in indirect impacts associated with use of the development. This represents an irretrievable commitment of these resources for at least the duration of this alternative. It would, however, be possible to restore impacted habitats to some semblance of their preconstruction state at some point in the future.

Special-Status Wildlife Species

Adverse effects on 1 special-status wildlife species would have an irreversible impact as long as development under this alternative occupies habitat and causes local human disturbance. It would be possible to reverse these impacts at some future date if the development was removed and some semblance of the natural habitat was restored.

Special-Status Plant Species

Adverse and irretrievable impacts would occur to one park rare species. Common juniper would be affected by new development within existing populations. It would be possible to reverse these impacts at some future date if the development was removed and the habitat for these species was restored to natural conditions. Irreversible impacts would occur to one park rare species. Individual planted giant sequoias in Yosemite Valley could be removed during restoration and possibly redevelopment actions. None of these actions would affect the overall sustainability of giant sequoias within the park's three naturally occurring groves, with negligible overall impacts on this species.

Merced Wild and Scenic River

The bank stabilization that may, depending on design, be necessary to reconstruct the El Portal Road between the Cascades Diversion Dam and Pohono Bridge would result in an irretrievable impact to the hydrologic process Outstandingly Remarkable Value because a portion of the river channel would be displaced by the stabilization material. The loss of historic bridges (i.e., Sugar Pine, Stoneman, Superintendent's, and Housekeeping) would have an irreversible adverse impact to the cultural Outstandingly Remarkable Value. The removal of the former Superintendent's House (Residence 1) and Lamon Orchard would result in an irretrievable impact to the cultural Outstandingly Remarkable Value.

Energy Consumption

Estimated annual propane consumption for the years 2000-2015 would be 380,310 gallons. The estimated combined annual motor fuel consumption by the year 2015 is 2,165,800 gallons.

Alternative 4

Under this alternative, no appreciable irreversible or irretrievable commitments of resources would be associated with water resources, floodplains, air quality, geologic hazards, scenic resources, visitor experience, transportation, noise, social and economic environments, or park operations. The irreversible and irretrievable impacts to special-status vegetation species, and cultural resources, would be the same as described for Alternative 2.

WETLANDS

Up to approximately 18 acres of potential wetlands would be affected as the result of the construction and redevelopment of new facilities. This represents an irretrievable commitment of this resource for at least the duration of this alternative. However, it would be possible to rehabilitate impacted wetland areas and return them to their preconstruction state at some point in the future.

SOILS

Up to 98 acres of soil would be adversely affected under this alternative as a result of the construction of new facilities in Yosemite Valley. However, none of this impact would occur within highly valued resource soil. This represents an irretrievable commitment of this resource for at least the duration of this alternative. However, it would be possible to rehabilitate these impacted soil types and return them to their preconstruction state at some point in the future.

VEGETATION

Up to 102 acres of vegetation in Yosemite Valley would be adversely affected under this alternative as a result of the construction and redevelopment of new facilities. However, approximately 14 of these impacted acres would occur within highly valued resource vegetation types. About 70 acres of vegetation would be affected outside of Yosemite Valley. This represents an irretrievable commitment of this resource for at least duration of this alternative. However, it would be possible to rehabilitate impacted vegetation types and return them to their preconstruction state at some point in the future.

WILDLIFE

Up to 102 acres of wildlife habitat would be adversely affected in Yosemite Valley under this alternative as a result of the redevelopment and construction of facilities. Approximately 14 of these acres would be highly valued resource habitat types. Approximately 70 acres of habitat would be affected outside Yosemite Valley. Removal and degradation of habitat would affect the availability of food, cover, and reproductive sites for wildlife, and result in associated indirect human impacts from the use of the development. This represents an irreversible commitment of these resources for at least the duration of this alternative. It would, however, be possible to restore impacted habitats to some semblance of their preconstruction state at some point in the future.

Special-Status Wildlife Species

Adverse effects on 2 special-status wildlife species would have an irreversible impact as long as development under this alternative occupies habitat and causes local human disturbance. It would be possible to reverse these impacts at some future date if the development was removed and some semblance of the natural habitat was restored.

Special-Status Plant Species

Adverse and irretrievable impacts would occur to two park rare species. Common juniper and whitneya would be affected by new development within existing populations. It would be possible to reverse these impacts at some future date if the development was removed and the habitat for these species was restored to natural conditions. Irreversible impacts would occur to one park rare species. Individual planted giant sequoias in Yosemite Valley could be removed during restoration and possibly redevelopment actions. None of these actions would affect the overall sustainability of giant sequoias within the park's three naturally occurring groves, with negligible overall impacts on this species.

Merced Wild and Scenic River

The bank stabilization that may, depending on design, be necessary to reconstruct the El Portal Road between the Cascades Diversion Dam and Pohono Bridge would result in an irretrievable impact to the hydrologic process Outstandingly Remarkable Value because a portion of the river channel would be displaced by the stabilization material. The removal of historic bridges (i.e., Sugar Pine, Stoneman, Superintendent's, and Housekeeping) would have an irreversible adverse impact to the cultural Outstandingly Remarkable Value. The removal of the former Superintendent's House (Residence 1) would result in an irretrievable impact to the cultural Outstandingly Remarkable Value.

Energy Consumption

Estimated annual propane consumption for the years 2000-2015 would be 405,810 gallons. The estimated combined annual motor fuel consumption by the year 2015 is 1,644,100 gallons.

Alternative 5

There would be no significant irreversible or irretrievable commitments of resources associated with water resources, floodplains, air quality, geologic hazards, scenic resources, visitor experience, transportation, noise, social and economic environments, and park operations. The irreversible and irretrievable impacts to special-status vegetation species, and cultural resources would be the same as described for Alternative 2.

Wetlands

Up to approximately 27 acres of potential wetlands would be affected as the result of the construction and redevelopment of new facilities. This represents an irretrievable commitment of this resource for at least the duration of this alternative. However, it would be possible to rehabilitate impacted wetland areas and return them to their preconstruction state at some point in the future.

SOILS

Up to 67 acres of soil would be adversely affected under this alternative as a result of the construction of new facilities in Yosemite Valley. However, approximately eight acres of this impact would occur within highly valued resource soil. This represents an irretrievable commitment of this resource for at least the duration of this alternative. However, it would be possible to rehabilitate these impacted soil types and return them to their preconstruction state at some point in the future.

VEGETATION

Up to 69 acres of vegetation in Yosemite Valley would be adversely affected under this alternative as a result of the construction and redevelopment of new facilities. However, approximately 16 of these impacted acres would occur within highly valued resource vegetation types. About 78 acres of vegetation would be affected outside Yosemite Valley. This represents an irretrievable commitment of this resource for at least the duration of this alternative. However, it would be possible to rehabilitate impacted vegetation types and return them to their preconstruction state at some point in the future.

WILDLIFE

Up to 69 acres of wildlife habitat would be adversely affected in Yosemite Valley under this alternative as a result of the redevelopment and construction of facilities. Approximately 16 of these acres would be highly valued resource habitat types. Approximately 78 acres of habitat would be affected outside Yosemite Valley. Removal and degradation of habitat would affect the availability of food, cover, and reproductive sites for wildlife, and result in associated indirect human impacts from the use of the development. This represents an irreversible commitment of these resources for at least the duration of this alternative. It would, however, be possible to restore impacted habitats to some semblance of their preconstruction state at some point in the future.

SPECIAL-STATUS WILDLIFE SPECIES

Adverse effects on 3 special-status wildlife species would have an irreversible impact as long as development under this alternative occupies habitat and causes local human disturbance. It would be possible to reverse these impacts at some future date if the development was removed and some semblance of the natural habitat was restored.

SPECIAL-STATUS PLANT SPECIES

Adverse and irretrievable impacts would occur to two park rare species. Trillium and common juniper would be affected by new development within existing populations. It would be possible to reverse these impacts at some future date if the development was removed and the habitat for these species was restored to natural conditions. Irreversible impacts would occur to one park rare species. Individual planted giant sequoias in Yosemite Valley would be removed during restoration and possibly redevelopment actions. None of these actions would affect the overall sustainability of giant sequoias within the park's three naturally occurring groves, with negligible overall impacts on this species.

Merced Wild and Scenic River

The bank stabilization that may, depending on design, be necessary to reconstruct the El Portal Road between the Cascades Diversion Dam and Pohono Bridge would result in an irretrievable impact to the hydrologic process Outstandingly Remarkable Value because a portion of the river channel would be displaced by the stabilization material. The removal of historic bridges (i.e., Sugar Pine and Ahwahnee) would have an irreversible adverse impact to the cultural Outstandingly Remarkable Value. The removal of the former Superintendent's House (Residence 1) would result in an irretrievable impact to the cultural Outstandingly Remarkable Value.

Energy Consumption

Estimated annual propane consumption for the years 2000-2015 would be 424,900 gallons. The estimated combined annual motor fuel consumption by the year 2015 is 1,872,000 gallons.

Relationship of Short-Term Uses and Long-Term Productivity

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Photo on previous page courtesy of Yosemite Museum

Lucy Telles (Mewuk/Paiute) weaving in the re-created Indian Village behind the Yosemite Museum, circa 1950. She sell an array of baskets and bead items to Yosemite visitors when she worked as a demonstrator.

Relationship of Short-Term Uses and Long-Term Productivity

This section discusses the effects of the short-term use of resources (as proposed in each of the alternatives) on the long-term productivity of the resources. The resources have been grouped into three categories: natural, hazards, and cultural.

Alternative 1

No measurable change from current conditions is expected. The existing relationship of short-term uses of the environment and the maintenance and enhancement of long-term productivity would be expected to continue. For example, existing structures would remain within highly valued resource areas such as wetlands, meadows, riparian areas, and California black oak woodlands. Existing bridges would also continue to impede flood flows and channel movement. Visitation levels would also continue to grow, resulting in more crowding, congestion, and delays for visitors. The potential risk for unavoidable adverse impacts would continue for structures and human life within the floodplain and rockfall zones. Therefore, the impacts associated with the short-term use of the environment would continue to adversely affect long-term productivity.

Alternative 2

Natural Resources

Generally, for most natural resources the long-term productivity gained from large-scale restorations of highly valued resources would outweigh the short-term, adverse impacts on these natural resources. Short-term, adverse impacts to these resources would consist of construction-related impacts of new development and restoration activities (e.g., construction equipment, grading, increased erosion potential, and vegetation removal). The long-term productivity of these resources would be enhanced through increased size, integrity, and connectivity. The long-term or net gains for these natural resources can be quantified as follows:

- Water Resources: The removal of Sugar Pine Bridge, the possible removal of Stoneman Bridge, and the replacement of the Happy Isles footbridge would result in short-term impacts caused by increased erosion during demolition activities. However, the beneficial effects of the long-term restoration of the natural river hydrologic processes would outweigh these adverse impacts.
- Wetlands: This alternative would provide a net gain of 118 acres of wetlands (141 acres of wetlands restored minus the 23 acres of potential wetlands impacted as a result of the construction and redevelopment of new facilities).
- Soils: This alternative would provide approximately 177 acres of restored soils, of which approximately 128 acres would be highly valued resource soil types.
- Vegetation, Wildlife, and Special-Status Species: This alternative would restore 175 acres of natural vegetation in Yosemite Valley, of which 160 acres (91%) would be highly valued vegetation types. This restoration would increase habitat availability, integrity, and

continuity for plants, wildlife, and special-status species. New development would occur on 75 acres in Yosemite Valley, of which only 21 acres (28%) would be highly valued resource vegetation types.

- Scenic Resources and Merced Wild and Scenic River: The short-term disruption of these resources during restoration and implementation activities would be more than offset by the long-term enhancement and preservation of scenic resources and the designated Outstandingly Remarkable Values of the Merced Wild and Scenic River segments.
- Energy Consumption: In the short term, fuel consumption would likely remain relatively consistent with existing usage. However, after implementation of this alternative, long-term fuel consumption would be reduced.

HAZARDS

Two distinct hazards occur in the Valley as a result of its landscape features: flooding and rockfall. There are structures currently located within the floodplain of the Merced River and within the talus slope and shadow line zones of the Valley walls. The actions of Alternative 2 would reduce the long-term risk to human life and property by relocating a number of structures and high-occupancy gathering places outside of these hazard zones.

CULTURAL RESOURCES

Historic structures would be removed and archeological sites would be disturbed or lost, resulting in long-term, adverse effects to cultural resources. However, the affected resources would be documented in accordance with the Programmatic Agreement, creating permanent records of individual cultural resources. The restoration of natural areas would substantially improve the overall cultural landscape in Yosemite Valley.

Alternative 3

NATURAL RESOURCES

Generally, for most natural resources the long-term productivity gained from large-scale restorations of highly valued resources would outweigh the short-term, adverse impacts on these natural resources. Short-term, adverse impacts to these resources would consist of construction-related impacts of new development and restoration activities (e.g., construction equipment, grading, increased erosion potential, and vegetation removal). The long-term productivity of these resources would be enhanced through increased size, integrity, and connectivity. The long-term or net gains for these natural resources can be quantified as follows:

- Water Resources: Removal of four bridges would result in short-term impacts caused by increased erosion during demolition activities. However, the beneficial impacts of the long-term restoration of the natural river hydrologic processes would outweigh these adverse impacts.
- Wetlands: This alternative would provide a net gain of 139 acres of wetlands (156 acres of wetlands restored minus the 17 acres of potential wetlands impacted as a result of the construction and redevelopment of new facilities).

- Soils: This alternative would provide approximately 206 acres of restored soils, of which approximately 144 acres would be highly valued resource soil types.
- Vegetation, Wildlife, and Special-Status Species: This alternative would restore 205 acres of natural vegetation in Yosemite Valley, of which 186 acres (91%) would be highly valued resource vegetation types. This restoration would increase habitat availability, integrity, and continuity for plants, wildlife, and special-status species. New development would occur on 102 acres in Yosemite Valley, of which only 14 acres (14%) would be highly valued resource vegetation types.
- Scenic Resources and Merced Wild and Scenic River: The short-term disruption of these resources during the restoration and implementation activities would be more than offset by the long-term enhancement and preservation of scenic resources and the designated Outstandingly Remarkable Values of the Merced Wild and Scenic River segments.
- Energy Consumption: In the short term, fuel consumption would likely remain relatively consistent with existing usage. However, after implementation of this alternative, long-term fuel consumption would be reduced.

HAZARDS

Two distinct hazards occur in the Valley as a result of its landscape features: flooding and rockfall. There are structures currently located within the floodplain of the Merced River and within the talus slope and shadow line zones of the Valley walls. The actions of Alternative 3 would reduce the long-term risk to human life and property by relocating a number of structures and high-occupancy gathering places outside of these hazard zones.

CULTURAL RESOURCES

Historic structures would be removed and archeological sites would be disturbed or lost, resulting in long-term, adverse impacts to cultural resources. However, the affected resources would be documented in accordance with the Programmatic Agreement, creating permanent records of individual cultural resources. The restoration of natural areas would substantially improve the overall cultural landscape of Yosemite Valley.

Alternative 4

NATURAL RESOURCES

Generally, for most natural resources the long-term productivity gained from large-scale restorations of highly valued resources would outweigh the short-term, adverse impacts on these natural resources. Short-term, adverse impacts to these resources would consist of construction-related impacts of new development and restoration activities (e.g., construction equipment, grading, increased erosion potential, and vegetation removal). The long-term productivity of these resources would be enhanced through increased size, integrity, and connectivity. The long-term or net gains for these natural resources can be quantified as follows:

- Water Resources: Removal of four bridges would result in short-term impacts caused by increased erosion during demolition activities. However, the beneficial effects of the long-

term restoration of the natural river hydrologic processes would outweigh these adverse impacts.

- Wetlands: This alternative would provide a net gain of 131 acres of wetlands (149 acres of wetlands restored minus the 18 acres of potential wetlands impacted as a result of the construction and redevelopment of new facilities).
- Soils: This alternative would provide approximately 193 acres of restored soils, of which approximately 141 acres would be highly valued resource soil types.
- Vegetation, Wildlife, and Special-Status Species: This alternative would restore 193 acres of natural vegetation in Yosemite Valley, of which 174 acres (90%) would be highly valued resource vegetation types. This restoration would increase habitat availability, integrity, and continuity for plants, wildlife, and special-status species. New development would occur on 102 acres in Yosemite Valley, of which only 14 acres (14%) would be highly valued resource vegetation types.
- Scenic Resources and Merced Wild and Scenic River: The short-term disruption of these resources during the restoration and implementation activities would be more than offset by the long-term enhancement and preservation of scenic resources and the designated Outstandingly Remarkable Values of the Merced Wild and Scenic River segments.
- Energy Consumption: In the short term, fuel consumption would likely remain relatively consistent with existing usage. However, after implementation of this alternative, long-term fuel consumption would be reduced.

HAZARDS

Two distinct hazards occur in the Valley as a result of its landscape features: flooding and rockfall. There are structures currently located within the floodplain of the Merced River and within the talus slope and shadow line zones of the Valley walls. The actions of Alternative 4 would reduce the long-term risk to human life and property by relocating a number of structures and high-occupancy gathering places outside of these hazard zones.

CULTURAL RESOURCES

Historic structures would be removed and archeological sites would be disturbed or lost, resulting in long-term, adverse effects to cultural resources. However, the affected resources would be documented in accordance with the Programmatic Agreement, creating permanent records of individual cultural resources. The restoration of natural areas would substantially improve the overall cultural landscape in Yosemite Valley.

Alternative 5

NATURAL RESOURCES

Generally, for most natural resources the long-term productivity gained from large-scale restorations of for most natural resources would outweigh the short-term, adverse impacts on these natural resources. Short-term, adverse impacts to these resources would consist of construction-related impacts of new development and restoration activities (e.g., construction

equipment, grading, increased erosion potential, and vegetation removal). The long-term productivity of these resources would be enhanced through increased size, integrity, and connectivity. The long-term or net gains for these natural resources can be quantified as follows:

- Water Resources: Removal of two bridges would result in short-term impacts caused by increased erosion during demolition activities. However, the beneficial impacts of the long-term restoration of the natural river hydrologic processes would outweigh these adverse impacts.
- Wetlands: This alternative would provide a net gain of 104 acres of wetlands (131 acres of wetlands restored minus the 27 acres of potential wetlands impacted as a result of the construction and redevelopment of new facilities).
- Soils: This alternative would provide approximately 161 acres of restored soils, of which approximately 122 acres would be highly valued resource soil types.
- Vegetation, Wildlife, and Special-Status Species: This alternative would restore 163 acres of natural vegetation in Yosemite Valley, of which 147 acres (91%) would be highly valued resource vegetation types. This restoration would increase habitat availability, integrity, and continuity for wildlife and special-status species. New development would occur on 69 acres in Yosemite Valley, of which only 16 acres (23%) would be highly valued resource vegetation types.
- Scenic Resources and Merced Wild and Scenic River: The short-term disruption of these resources during the restoration and implementation activities would be more than offset by the long-term enhancement and preservation of scenic resources and the designated Outstandingly Remarkable Values of the Merced Wild and Scenic River segments.
- Energy Consumption: In the short term, fuel consumption would likely remain relatively consistent with existing usage. However, after implementation of this alternative, long-term fuel consumption would be reduced.

HAZARDS

Two distinct hazards occur in the Valley as a result of its landscape features: flooding and rockfall. There are structures currently located within the floodplain of the Merced River and within the talus slope and shadow line zones of the Valley walls. The actions of Alternative 5 would reduce risk to human life and property by relocating a number of structures and high-occupancy gathering places outside of these hazard zones.

CULTURAL RESOURCES

Historic structures would be removed and archeological sites would be disturbed or lost, resulting in long-term, adverse effects to cultural resources. However, the affected resources would be documented in accordance with the Programmatic Agreement, creating permanent records of individual cultural resources. The restoration of natural areas would substantially improve the cultural landscape in Yosemite Valley.

chapter 5

Consultation and Coordination

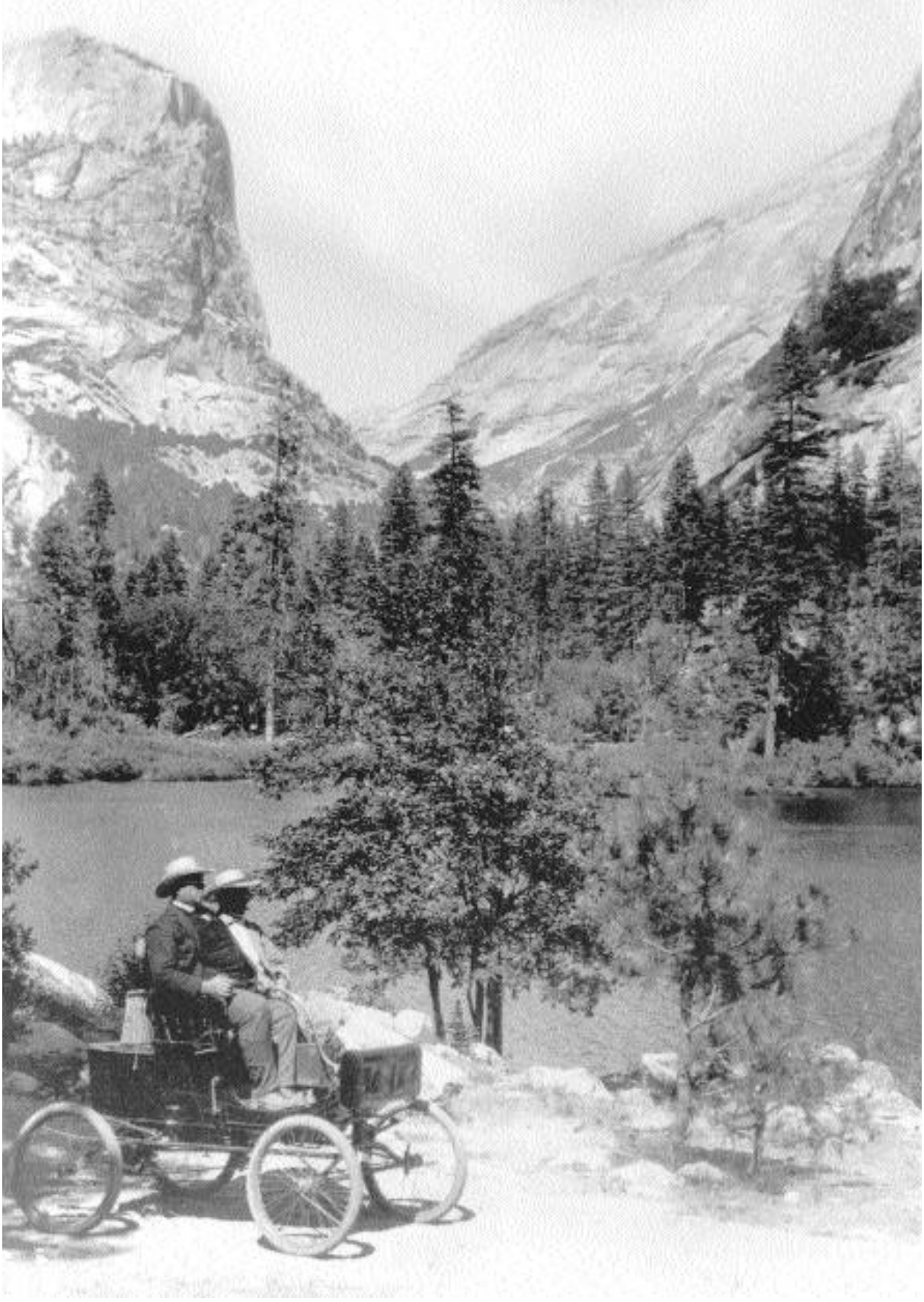

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Photo on previous page courtesy of Yosemite Museum

The first car to enter Yosemite Valley, a 1900 Locomobile, driven by Oliver Lippincott, a Los Angeles photographer. Automobiles were banned in Yosemite from 1907 until 1913, when they were again permitted in the park.

CONSULTATION AND COORDINATION

Introduction

This chapter describes the history of public involvement leading up to and during development of the *Final Yosemite Valley Plan/SEIS*. Public participation in the planning process helps to ensure that the National Park Service fully understands and considers the public's interest. Through public involvement, the National Park Service shared information about the planning process, issues, and proposed actions. In turn, the planning teams were informed of the concerns and values of those groups and individuals who participated in the process. Also as part of public involvement and in compliance with laws and regulations, management agencies and other public constituencies were consulted. Chapter 5 describes these consultations and their results. With the help of the public's involvement, the National Park Service is able to make better informed decisions and improved plans.

Public and agency participation throughout the planning process allowed the planning team to:

- Analyze and incorporate comments from previous planning efforts
- Collect scoping comments to help define the range of issues to be addressed
- Provide opportunities for the public to obtain the knowledge necessary to make informed comments
- Collect public, American Indian, and agency comments on the *Draft Yosemite Valley Plan/SEIS*
- Consult with other management agencies
- Produce the best possible plan

Public and agency participation in the planning process will not end with the *Final Yosemite Valley Plan/SEIS*, but will continue throughout the design and implementation phases of the plan.

Scoping and Public Comment

The purpose of scoping is to identify issues and concerns related to the planning process and to determine the range of issues that will be addressed in the environmental analysis. Typically, scoping occurs at the beginning of a planning process. In the case of the *Draft Yosemite Valley Plan/SEIS*, however, scoping has been taking place since 1991 as part of previous planning efforts for the 1992 *Draft Yosemite Valley Housing Plan/SEIS* and its 1996 Addendum, the 1997 *Draft Yosemite Valley Implementation Plan/SEIS*, and the 1997 *Yosemite Lodge Development Concept Plan/Environmental Assessment*, the related *Finding of No Significant Impact*, and its 1998 modified version. Each of these planning efforts had its own scoping and public comment period. As part of the scoping process for the *Draft Yosemite Valley Plan/SEIS*, public comments from these previous efforts were reanalyzed; relevant issues were included as were concerns raised since 1991.

The National Park Service received approximately 1,400 public comment letters in response to the 1992 *Draft Yosemite Valley Housing Plan/SEIS*. This plan proposed to move most employee

housing and National Park Service and concession headquarters to Foresta. As a result of public comment, an *Addendum to the Draft Yosemite Valley Housing Plan/SEIS* was released in December of 1996. The 1996 addendum described a newly proposed alternative that shifted the majority of housing and administrative headquarters to El Portal, as originally called for in the 1980 *General Management Plan*. A total of 195 comments in reference to the 1996 addendum were received.

The National Park Service received 3,853 comment letters in response to the 1997 *Draft Yosemite Valley Implementation Plan/SEIS.* The 1999 *Draft Yosemite Valley Plan/SEIS* incorporated many ideas, suggestions, and concerns gained from the public's involvement in the 1997 draft implementation plan. In response to the 1997 *Yosemite Lodge Development Concept Plan/EA/FONSI, the* National Park Service received 391 comments.

The formal public scoping period for the *Draft Yosemite Valley Plan/SEIS* began with a *Federal Register* notice on December 16, 1998, that described the intent of the *Draft Yosemite Valley Plan/SEIS* and solicited comments from the public through January 15, 1999. Based on requests from the public, the formal scoping period was extended through February 1, 1999. The *Federal Register* notice, in addition to announcing the formal scoping period, stated that all comments associated with previous planning efforts would be "duly reconsidered" in the *Draft Yosemite Valley Plan/SEIS* planning process.

A total of 598 scoping comment letters were received during the formal scoping period. Initially, a team of park staff evaluated the scoping comments and prepared a summary report (NPS 1999). Later, these comments were included in the comprehensive reanalysis, which included all previous comments from associated planning efforts.

Because the comments from previous plans were originally analyzed in diverse contexts using different methods, they were reanalyzed using a common methodology developed by the U.S. Forest Service's Content Analysis Enterprise Team (CAET). The Content Analysis Enterprise Team used the same methodology to read and analyze all letters, emails, and faxes received during the formal scoping period for the *Draft Yosemite Valley Plan/SEIS.*

In the reanalysis of previous comments, 6,468 letters, emails, and faxes were read and analyzed by the Content Analysis Enterprise Team. These responses contained 23,768 individual comments that were coded, categorized, and entered into the content analysis database. This analysis, *Summary of Public Comment, Yosemite Valley Planning, 1992-1999* (USFS 1999), was a key tool used to ensure that public comments were addressed in the *Draft Yosemite Valley Plan/SEIS.* Concern statements raised through the public comment process and the park's response to those concern statements were included as Volume III of the *Draft Yosemite Valley Plan/SEIS.* The reanalysis of public comments from previous Yosemite Valley planning efforts has not been published as part of the *Final Yosemite Valley Plan/SEIS.*

Table 5-1 Number of Responses and Number of Signatures Sorted by Planning Process Summary of Public Comments, Yosemite Valley Planning, 1992-1999			
Planning Process	**Number of Responses**	**Number of Signatures**	**Number of Comments**
1992 *Draft Yosemite Valley Housing Plan/SEIS*	1,437	5,866	3,226
1996 *Addendum to the Draft Yosemite Valley Housing Plan/SEIS*	195	219	835
1997 *Yosemite Lodge Development Concept Plan/EA/FONSI*	391	536	753
1997 *Draft Yosemite Valley Implementation Plan/SEIS*	3,853	6,941	16,078
1999 *Draft Yosemite Valley Plan/SEIS (Scoping)*	592	617	2,876
Totals	**6,468**	**14,179**	**23,768**

THE DRAFT YOSEMITE VALLEY PLAN/SEIS

In a press release dated March 27, 2000, the National Park Service announced the availability of the *Draft Yosemite Valley Plan/SEIS* for public review. The period of public review ran from April 7 through July 5, 2000.[1] The official notice of the National Park Service's public release of the plan was published in the *Federal Register* on April 13, 2000 (Vol. 65, No. 72, page 19,923). This notice stated that the public comment period would run from April 7 through July 7, 2000, a period of 92 days. Throughout the public comment period, the National Park Service was actively advertising that public comments would be accepted through July 7. This advertising effort included a notice on the Yosemite National Park web site, statements in press releases for public meetings, information sheets handed out to the public, and announcements at all related, National Park Service public meetings and presentations.

On Friday, April 14, 2000, the Environmental Protection Agency (EPA) published their weekly summary announcement of environmental impact statements officially filed and available for public review (*Federal Register* Vol. 65, No. 73, page 20,155). The official EPA announcement listed the "due" date for comment as July 14, 2000. Unfortunately, because Yosemite planners expected the EPA notice to mirror the National Park Service notice, this discrepancy was not discovered until mid-August. Thus, the *Draft Yosemite Valley Plan/SEIS* public comment period was technically a period of over 90 days, from April 14 through July 14, 2000. No extension of the comment period was made.

In an effort to reconcile the official review period set by the EPA *Federal Register* notice and the National Park Service's originally advertised 92-day comment period beginning April 7 and running through July 7, all comments received, or having a postmark dating, from March 28[2] through July 14, 2000, were analyzed and used in formulating the *Final Yosemite Valley Plan/SEIS*.

[1] By April 4, a total of 1,219 Executive Summaries and 639 full sets of the *Draft Yosemite Valley Plan/SEIS* had been shipped to people who had previously requested copies. Another 1,500 Executive Summaries, 1,000 full plans, and 2,000 CD-ROMs of the full plan were requested and distributed to members of the public during the public comment period.

[2] This was the date the first comment on the *Draft Yosemite Valley Plan/SEIS* was received, the day after the National Park Service press conference announcing the plan.

The letters of public comment received by July 7 were read and analyzed by the U.S. Forest Service Content Analysis Enterprise Team (CAET) and National Park Service staff. The results were forwarded to Yosemite National Park in a series of interim reports throughout the comment period and in CAET's final report, *Summary of Public Comment, Yosemite Valley Plan Draft Environmental Impact Statement* (USFS 2000c). These reports were used to develop the *Final Yosemite Valley Plan/SEIS*. The process of analyzing and using public comments is described in more detail in Volume III of this document.

The letters received between July 7 and July 14 were read and analyzed by National Park Service and the U.S. Forest Service CAET staff the week of August 14; five new public concerns were identified. The CAET staff subsequently produced an additional report, *Addendum, Summary of Public Comment, Yosemite Valley Plan Draft Environmental Impact Statement*, that is incorporated into their earlier summary report as Appendix I (USFS 2000c).

During the public comment period, the National Park Service held 14 public meetings throughout California. These meetings consisted of an open house where the public could view displays, interact with park staff, and attend a formal public hearing on the plan. Approximately 1,500 people attended these public meetings. Written comments were formally received at these meetings, and 365 people testified during the public hearings and their statements were recorded by a court reporter. The National Park Service also held public meetings in Seattle, Washington; Denver, Colorado; Chicago, Illinois; and Washington, D.C. Over 100 individuals attended these meetings.

Comments on the Draft Yosemite Valley Plan/SEIS

During the public comment period, approximately 10,200 comment letters, postcards, e-mails, faxes, comment forms, and public hearing testimonies were received on the *Draft Yosemite Valley Plan/SEIS.* These comments were read and analyzed by a joint U.S. Forest Service and National Park Service team and then were distilled into 867 distinct public concern statements (see Vol. III, Public Comments and Responses, for a complete description of the comment analysis process).

Informational Meetings and Public Outreach

In addition to the public scoping process and the public meetings and hearings conducted for the *Draft Yosemite Valley Plan/SEIS*, the National Park Service has continued to conduct numerous other public involvement activities related to the *Draft Yosemite Valley Plan/SEIS*. These include the mailing of periodic planning updates, presenting regularly scheduled open houses in the park, developing and displaying wayside exhibits in the park, conducting ranger-led walks, and meeting with a number of interested and affected groups.

The park produces a periodic four- to eight-page *Planning Update* newsletter that is mailed to the addresses on its extensive mailing list. Each *Planning Update* provides the current status of ongoing planning activities within the park, including information and notices concerning the *Draft* and *Final Yosemite Valley Plan/SEIS*. Between January 1999 and August 2000, five

Planning Updates were mailed to between 5,000 and 11,000 individuals, organizations, and agencies.

To provide visitors in the park an opportunity to learn more about the alternatives being considered in the *Draft Yosemite Valley Plan/SEIS* and an opportunity to comment, open house sessions were held at the Yosemite Valley Visitor Center from Wednesdays through Sundays throughout the comment period. The open houses were staffed by park employees familiar with the *Draft Yosemite Valley Plan/SEIS* and stocked with exhibits, maps, copies of the document, and comment forms. Over 1,650 people attended a total of 63 open houses. Hundreds of individuals submitted written comments while attending these open houses.

A special four-page insert covering the planning process was prepared for the *Yosemite Guide*, the park's informational newspaper. The newspaper described the planning process and informed visitors on how they could get involved. Over 380,000 copies of the *Yosemite Guide* with the special insert were distributed to park visitors during the public comment period.

A series of regularly scheduled ranger-led walks were held on weekends from April 15, 2000, through the end of the comment period. These hour-long walks provided an opportunity for the public to get a first-hand look at many of the key areas that could be affected by the actions proposed in the *Draft Yosemite Valley Plan/SEIS*. The walks also enabled visitors to discuss issues with other members of the public and park staff. In all, 264 people attended 26 walks.

The National Park Service installed 10 interpretive wayside exhibits in key areas in the Valley. Areas selected were those that could be affected by actions included in the *Draft Yosemite Valley Plan/SEIS*, including Camp 4 (Sunnyside Campground), Lower Yosemite Falls, the concession stable, and Curry Village. The signs informed visitors of the potential changes that could occur at each location, and guided visitors to areas where they could receive more information.

The National Park Service maintains a web site (*nps.gov/yose/planning.htm*) which contains a wide range of information about planning activities and updates on issues related to the development of the *Draft* and *Final Yosemite Valley Plan/SEIS*, as well as the full text of the *Draft Yosemite Valley Plan/SEIS*.

From the onset of planning for the 1992 *Draft Yosemite Valley Housing Plan/SEIS*, park staff members have met informally and consulted with a diverse group of organizations. Between December 1998 and July 2000, the National Park Service conducted informational meetings with the following groups:

American Alpine Club
American Alpine Club of Berkeley
American Indian Council of Mariposa, Inc.
Angels-Murphys Rotary Club
Aquatic Outreach Institute
Backcountry Horseman of California Convention
Bishop Chamber of Commerce
Bishop Rotary Club
Bridgeport Chamber of Commerce
California Bicycle Coalition
California Native Plant Society
California State Horseman's Association Concord
California State Polytechnic University, San Luis Obispo
California State University – Stanislaus – environmental philosophy class
California Preservation Foundation
Central Sierra Environmental Resource Center
Climbing organizations
Commonwealth Club of California
East Bay Bicycle Coalition
Eastern Madera County Chamber of Commerce
El Portal Post Office
El Portal Town Planning Advisory Committee

Foresta Homeowners Association
Foresta Preservation Association
Fresno Chamber of Commerce
Fresno Visitors Bureau
Friends of the River
Greater Area Merced Chamber of Commerce
Groveland Kiwanis Club
Groveland Highway 120 Association
Groveland Rotary Club
Highway 120 Chamber of Commerce
Hillsborough Garden Club
Hispanic Chamber of Commerce for Merced
International Rivers Network
John C. Fremont Hospital Trustees
John Muir Heritage
Kiwanis of Greater Sonora
Lee Vining Chamber of Commerce
Loyola Marymount School of Business
Madera County Board of Supervisors
Mammoth Lakes Chamber of Commerce
Mammoth Lakes Executive Committee Sierra Club
Mammoth Lakes Lions Club
Mammoth Lakes Town Council
Mammoth Rotary Club
Mammoth Visitors Bureau
Mariposa County Chamber of Commerce
Mariposa County Board of Supervisors
Mariposa Fish and Game
Mariposa Kiwanis
Mariposa Planning Council
Mariposa Rotary Club
Mariposans for Environmentally Responsible Growth
Marmot Mountain Works
Merced County Chamber of Commerce
Merced Co-Gustine Chamber of Commerce
Mono County Regional Planning Advisory Committee
Mono County Board of Supervisors
Montclair Eco-Stewards
National Parks and Conservation Association
National Trust for Historic Preservation
North Merced Rotary
Oakhurst Action Council
Oakhurst Kiwanis Club
Oakhurst Rotary Club
Range of Light Sierra Club
Rogue River National Forest
Rutgers University
San Francisco Presbytery/Peacemaking
San Francisco State University – resource management class
Senator Barbara Boxer's office
Service Employees International Union Local 535
Sierra Club
Sierra Club, Conservation Committee, Berkeley
Sierra Club Yosemite Committee
Sonora Kiwanis Club
Sonora Rotary Club
Sonora Sierra Club
Stanford Linear Accelerator Center
Tour Resource Information Partners
Tuolumne County Chamber of Commerce/Government Affairs Committee
Tuolumne County Planning Department
Tuolumne County Visitors Bureau
Tuolumne Transportation Conformity Team
U.S. Geological Survey, Biological Research Division, El Portal
Wawona Property Owners Association
Wawona Town Planning Advisory Committee
Wilderness Society
Yosemite Area Regional Transportation Strategy (YARTS), Management Board
Yosemite Area Regional Transportation Strategy (YARTS), Technical and Citizens Advisory Committee
Yosemite Area Regional Transportation System, Authority Commission
Yosemite Area Regional Transportation System - Authority Advisory Committee
Yosemite Association
Yosemite Campers Association
Yosemite Concession Services
Yosemite Fund
Yosemite Fund John Muir Society
Yosemite High School
Yosemite Institute
Yosemite Motels
Yosemite Restoration Trust
Yosemite Transportation System
Yosemite Valley Lion's Club
Yosemite Valley Rotary Club
Yosemite West Property Owners Association

AGENCY AND AMERICAN INDIAN CONSULTATION AND COORDINATION

Comment letters from federal and state agencies and American Indian tribes are published in Vol. III, Summary of Public Comments and Responses, Chapter 9.

Advisory Council on Historic Preservation and California State Historic Preservation Officer

The 1966 National Historic Preservation Act (NHPA), as amended in 1992, requires federal agencies to consult with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) regarding undertakings that may affect historic properties. The National Park Service has consulted with the California SHPO and the ACHP in development of the *Draft Yosemite Valley Implementation Plan/SEIS*, the *Draft Yosemite Valley Housing Plan/SEIS*, the *Draft Yosemite Valley Plan/SEIS*, and other subordinate plans such as the Yosemite Lodge Redesign Project and the El Portal Road Improvement Project (NPS). Several meetings were held to discuss specific aspects of these proposed undertakings as well as the Yosemite Programmatic Agreement for compliance with Section 106 of the NHPA. This Programmatic Agreement addresses individual undertakings proposed in the *Draft* and *Final Yosemite Valley Plan/SEIS*. Although consultations were frequent and at times informal, the following meetings were held:

August 15, 1996: Meeting with a representative from the SHPO to discuss the range of options being considered in the 1997 *Draft Yosemite Valley Implementation Plan* and to consider alternative approaches to completing NHPA Section 106 compliance.

June 18, 1997: Meeting with a representative from the SHPO and the ACHP to discuss the proposed Programmatic Agreement as an approach to completing NHPA Section 106 compliance for the *Draft Yosemite Valley Implementation Plan/SEIS* and the *Draft Yosemite Valley Housing Plan/SEIS*.

July 30, 1997: Meeting with a representative from the SHPO to further discuss the proposed Yosemite Programmatic Agreement.

October 15, 1998: Meeting with a representative from the SHPO, the ACHP, and members of the National Trust for Historic Preservation to discuss the *Draft Yosemite Valley Implementation Plan* and the draft Programmatic Agreement.

October 21, 1999: Meeting with a representative from the SHPO and the ACHP to discuss the proposed actions in the *Draft Yosemite Valley Plan/SEIS*, the methodology for analyzing impacts to cultural resources, and NHPA Section 106 compliance through the Programmatic Agreement.

August 16-17, 2000: On-site meeting in Yosemite Valley with representatives from the SHPO to discuss formal SHPO comment on the *Draft Yosemite Valley Plan/SEIS* and specific changes in the Preferred Alternative. Site visits were made to Sugar Pine and Stoneman Bridges, Camp 4 (Sunnyside Campground), and Curry Village.

American Indian Consultation

As part of the development of the *Draft* and *Final Yosemite Valley Plan/SEIS*, the National Park Service consulted with the following park-associated federally recognized tribes and nonfederally recognized American Indian communities who refer to themselves as "tribes": the American Indian Council of Mariposa County, Inc.; the North Fork Mono Rancheria; the Tuolumne Band of Me-Wuk Indians; the Chukchansi Tribal Government; the Mono Lake Indian Community; the Bridgeport Paiute Indian Colony; and the Bishop Paiute Tribal Council. These consultations have been ongoing throughout the planning process for the *Draft Yosemite Valley Housing Plan/SEIS* and the *Draft Yosemite Valley Implementation Plan/SEIS*, and will continue through the design and implementation phases for activities taking place under the *Yosemite Valley Plan*. At present, the National Park Service is consulting with seven American Indian tribes and groups regarding issues such as access for traditional use, gathering of traditional materials, protection and mitigation of impacts to traditional cultural resources, and preservation and management of important cultural places.

The following meetings have taken place between July 1995 and July 2000:

July 24, 1995: Meeting with North Fork Mono tribal board of directors in Bass Lake, California. National Park Service representatives met with the tribal council to discuss issues and concerns related to the earlier *Draft Yosemite Valley Implementation Plan/SEIS*. Six tribal members were present.

July 26, 1995: Meeting with Mono Lake Indian Community chairman and members in Lee Vining, California. National Park Service representatives met with the tribe to discuss issues and concerns related to the earlier *Draft Yosemite Valley Implementation Plan/SEIS*. Five tribal members were present.

July 27, 1995: Meeting with American Indian Council of Mariposa County, Inc. and a representative of the Tuolumne Band of Me-Wuk Indians in Mariposa, California. National Park Service representatives met with the tribal council to discuss issues and concerns related to the earlier *Draft Yosemite Valley Implementation Plan/SEIS* and *Draft Yosemite Valley Housing Plan/SEIS*. Fifteen tribal members were present.

September 12, 1996: Meeting with the American Indian Council of Mariposa County, Inc. to provide updated information on status and specifics of the earlier *Draft Yosemite Valley Implementation Plan/SEIS*. Six tribal members were present.

Several meetings and on-site walks were held with representatives of the American Indian Council of Mariposa County, Inc. from 1997 through 1999 regarding actions originally proposed as part of Yosemite's flood recovery program and other individual actions. These include reconstructing the El Portal Road, rebuilding the Yosemite Lodge complex, constructing administrative facilities in El Portal, and rehabilitating the Lower Yosemite Fall area.

April 19, 1999: Meeting with American Indian Council of Mariposa County, Inc. National Park Service representatives met with one member of the tribal board of directors for a site walk-through at a location proposed for housing development in El Portal.

October 5, 1999: Meeting with the North Fork Mono Indian Tribe in North Fork, California. National Park Service representatives met with the tribal council to discuss the *Draft Yosemite Valley Plan/SEIS*.

October 6, 1999: Meeting with the Mono Lake Indian Community in Lee Vining, California. National Park Service representatives met with the tribal chairman and several members to discuss, among other things, the *Draft Yosemite Valley Plan/SEIS*.

October 28, 1999: Meeting with the American Indian Council of Mariposa County, Inc. National Park Service representatives met with the tribal council and several members to discuss the *Draft Yosemite Valley Plan/SEIS*.

June 28, 2000: Meeting with the American Indian Council of Mariposa County, Inc. in Yosemite Valley, California. National Park Service representatives met with representatives of the tribe to discuss the *Draft Yosemite Valley Plan/SEIS*. Five tribal representatives were present.

July 14, 2000: Meeting with the Mono Lake Indian Community in Yosemite Valley, California. National Park Service representatives met with two tribal representatives to discuss the *Draft Yosemite Valley Plan/SEIS*.

July 17, 2000: Meeting with the North Fork Mono Indian Tribe in Yosemite Valley, California. National Park Service representatives met with three tribal representatives to discuss the *Draft Yosemite Valley Plan/SEIS*.

August 4, 2000: Meeting with the North Fork Mono Indian Tribe in Wawona, California. National Park Service representatives met with tribal members for a site walk-through at a location proposed for housing development in Wawona.

August 14, 2000: Meeting with the Bishop Paiute Tribe in Bishop, California. National Park Service representatives met with four tribal representatives to discuss the *Draft Yosemite Valley Plan/SEIS*.

August 21, 2000: Meeting with the Tuolumne Me-Wuk Indians in Yosemite Valley, California. National Park Service representatives met with three tribal representatives to discuss the *Draft Yosemite Valley Plan/SEIS*.

August 22, 2000: Meeting with the Bridgeport Paiute Indians in Bridgeport, California. National Park Service representatives met with the tribal council and members to discuss the *Draft Yosemite Valley Plan/SEIS*.

September 7, 2000: Meeting with the American Indian Council of Mariposa County, Inc. to discuss changes in the *Draft Yosemite Valley Plan/SEIS*.

U.S. Fish and Wildlife Service

The Endangered Species Act of 1973, as amended (16 USC 1531 et seq.) requires all federal agencies to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitat.

The National Park Service requested a list of federally listed endangered and threatened species that may be present or affected by actions proposed in the *Draft Yosemite Valley Plan/SEIS* in March 2000. The species list was received from the U.S. Fish and Wildlife Service on March 29, 2000 and is included in the Biological Assessment (Appendix K).

A Biological Assessment on the *Draft Yosemite Valley Plan/SEIS* was submitted to the U.S. Fish and Wildlife Service on May 11, 2000. At this time, the National Park Service requested that formal consultation be initiated with the U.S. Fish and Wildlife Service. In June of 2000, the U.S. Fish and Wildlife Service requested more information on elderberry plants, which serve as habitat for the valley elderberry longhorn beetle, a federally listed species. This information was submitted on July 5, 2000, along with a revised Biological Assessment on the *Draft Yosemite Valley Plan/SEIS*, which reflected the new information.

In August of 2000, a Biological Assessment on the *Final Yosemite Valley Plan/SEIS* was submitted to the U.S. Fish and Wildlife Service. The National Park Service met with the U.S. Fish and Wildlife Service in Yosemite on August 30, 2000. Mitigation and compensation measures for potential impacts on the Valley elderberry longhorn beetle were discussed and potential development and restoration sites were visited. The U.S. Fish and Wildlife Service prepared a Biological Opinion in September 2000 (see Vol. II, Appendix L) based on the Biological Assessment (see Vol. II, Appendix K).

Environmental Protection Agency

The National Park Service consulted with the Environmental Protection Agency on a periodic basis during development of the *Draft Yosemite Valley Plan/SEIS* and solicited formal comments during review of the published document. Key issues identified by the Environmental Protection Agency in their comments on the *Draft Yosemite Valley Plan/SEIS* include:

- Air quality impacts (specifically clean fuels, transit, and fleet maintenance)
- Pollution prevention and materials reuse
- Sustainability principles

Consultation with the Environmental Protection Agency is ongoing throughout the design and implementation phases of the *Yosemite Valley Plan*.

U.S. Geological Survey

The expertise of the U.S. Geological Survey was used to evaluate geological hazards within portions of the planning area. The U.S. Geological Survey published reports that document rockfall and debris flow characteristics. This information was used in the plan as a development consideration.

National Park Service Water Resources Division

Executive Orders 11988 Floodplain Management and 11990 Protection of Wetlands consultation on direct federal agencies to enhance floodplain and wetland values, to avoid development in wetlands and floodplains whenever there is a practicable alternative, and to avoid impacts associated with the occupancy or modification of floodplains or wetlands to the extent

possible. Communication and site visits with the National Park Service Water Resources Division have taken place on a regular basis to ensure that the National Park Service is meeting all obligations under these Executive Orders and to oversee wetland delineation.

Foresta Preservation Association

The National Park Service has an obligation to formally advise the Foresta Preservation Association of actions concerning Foresta residents, as stipulated by Civil Action 92-5617-OOW (Benson v. USA, et al.). To meet this obligation, *Draft Yosemite Valley Plan/SEIS* documents, planning updates, and information sheets were distributed directly to the association, via its president. Additionally, National Park Service staff met directly with Foresta residents to inform and advise them on the elements, contents, and status of the *Draft Yosemite Valley Plan/SEIS*.

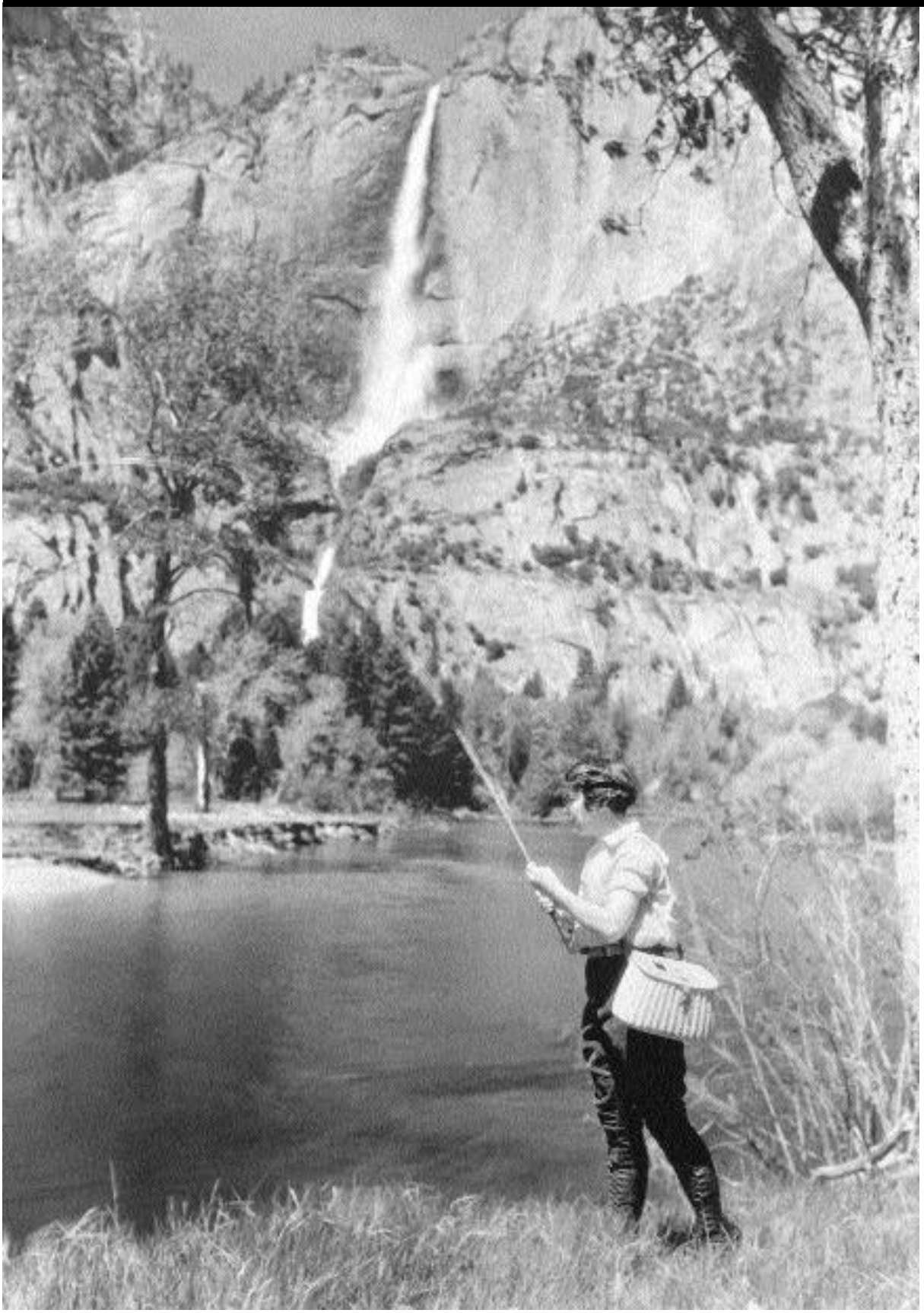

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Photo on previous page courtesy of Yosemite Museum

Miss Beatrice Kelly fishing in Yosemite Valley, April 1929.

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Photo on previous page by Ralph Anderson, courtesy of Yosemite Museum

Walter Gerrard's Girls posse in front of the square round cross-section in front of the Yosemite Museum, April 1931.

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Glossary

Final Yosemite Valley Plan

Supplemental EIS

NPS Photo on previous page by Fred Maag, Jr.

California black oaks and conifers silhouetted against El Capitan.

GLOSSARY

100-year floodplain: The land adjacent to a river corridor that would be covered by water during a 100-year flood event. A 100-year flood event has a 1% probability of occurring during any given year.

A-weighted noise level (dBA): Noise intensity as measured with devices that have the same sensitivity to sound frequencies as the human ear.

Abutment: A structure that supports the ends of a bridge or dam.

Action alternative: An alternative that proposes a change to existing conditions or current management direction. The environmental consequences of an action alternative are analyzed in relation to the No Action Alternative. *Also see* No Action Alternative.

Adaptive reuse: A new use for a structure or landscape other than the historic use, normally entailing some modification of the structure or landscape. *Also see* Rehabilitation (cultural resources).

Affected environment: The existing biological, physical, cultural, social, and economic conditions that are subject to both direct and indirect changes as a result of actions described within alternatives under consideration.

Air quality: A measure of health and visibility-related characteristics of air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances.

Alluvial: Processes by which sediment is deposited by running water.

Alluvium: Sediment deposited by a stream or other body of running water.

Alternatives: A reasonable range of options that can accomplish an agency's objectives.

Ambient noise: The existing sounds at a given location coming from all sources, both near and far.

Anaerobic: Existing in the absence of free oxygen.

Annosus root disease: A root disease caused by a widespread native fungus (*Heterobasidion annosum*). In pines, the fungus spreads through the root system, attacking the inner bark and sapwood. Two to six years after initial infection, the fungus reaches the root crown and girdles the tree, but remains active as a wood-decaying organism within the roots and trunk of the dying tree. Pines weakened by annosus root disease are often killed by bark beetles. Incense-cedars, however, are not affected by bark beetles and will stand green for many years until the disease so weakens the trees that they fall down. Cedars are thought to act as a reservoir for annosus root disease because they take so long to die from the disease.

Anthropogenic: Resulting from the influence or actions of human beings, e.g., the burning of the Valley floor by American Indians to clear brush.

Aquatic state: The period in the life cycle of some organisms that is spent almost entirely in water. For example, many insects have an aquatic larval stage.

Armillaria root rot: A native plant disease primarily affecting oaks, but other tree species as well; sometimes exacerbated by management activities. It can also result in tree hazards.

Average level (L_{eq}): The constant sound level for a specific measurement period that has the same total sound energy as the actual varying sound levels recorded over the period.

Background noise: The all-encompassing sound associated with a given environment at a specified time, usually a composite of sound from many sources and directions. Background noise remains in a given location in a given situation when all uniquely identifiable, discrete sound sources are eliminated, rendered insignificant, or otherwise not included.

Bank: The slope of land adjoining a body of water, especially a river, stream, lake, or channel.

Base of talus: *See* Talus slope zone.

Bed: Refers to the number of bed spaces assigned to employees in a given location. A bed could represent a multi-room house, a dormitory, or single-room unit. For example, a single-family house dedicated to one employee is considered to be one bed, regardless of the number of family members living in the same residence.

Best Management Practices: Effective, feasible (including technological, economic, and institutional considerations) conservation practices and land- and water-management measures that avoid or minimize adverse impacts to natural and cultural resources. Best Management Practices may include schedules for activities, prohibitions, maintenance guidelines, and other management practices.

Biodiversity: Or biological diversity, includes genetic diversity within species, species diversity within a community, and diversity in a full range of biological communities. An area is considered biologically diverse when it includes rich and stable populations of native species that are naturally distributed across the landscape.

Biological community: An association of plants and animals in a region dominated by one or more prominent species or by a physical characteristic (e.g., California black oak community).

Biota: All plants, animals, and microscopic life forms that make up a biological community or region.

Biotic: Of or produced by living things; composed of plant, animal, or microscopic life forms.

Braided stream system: A stream pattern that is characterized by the division of water flow into more than one channel. A basic characteristic of this pattern is the diversion of a single trunk channel into a network of interconnected branches and the formation of interspersed islands.

California black oak woodland: A vegetation community dominated by California black oak (*Quercus kelloggii*). Other species that may be present include canyon live oak, California buckeye, Douglas-fir, incense-cedar, and ponderosa pine. The canopy can be continuous, intermittent, or

savanna-like. Shrubs may or may not be common. Ground layer vegetation is sparse or grassy (Sawyer 1995).

Cabin (cultural resource): A small, rustic residential structure usually occupied seasonally.

Cabin (lodging): A structure containing one to four lodging units, as defined in the 1992 *Concession Services Plan/EIS*.

California Wilderness Act of 1984: A federal law that designated a number of additional wilderness areas in California, including those in Yosemite National Park.

Cambium: A thin layer of cells between the wood and bark in most vascular plants; the cells increase by division and differentiate to form new wood or bark.

CEQ: The President's Council on Environmental Quality (CEQ) was established by the National Environmental Policy Act (NEPA). The council's mission is to oversee and develop national environmental policy.

Choosing by Advantages: A decision-making process used as part of developing the *Yosemite Valley Plan* to analyze and refine the alternatives.

Colluvial soils: Loose earth material (such as rock fragments, sand, etc.) that accumulates on steep slopes or at the base of talus slopes through the action of gravity.

Community: When used in a social or political context, refers to the group of people living in a particular area. When used in a biological context, any group of interacting organisms belonging to a number of different species that occur in the same habitat. *Also see* Biological community.

Concessioner: A private commercial entity that conducts business under contract with the National Park Service in Yosemite National Park to provide food, lodging, retail, recreation, and other services to park visitors. The primary concessioner in the park is Yosemite Concession Services. Other concessioners include Yosemite Medical Clinic, The Ansel Adams Gallery, El Portal Market, and El Portal Chevron.

Concession Services Plan: The 1992 amendment to Yosemite's *General Management Plan* that guides the management of concession enterprises, such as lodging, food, retail, and other commercial services in Yosemite National Park. This plan serves as the basis for contracts between the National Park Service and the park's primary concessioner.

Conifer invasion: The progressive growth of coniferous trees, such as pines and incense cedars, into areas that formerly did not support these species. Over the last 150 years human-caused changes (such as alteration of soil moisture and suppression of a natural fire regime) have encouraged unnatural rates of conifer spread, reducing the size and continuity of meadows in Yosemite Valley.

Connectivity: The degree to which physical connections are maintained between large areas of habitat and patches of habitat, and between different types of habitat. Connectivity increases biodiversity and enhances reproduction and survival of species. *Also see* Habitat fragmentation.

Cottage: A lodging structure containing five to eighteen lodging rooms, as defined in the 1992 *Concession Services Plan/EIS*.

Crownsprout: An adaptation of plants to produce new growth from a stump or burl typically damaged by cutting or fire. New growth often appears as circular or crown-like.

Cultural landscape: A geographic area, including both cultural and natural elements, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values. There are two primary types of cultural landscapes in Yosemite Valley: historic designed landscapes, such as The Ahwahnee and the Yosemite Village Historic District; and ethnographic landscapes, such as the entirety of Yosemite Valley.

Cultural resources: Properties such as landscapes or districts, sites, buildings, structures, objects, or cultural practices that are usually greater than 50 years of age and possess architectural, historic, scientific, or other technical value. By their nature, cultural resources are non-renewable.

Cumulative effects: Effects on the environment that result from the incremental impacts of an action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or non federal) or person undertakes such actions. Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time.

dBA: *See* decibel (dBA)

Day visitor: All visitors who do not spend the night in the park.

Day-Night Average (DNL): An average of daytime and nighttime noise levels with an adjustment that takes into consideration the greater need for quiet at night.

Debitage: Waste flakes of stone created during the process of stone tool manufacturing. *Also see* Lithic.

Debris flow: Soil, rock, and other materials that are rapidly transported by water and gravity. Debris flows occur in a variety of environments throughout Yosemite, ranging from steep ephemeral and perennial stream channels below cliffs to nearly flat alluvial fans adjacent to the Merced River floodplain.

Decadent trees: Stands of trees with greatly reduced growth, usually occurring as one of three types: (1) over-mature trees nearing end of normal life, (2) younger trees limited by site conditions such as soil deficiencies, and (3) overcrowding due to exclusion of natural and cultural fires.

Decibel (dBA): A unit of measure of sound intensity.

Decompaction: A natural resource restoration technique that includes loosening or breaking up unnaturally compacted soils to facilitate water movement and root growth.

Degradation (natural resources): Refers to negative impact(s) to natural resources or natural processes. The impact may be singular or cumulative; the extent may be local or ecosystem-wide. The term degradation is used broadly and may refer to: reduction in habitat size, reduction in extent of plant populations, declining species vigor exhibited as reduced population numbers, reduced reproductive success, increased mortality rates, and/or decreased percent of available habitat utilized.

Deluxe Lodging: A type of overnight visitor lodging having the largest number of amenities and, correspondingly, the highest price range found in Yosemite National Park. The only deluxe accommodations provided in Yosemite are at The Ahwahnee. As required by law, prices are established by the National Park Service after considering market forces and relevant factors, as well as reviewing a sample of comparable facilities operated under similar conditions in California. Double occupancy prices for deluxe lodging in 1999 ranged from $241 - $313, plus tax, depending on room type and season.

Design day: A planning term meaning a typically busy day; the level of visitation for which various facilities, systems, and programs would be designed to handle.

Designed historic landscape: A landscape significant as a design or work of art, that was consciously designed and laid out either by a master gardener, landscape architect, architect, or horticulturist to a design principle, or by an owner or other amateur according to a recognized style or tradition. A designed historic landscape has historical association with a significant person, trend, or movement in landscape gardening or architecture, or a significant relationship to the theory or practice of landscape architecture.

Doghair thickets: Young stands of equally aged trees (usually white fir, incense-cedar, and ponderosa pine) densely packed due to exclusion of natural and cultural fires. Such thickets are highly susceptible to insect outbreaks, diseases, wildfire, and mechanical damage from snow and wind.

Ecological restoration: See Restoration (natural).

Economy lodging: A type of overnight visitor lodging having basic amenities and offering the lowest-priced, hard-sided accommodations found in Yosemite National Park (rustic lodging with canvas roof and/or walls is priced lower). Economy lodging in Yosemite Valley can be found at Curry Village. As required by law, prices are established by the National Park Service after considering market forces and relevant factors as well as reviewing a sample of comparable facilities operated under similar conditions in California. Double occupancy prices for economy lodging in 1999 ranged from $45 - $75, plus tax, depending on room type and season.

Ecosystem: A system that involves the interaction of organisms with their physical environment.

Ecotone: A transition zone between different habitat types, such as the area between meadows and California black oak woodlands.

El Portal Administrative Site: An area of federally owned land under National Park Service jurisdiction outside of Yosemite National Park and adjacent to the western park boundary along Highway 140. In 1958, the administrative site, including the community of El Portal, was designated by the U.S. Congress to be used for park operations, housing, and administration. *See* Vol. I C, plate 1-6.

Eluviation: The movement through the soil of materials brought into suspension or dissolved by the action of water.

Emergent wetland: A wetland characterized by frequent or continual surface water inundation, dominated by herbaceous plant species rooted underwater and emerging into air (e.g., cattails, rushes).

Employee bed: *See* Bed.

Endangered species: *See* Threatened and endangered species.

Energy equivalent: *See* Average level (L_{eq}).

Environmental consequences: A section of an environmental impact statement that is the scientific and analytic basis for comparing alternatives. This discussion includes the environmental effects of the alternatives, any adverse effects that cannot be avoided, and short-term, long-term and cumulative effects. These environmental effects include ecological, aesthetic, historical, cultural, economic, and social (Bass and Herson 1993).

Environmental Impact Statement: A detailed statement required by the National Environmental Policy Act (NEPA) when an agency proposes a major action that significantly affects the quality of the human environment. This document describes and analyzes the activities that might affect the human environment (Bass and Herson 1993).

Environmental justice: Ensuring the rights of low-income people and communities of color to experience and enjoy clean and healthy environments. Executive Order 12898 requires that the National Park Service ensures that its programs, policies, and activities do not exclude, discriminate, or deny persons because of their race, color, or national origin.

Erratics: Rock fragments of any size carried by glacial or floating ice and deposited at some distance from the place of origin.

Exotic species: *See* Non-native species.

Facilities: Refers to buildings, houses, campgrounds, picnic areas, visitor-use areas, operational areas, and associated supporting infrastructure such as roads, trails, and utilities.

Facultative wetland species: Plant species that can, but do not always, occur in wetlands. Facultative species indicate possible wetland conditions; further study of other wetland indicators (e.g., soils and inundation patterns) may be warranted.

Fell-field: A community of widely scattered dwarfed vegetation that grows in the barren land above the timberline.

Fen: A unique wetland type, possessing a water source that originates from alkaline ground water. Typically fens possess unique wetland vegetation adapted to saturated alkaline growing conditions.

Fire return interval: The typical period of time between naturally occurring fires. Fire return intervals vary by vegetation type and location.

Floodplain: Land on either side of a stream or river that is submerged during floods.

Fluvial: A term used to indicate the presence or interaction of a river within an area or landform.

Footprint: The land area covered or occupied by a function or structure.

Frazil ice: Stream ice with the consistency of slush, formed when small ice crystals develop in super-cooled stream water as air temperatures drop below freezing. These ice crystals join and are pressed together by newer crystals as they form.

Free-flowing river: A body of water existing or flowing under natural conditions without impoundments, diversions, straightening, riprapping, or other modification of the waterway (as defined in the Wild and Scenic Rivers Act - 16 USC 1286 [b]). *Also see* Riprap.

Fuel loads: The quantities of burnable, wildland fire fuels, normally expressed in tons per acre. The exclusion of natural and cultural fires has resulted in unnaturally high and hazardous fuel loads in many forested areas making management by prescribed fire unsafe.

Fuel/propulsion technology: The practical application of knowledge in the development of fuels, both petroleum and nonpetroleum, and the engineering of appropriate power and drive systems for vehicles.

Full build-out: The condition that occurs when all planned facilities are constructed; the utilization of all suitable and designated locations within an area.

Geologic hazards: Natural geologic processes (i.e., rockfall) that occur or could potentially occur in locations that present a threat to humans or developed areas.

Geographic information system (GIS): A unique assemblage of hardware, software, and personnel that integrates digital databases, spatial technologies, and analytical methods in order to capture, store, edit, analyze, and display geographic data.

Geomorphic: Refers to the shape of the earth, or the shape of features on the earth's surface.

Glaciation: A collective term for geologic processes of glacial activity, including erosion, deposition, and the resulting effects of such action on the earth's surface.

Groundwater: All water found below the surface of the ground. *Also see* Surface water.

Habitat fragmentation: The partitioning of larger habitats into smaller more isolated parcels, usually as a result of development. Fragmentation of habitat can negatively affect the abundance and diversity of plants and animals in an area.

Hazard trees: "...any tree...either alive or dead, which due to outwardly visible defects could fall down (in part or in entirety) and strike a person or property within any designated portion of a development zone." (WR-093)

Hazardous material: A substance or combination of substances that, because of quantity, concentration, or physical, chemical, or infectious characteristics, may either: (1) cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating illness, or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, used, or disposed of.

Hazardous waste: Hazardous materials that no longer have practical use, such as substances that have been discarded, spilled, or contaminated, or that are being temporarily stored prior to proper disposal.

Headwaters: The point or area of origin for a river or stream.

Herbaceous: Refers to plants that lack a woody structure.

Highly valued resources: A set of natural and cultural resources that are the park's highest priority for protection and restoration. Highly valued resources in Yosemite Valley are those that

make up the Merced River ecosystem (Merced River, wetlands, riparian, and meadow communities), California black oak woodlands, sensitive wildlife habitat, rich soil areas, National Historic Landmarks, and important archeological sites. Highly valued resources are graphically portrayed in Vol. IC, plate C.

Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER): An architectural and engineering documentation program that produces a thorough archival record of buildings, engineered structures, and cultural landscapes significant in American history and the growth and development of the built environment.

Historic character: The sum of all visual aspects, features, materials, and spaces associated with the historic nature of a site, structure, or landscape.

Historic district: A geographically definable urban or rural area, possessing a significant concentration, linkage, or continuity of sites, landscapes, structures, or objects united by past events or aesthetically by plan or physical developments. A district may also be composed of individual elements separated geographically but linked by association or history.

Historic topography: The physical features and contours of a place or region as they existed during historic time.

Hotel: A structure containing more than eighteen lodging rooms, as defined in the 1992 *Concession Services Plan/EIS*.

Housing actions: The component of alternatives that describes the potential locations, types, and numbers of employee housing. *Also see* Bed.

Housing support facilities: Amenities required by a typical residential community (i.e., post office, food preparation and service, recreational facilities, barber shop, child care, etc.).

Housekeeping unit: A type of rustic accommodation found within Housekeeping Camp in Yosemite Valley. The unit is composed of a concrete three-walled structure with canvas roof and door, a small patio, and a common bathroom. *Also see* Rustic accommodation.

Hydric soils: Soils that are characterized by an abundance of moisture, periodically producing anaerobic conditions.

Hydrodynamics: The flow, fluctuation, and character of water in a system.

Hydrogeomorphology: The science dealing with how the land is shaped by hydrological processes, such as the formation of the floodplain in Yosemite Valley and the channels of the Merced River.

Hydrologic response: The response of a watershed to precipitation, often the resulting streamflow from a precipitation event or snowmelt.

Hydrology: The science dealing with the properties, distribution, and circulation of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere.

Hydromorphic classification: A wetland classification system that distinguishes wetland features based on position in the landscape, geomorphic setting, and hydrodynamics (National Research Council 1995).

Hydrophilic: Refers to soils that have an affinity for water, usually soils with high clay content.

Hydrophyte: Any plant growing in water or in a substrate that has an abundance of moisture. Hydrophytes are typically found in wetland habitats.

Illuviation: The accumulation in a soil layer of material that has been leached out of another layer.

Impacts: Effects, both beneficial and adverse, of an action on the human environment. Direct effects are those occurring at the same time and place as the action itself. Indirect effects occur later in time or are farther removed in distance from the action, yet are reasonably foreseeable.

IMPLAN: An economic impact assessment modeling system that allows the user to build economic models to estimate the impacts of economic changes.

Infrastructure: The various systems and facilities needed to support park operations and visitor services (e.g., sewer and water systems, electric systems, communication lines, roads and trails, and various support buildings).

Internal/external air pollution sources: Sources of air pollution either outside of a region or within a region; Yosemite Valley experiences air pollution from both sources: air pollution caused by motor vehicles within the Valley and air pollution originating in the San Joaquin Valley and moving into the Yosemite area.

Interpretation: Programs that support the mission of the National Park Service by assisting people in understanding, enjoying, and contributing to the protection of the park's natural, cultural, and scenic resources and dynamic processes. Interpretive programs include walks and evening programs, guided tours, formal education programs for school groups, exhibits, audio-visual productions, and publications. In Yosemite, these programs are provided by the National Park Service and park partners, including Yosemite Concession Services, the Yosemite Association, The Ansel Adams Gallery, the Yosemite Institute, and the Sierra Club.

Inoculum: Refers to naturally occurring fungal material used to inoculate root systems.

Krummholz: Krummholz is the name given to dwarfed and stunted trees that occupy environments characterized by intense solar radiation, high winds, excessive salts, and large diurnal temperature fluctuations.

L_{eq}: *See* Average level (L_{eq}).

Lacustrine: Of, or relating to lakes.

Ladder fuels: Flammable materials between the ground and tree canopy (a single tree or stand of trees) that provides an opportunity for a ground fire to ignite the canopy. Ladder fuels are typically composed of immature trees, shrubs, and dead or downed branches.

Lateral moraines: Linear moraines deposited along the sides of a glaciated valley. *See* Moraine.

Life zone: Bands of characteristic vegetation occurring along elevation gradients.

Liquefaction: A process by which water-saturated soils lose strength and liquefy during ground shaking events.

Lithic: Of or relating to stone or stone tools.

Lodging unit/room: Concessioner-operated facilities for overnight visitors. A lodging unit may be a single structure, such as a tent cabin, or a series of rooms grouped into larger motels or hotels. Lodging rooms in Yosemite are available at a range of prices that correspond to the type of structure as well as the amenities provided. *See* Cabin (lodging); Cottage; Hotel; Housekeeping unit; Motel. *Also see* Deluxe Lodging; Economy Lodging; Mid-scale Lodging; Rustic Lodging.

Mast crop: The fallen fruit of forest trees (such as acorns) used as forage by wildlife.

Mechanical treatment: The alteration of the landscape using hand implements, power tools, and heavy equipment.

Medial moraine: A deposit of glacial debris that indicates the point of contact between two glaciers moving in a parallel direction, combining their respective lateral moraines. *See* Moraine; Lateral moraines.

Microclimate: The distinct yet uniform, localized climate of a small site or habitat.

Mid-scale lodging: A type of overnight visitor lodging having a moderate number of amenities and, correspondingly, a price range located between deluxe and economy. In Yosemite Valley, mid-scale lodging rooms are located at Yosemite Lodge and Curry Village. As required by law, prices are established by the National Park Service after considering market forces and relevant factors as well as reviewing a sample of comparable facilities operated under similar conditions in California. Double occupancy prices for mid-scale lodging in 1999 ranged from $78 - $115, plus tax, depending on room type and season.

Mission 66 style (architecture): Refers to buildings developed in national parks between 1956 and 1966, during a period of experimentation with new structural forms, modern materials, and machine-driven methods of construction. The intent was to provide low maintenance, economical, permanent structures.

Mitigation: An activity designed to avoid, minimize, rectify, eliminate, or compensate for impacts of a proposed project. A mitigation measure should be a solution to an identified environmental problem.

Mixed conifer zone: Plant communities consisting of a mix of conifers such as pine, fir, incense-cedar, and Douglas-fir. The zone includes lower montane, montane, and upper montane coniferous forests. California black oak and other hardwoods are common associates.

Monoculture: The cultivation or growth of a single crop or organism to the exclusion of all others. Pervasive invading non-native plant species can sometimes create a near monoculture situation.

Montane: Of, relating to, or growing in the biogeographic zone of relatively moist cool upland slopes below the timberline, dominated by large coniferous trees.

Moraine: An accumulation of mineral material, such as boulders, stones, and sediment that is transported and deposited by a glacier.

Mosaic: A descriptive term for vegetation where the mix of species types and ages creates a diverse assemblage of vegetation or vegetation communities. This term can also be used to describe diversity in habitat types.

Motel: A structure containing more than eighteen lodging rooms, as defined in the 1992 *Concession Services Plan/EIS*.

Multi-use paved trail: A trail that is intended for pedestrian and bicycle use. Occasionally, short segments of multi-use trails may also be used for horses, maintenance, and emergency access by motor vehicles.

Museum collection: Objects, works of art, historic documents, and natural history specimens collected according to a rational scheme and maintained so they can be preserved, studied, and interpreted for public benefit.

National Environmental Policy Act (NEPA): The federal act that requires the development of an environmental impact statement (EIS) for federal actions that might have substantial environmental, social, or other impacts.

National Historic Landmark: A district, site, building, structure, landscape, or object of national historical significance designated by the Secretary of the Interior under authority of the Historic Sites Act of 1935 and entered in the National Register of Historic Places.

National Register of Historic Places: The comprehensive list of districts, sites, buildings, structures, and objects of national, regional, state, and local significance in American history, architecture, archeology, engineering, and culture. This list is maintained by the National Park Service under authority of the National Historic Preservation Act of 1966.

Natural quiet: The absence of human-caused sounds.

Natural process: A collective term for processes, including hydrologic, geologic, biologic, and ecosystemic, that are not the result of human manipulation.

Natural resources: Features and values that include plants and animals, water, air, soils, topographic features, geologic features, paleontologic resources, natural quiet, and clear night skies.

Natural topography: The natural shape or contour of the land.

No Action Alternative: An alternative in an environmental impact statement that continues current management direction. A no action alternative is a benchmark against which action alternatives are compared.

Non-native species: Species of plants or animals that do not naturally occur in a particular area and often interfere with natural biological systems. Also known as alien, introduced, or exotic species.

Non-point sources: Pollutants that enter the environment from general noncontained locations. Examples of non-point sources are roadways, parking lots, and landscaped areas. Pollutants from these locations can include petrochemicals, heavy metals, and fertilizers.

Nonwilderness: Areas in Yosemite that have not been designated for special protection under the California Wilderness Act of 1984.

Obligate wetland species: Plant species that almost always occur in wetlands.

Off-season: Refers to a period of year when Yosemite visitation is lowest, usually from late autumn to early spring. *Also see* Peak season.

Ordinary high water: That line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Out-of-Valley parking: Day-visitor parking outside of Yosemite Valley. Out-of-Valley parking refers to parking areas located either inside or outside the park boundary.

Outstandingly Remarkable Values (ORVs): The exceptional values of a river that warranted its inclusion in the national Wild and Scenic Rivers System. ORVs are the "scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values…that shall be protected for the benefit and enjoyment of present and future generations."

Overnight visitor: Refers to visitors who spend the night in Yosemite Valley. This includes those that stay in lodging, campgrounds, and wilderness areas.

Overstory: The layer of foliage in a forest canopy.

Over-the-road coach: A bus designed for high-speed travel on highways with storage under the floor; a tour bus.

Oxbow: A bend in a meandering river channel that is abandoned as the river shifts its course over time. Oxbows can remain saturated with surface water or groundwater for some time, providing diverse wetland habitats for vegetation and wildlife.

Paleoenvironment: The environment that existed during some time in prehistory.

Palustrine: A term relating to vegetated wetlands (e.g., marsh, swamp, fen, bogs) and small, shallow ponds.

Park partner: An organization that maintains a formal agreement with the National Park Service to provide visitor services in conjunction with Yosemite National Park or otherwise assist the National Park Service; examples include the Yosemite Institute, Yosemite Association, Yosemite Fund, and the Sierra Club (operates LeConte Memorial Lodge).

Particulate matter (PM_{10} and $PM_{2.5}$): Particles with diameters of 10 microns or less (PM_{10}) or 2.5 microns or less ($PM_{2.5}$). Such particles can be inhaled into the air passages and the lungs and can cause adverse health effects. High levels of $PM_{2.5}$ are also associated with regional haze and visibility impairment.

Peak season: Refers to a period of the year when park visitation is highest: broadly speaking, this includes late spring, summer, and early fall. *Also see* Off-season.

Pedestrian/stock trail: Mostly unpaved trails intended to accommodate both pedestrians and stock users. (Use of bicycles on unpaved trails is prohibited.)

Point bars: Areas along the inside bends of a meandering river where material is deposited.

Pool-riffle: The relationship, usually expressed as a ratio, between the surface area of pools and that of small rapids (riffles) in a given portion of a stream or river.

Post-flood conditions: Describes the environment in Yosemite Valley following the January 1997 flood. Post-flood conditions include any subsequent clean-up activities, such as the removal of flood-damaged facilities at Yosemite Lodge and the closure of Upper and Lower River Campgrounds.

Potential Wilderness additions: In Yosemite, these are areas that are officially designated as potential Wilderness additions under the California Wilderness Act of 1984. Potential Wilderness additions are managed as Wilderness until the time that they can be become designated Wilderness. Potential Wilderness additions can become Wilderness without further Congressional action if the use (e.g., roads and trails) or activity (e.g., motorized use) precluding Wilderness designation ceases.

Prescribed fire: Fires that are intentionally ignited under controlled conditions to meet management goals for natural resources and processes, wildland fire protection, and cultural resource preservation.

Preservation (cultural resource): The act or process of applying measures to sustain the existing form, integrity, and material of a historic structure, landscape, or object. Work may include preliminary measures to protect and stabilize the property, but generally focuses on the ongoing preservation, maintenance, and repair of historic materials and features rather than extensive replacement and new work.

Preservation (natural resource): The act or process of preventing, eliminating, or reducing impacts to natural resources and natural processes.

Programmatic accessibility: The ability for visitors with disabilities to participate in the range of programs offered in the park. This includes access to interpretive programs, concessioner services, scenic views, and audio-visual media.

Protected species: *See* Threatened and endangered species.

Protohistoric: Refers to a time immediately before written history.

Radiating impacts: Human activity and associated foot traffic that originates in visitor focal points, such as parking lots, and spreads into adjacent areas.

Recessional moraines: A moraine or series of moraines deposited by glaciers as they retreat across a landscape. *See* Moraine.

Reconstruction: The act or process of depicting, by means of new work, the form, features, and detailing of a nonsurviving historic structure or landscape for the purpose of replicating its appearance at a specific time and in its historic location. (The term also refers to the resulting structure or landscape.)

Record of Decision (ROD): The public document following the preparation of an environmental impact statement that reflects the agency's final decision, rationale behind the decision, and commitments to monitoring and mitigation.

Redevelop: A term that applies to areas that are currently developed, where all or part of the existing development is removed and replaced, modified, or adaptively reused.

Regional transit: A system that provides transportation to and from Yosemite Valley and other areas of the park from communities and locations outside of the park.

Rehabilitation (cultural resources): The act or process of making possible an efficient, compatible use for a historic structure or landscape through repair, alterations, and additions while preserving the portions or features which convey the historical, cultural, and architectural values. *Also see* Adaptive use.

Rehabilitation (natural resources): All activities conducted to improve the quality or biologic function of an impacted natural resource. The term rehabilitation connotes a less extensive process than restoration. Site impacts may preclude a full restoration, but project work is undertaken to enhance the extent or function of natural processes.

Resilient soil: Types of soil that can withstand certain levels of human impact (e.g., foot traffic) without changing its natural character and biological function.

Resilient ecosystem: Ecosystem types that have the ability to rebound from negative impacts to resources and natural processes with negligible or minimal long-term effects.

Restricted access: During periods of high traffic congestion, some vehicles may be required to wait to gain entry to Yosemite Valley (and sometimes the entire park) for portions of the day, with the exception of those visitors who have lodging or camping reservations.

Restricted Access Plan: The Restricted Access Plan lists the criteria and procedures for implementing restricted access. *See* Restricted access.

Restoration (cultural): The act or process of accurately depicting the form, features, and character of an existing historic structure, landscape, or object as it appeared at a particular period of time, by removing modern additions and replacing lost portions of historic fabric, paint, or other elements.

Restoration (natural): Work conducted to remove impacts to natural resources and restore natural processes, and to return a site to natural conditions.

Revegetation: Replacement or augmentation of native plants in an area largely or entirely denuded of vegetation.

Riffle: See Pool-riffle.

Riparian areas: Areas that are on or adjacent to rivers and streams; these areas are typically rich in biological diversity (flora and fauna).

Riprap: Any hardening of a shoreline (with rocks or cement) to stabilize river banks for the protection of facilities on or near the bank.

Riverine: Of or relating to a river. A riverine system includes all wetlands and deepwater habitats contained within a river channel.

River Protection Overlay (RPO): A buffer area intended to protect the Merced River within the park boundary and the El Portal Administrative site, as prescribed by the 2000 *Draft Merced Wild and Scenic River Comprehensive Management Plan/Environmental Impact Statement*. The River Protection Overlay includes the river channel and extends outward 150 feet from the ordinary

high water line above 3,800 feet elevation (including Yosemite Valley and Wawona), and 100 feet from the ordinary high water line below 3,800 feet (including El Portal). It is graphically depicted in Vol. IC, plates F-1 to F-3.

Rockfall: Associated forms of mass movement such as rock avalanches, rockslides, debris slides, and debris flows (Wieczorek, et al. 1998).

Rockfall shadow zone (SL): A distance calculated to determine outlying boulder locations beyond the extent of talus. The SL is determined by a procedure based on the apex of the talus and a minimum shadow angle of 22 degrees (Wieczorek et al. 1998). It is graphically depicted in Vol. IC, plate D.

Rockfall talus zone: *See* Talus slope zone.

Rustic lodging: The most economical lodging type provided in the park; rustic lodging has the fewest number of amenities. Most rustic lodging consists of canvas tents on wooden frames and are furnished with cots. Linen service and daily housekeeping are generally not provided. In Yosemite Valley, rustic lodging is provided at Curry Village and Housekeeping Camp. As required by law, prices are established by the National Park Service after considering market forces and relevant factors, as well as reviewing a sample of comparable facilities operated under similar conditions in California. Double occupancy prices for rustic lodging in 1999 ranged from $40 - $46, plus tax, depending on room type and season.

Rustic style (architecture): Refers to a building style developed in the 1920s and 1930s in national parks. The rustic style emphasized the use of natural materials and textures and thoughtful integration with the natural landscape.

Saprophytic: Obtaining food by absorbing dissolved organic material; saprophytic plants live on dead or decaying organic matter and assist in the breakdown of such into humus.

Scarification: A restoration term meaning the decompaction or loosening of topsoil to allow for enhanced vegetative growth and absorption of moisture.

Section 35: The area on the South Fork of the Merced River, originally designated by the U.S. Geological Survey, that demarcates the “township of Wawona” and contains intermixed parcels of private and National Park Service lands.

Sediment: A particle of soil or rock dislodged, transported, and deposited by surface runoff or a stream. The particle can range in size from microscopic to cobble stones.

Sense of arrival: An emotional and mental state that accompanies the end of a visitor’s travels and the beginning of their park experience. For many visitors, arriving in Yosemite Valley marks the end of a considerable journey involving both lengthy planning and travel. For some, a sense of arrival is created by the clear opportunity to park their car, learn about and plan activities in the park, and begin their exploration of the park with the assistance of exhibits, signs, guidebooks, trails, shuttle buses, etc. For others, this sense of arrival begins with the first sight of Yosemite icons (e.g., Tunnel View, El Capitan, Half Dome). For returning visitors, this sense of arrival may occur as they check into their campsite, cabin, or lodging room.

Sheetflow: Flowing water that is not confined to a channel.

Shoulder season: The nonpeak park visitation season on either side of peak summer months. For example, the calendar months of April, May, September, and October are included in the shoulder season.

Snag(s): Snags consist of dead trees that remain standing or leaning against another tree. Snags provide cavity habitats for a variety of wildlife species. Snags near trails or camping areas represent hazards which must be managed or removed.

Social trails: A social trail is an informal, nondesignated trail between two locations. Social trails often result in trampling stresses to sensitive vegetation types.

Special Use Occupancy: Designation for structures or facilities that can have more than 300 people present at one time.

Statement of Finding (SOF): As it refers to floodplains, a document normally associated with an environmental impact statement or environmental assessment that explains why an action is to be taken in a regulatory floodplain. The SOF describes the risk associated with use of the regulatory floodplain and how mitigation of flood risk would be achieved. (*See* Appendix N.)

Stewardship: The responsibility of caring for the park. This often grows from an understanding of and respect for the principles of the National Park System and the needs of the park's natural, social, and cultural environment.

Stock: This term generally refers to horses and mules used for riding or carrying packed supplies on established trails.

Succession: The process by which vegetation is either re-established following a disturbance or by which it initially develops in an unvegetated site. This term also refers to the entire process from initial colonization to the development of vegetation typical of that geographic area.

Surface water: Water that naturally flows or settles on top of natural landforms and vegetation, often as rivers, streams, lakes, ponds, and other bodies of water.

Talus: An accumulated mass of rock fragments (broken rock formed by falling, rolling, or sliding) of various sizes derived from and lying at the base of a steep slope (Wieczorek, et al. 1998).

Talus slope zone (TS): The area where the majority of accumulated rock debris is deposited at the base of a steep slope following a mass movement event (i.e., rockfall) (Wieczorek, et al. 1998). It is graphically depicted in Vol. IC, plate D.

Tarn: A small, mountain lake or pool.

Terminal moraine: Ridges of material deposited at the terminus of a glacier. *See* Moraine.

Terrestrial: Living on or growing from land.

Threatened and endangered species: Species of plants and animals that receive special protection under state and federal laws. Also referred to as listed, endangered, or protected species.

Traffic check station: A location where vehicle access is regulated; typically requires buildings, multiple traffic lanes, and staffing.

Transit bus: A mode of transportation that operates on a schedule along routes with established stops. Transit buses do not require daytime parking in Yosemite Valley, as they continuously pick up and drop off passengers along their established routes.

Umacha: A Miwok structure made of cedar bark and used for shelter.

Understory: An underlying layer of vegetation, specifically the vegetative layer, and especially the trees and shrubs, between the forest canopy and the ground cover.

Ungulates: Hoofed herbivores, e.g., mule deer.

Upland community: The vegetation found where soil conditions are average to dry and where soils are only infrequently flooded or saturated. In Yosemite Valley, mixed conifer, California black oak, and live oak communities dominate uplands.

User groups: Park visitors who participate in any one activity are considered members of a user group. An individual may belong to a number of different user groups. User groups may desire different, and sometimes conflicting, experiences in the same area (e.g., fishing and swimming in the same stretch of river).

Visitor experience: The perceptions, feelings, and interaction a park visitor has in relationship with the environment. Within the context of the proposed alternatives, the Visitor Experience section describes general access, facilities, visitor services, interpretation and orientation, and recreational opportunities. Other elements also contribute to the quality of the visitor experience, such as the condition of natural and cultural resources, air quality, transportation, and noise.

Visitor Experience Resource Protection (VERP): A process developed for the National Park Service to help manage the impacts of visitor use on the visitor experiences and resource conditions in national parks.

Walk-in campground: A campground with consolidated parking areas separated from the individual campsites. Campers walk a short distance from the parking area to their campsites (e.g., Camp 4 [Sunnyside Campground]).

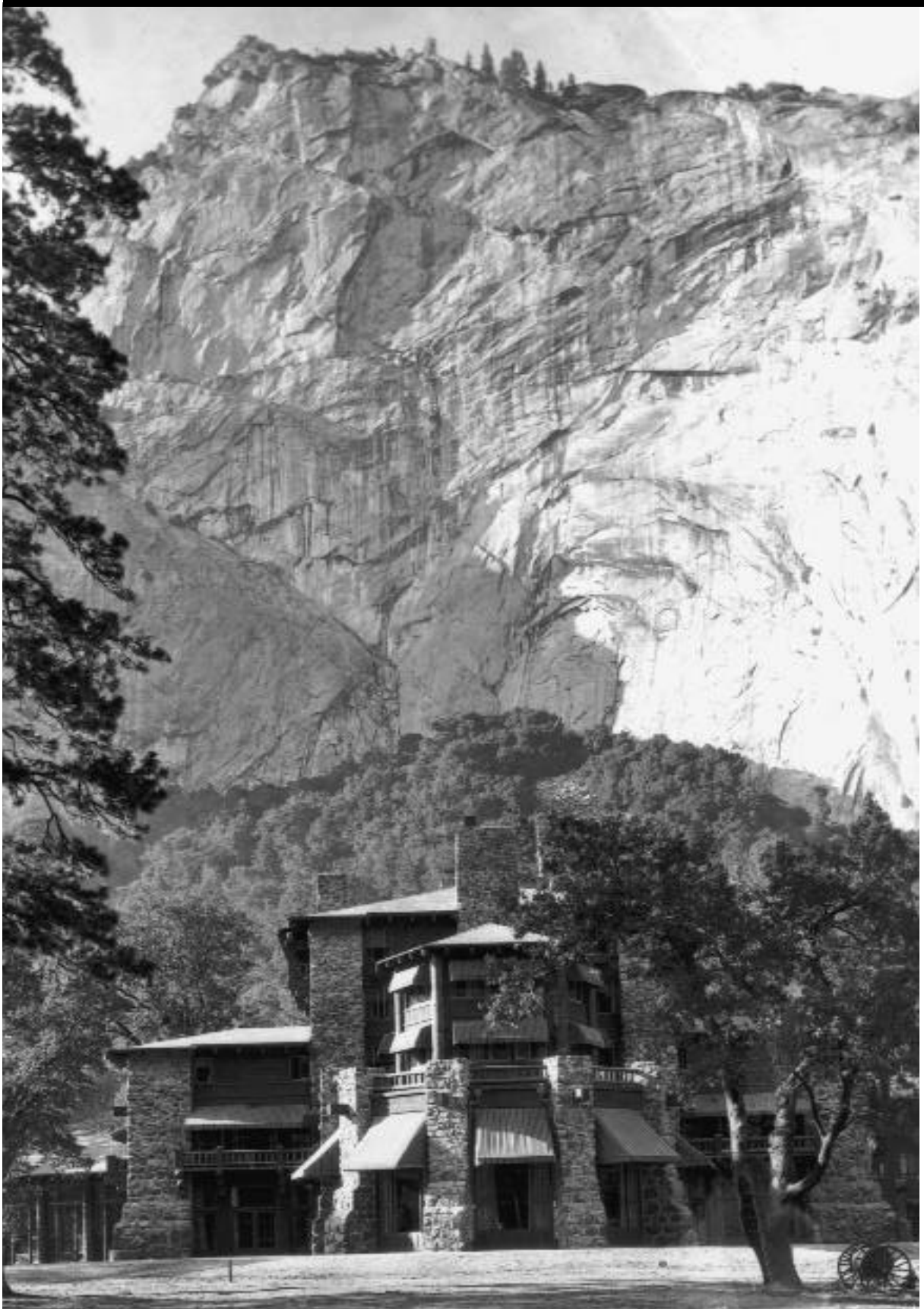
Walk-to campground: A campground with no parking at the campsite, and no designated parking place associated with the campground. These campgrounds would be available for campers arriving in Yosemite Valley without a private vehicle (i.e., by bus, on foot, by bicycle).

Watershed: The region draining into a river, river system, or body of water.

Wetland: Areas that are inundated by surface or groundwater with a frequency sufficient to support, under normal circumstances, vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.

White pine blister rust: A non-native disease affecting five-needled pines including sugar pine and also shrubs in the genus *Ribes* (alternate host). Extensive prevention and control efforts in the 1930s focused on eradication of *Ribes* bushes. These efforts resulted in the creation of several small settlements to house the thousands of people hired by the government for this work project.

Wilderness: Areas protected by provisions of the Wilderness Act of 1964. These areas are characterized by a lack of human interference in natural processes; generally, there are no roads, structures, installations, and the use of motorized equipment is not allowed.



Acronyms and Abbreviations

Final Yosemite Valley Plan

Supplemental EIS

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The Ahwahnee hotel is a National Historic Landmark. Built in the 1920s below the Royal Arches, it was designed to harmonize with its natural setting.

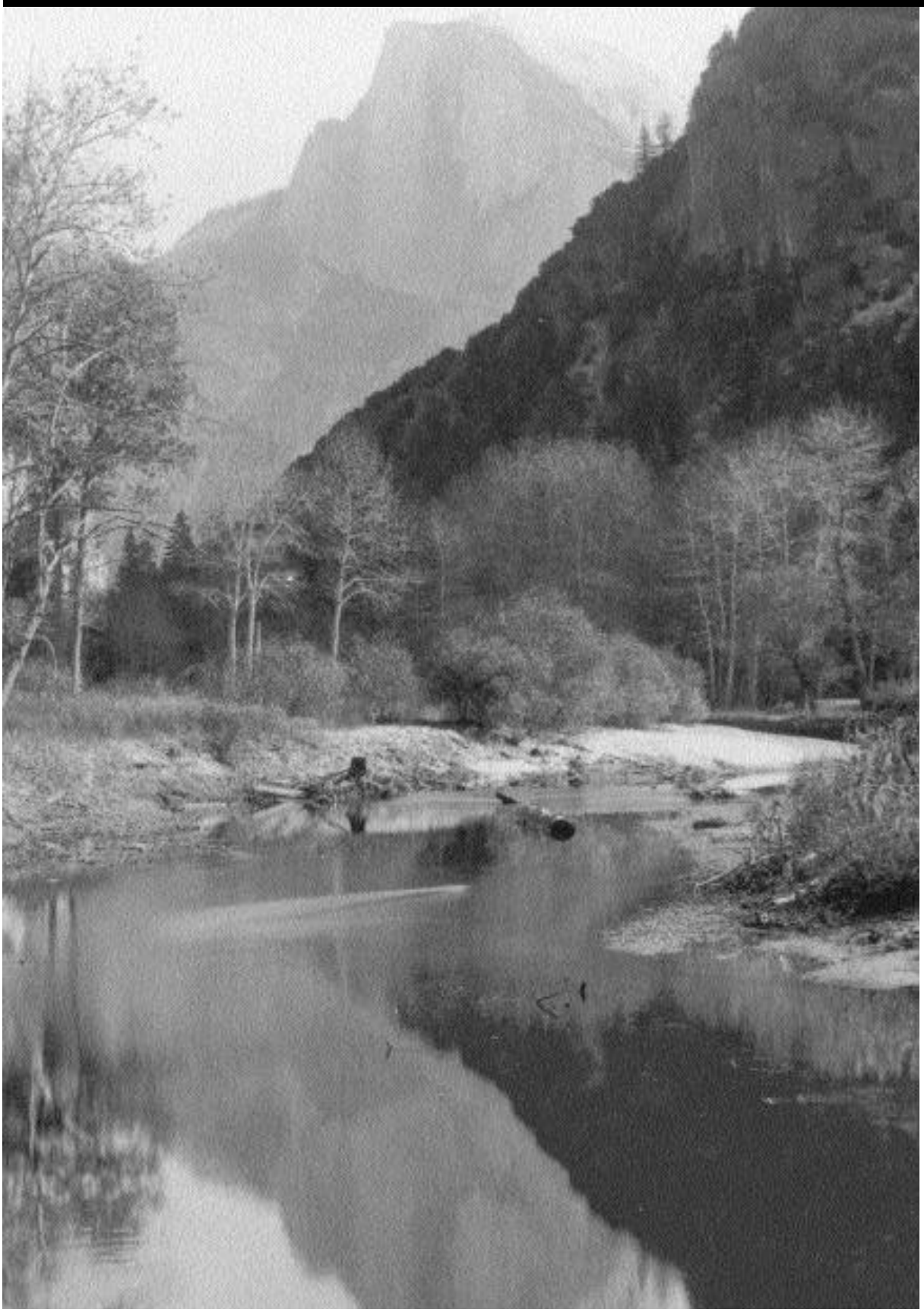
ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
APCD	Air Pollution Control District
AQMD	Air Quality Management District
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Clean Air Act
CAET	Content Analysis Enterprise Team (U.S. Forest Service)
CAFE	Corporate Average Fuel Economy
CARB	California Air Resources Board
CDFG	California Department of Fish and Game
CDMG	California Department of Mines and Geology
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CNDDB	California Natural Diversity Database
CNG	compressed natural gas
CO	carbon monoxide
COE	U.S. Army Corps of Engineers
CPI	Consumer Price Index
CSP	*Concession Services Plan*
dB	decibel(s)
dBA	decibels on the “A” weighted scale
DOE	U.S. Department of Energy
DO	Director’s Order
DOI	U.S. Department of the Interior
EA	Environmental Assessment
EDD	Employment Development Department

EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMFAC	Emission Factor
EPA	U.S. Environmental Protection Agency
FESA	Federal Endangered Species Act
FICN	Federal Interagency Committee on Noise
ft/sec	feet per second
FONSI	finding of no significant impact
FTE	full time equivalents
gal.	gallons
GIS	geographic information system
GMP	*General Management Plan*
gpd	gallons per day
gpm	gallons per minute
HMA	hot mix asphalt
HVAC	heating, ventilation, and air conditioning
HVR	highly valued resources or high value resource
ICBO	International Conference of Building Officials
IESNA	Illuminating Engineering Society of North America
IMPROVE	Interagency Monitoring of Protected Visual Environments
kWh	kilowatt hour
L_{eq}	energy equivalent level
LOS	Level of Service
LPG	liquid petroleum gas
MCAPCD	Mariposa County Air Pollution Control District
$\mu g/m^3$	micrograms/cubic meter
MIG	Minnesota IMPLAN Group, Inc.
Mm^{-1}	inverse megameters
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
mph	miles per hour

MRP	*Draft Merced Wild and Scenic River Comprehensive Management Plan/Environmental Impact Statement*
msl	mean sea level
mya	million years ago
NA	not applicable
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxide
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O_3	ozone
ORV	Outstandingly Remarkable Values
PA	Programmatic Agreement
Pb	lead
PG&E	Pacific Gas and Electric Company
PILT	payment in lieu of taxes
PL	Public Law
PM	particulate matter, when used as PM_{10} or $PM_{2.5}$
ppm	parts per million
PSD	Prevention of Significant Deterioration
PT	total particulate
RAP	Restricted Access Plan
ROD	Record of Decision
rpm	revolutions per minute
RPO	River Protection Overlay
RTE	rare, threatened, and endangered
RWQCB	Regional Water Quality Control Board

SHPO	State Historic Preservation Office (or Officer)
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SNEP	Sierra Nevada Ecosystem Project
SO_2	sulfur dioxide
SOF	Statement of Findings
SWRCB	State Water Resources Control Board
TES	threatened and endangered species
TOG	total organic gases
TPAC	Town Planning Advisory Council
USC	U.S. Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VELB	Valley elderberry longhorn beetle
VERP	Visitor Experience and Resource Protection (framework)
VIP	*Draft Yosemite Valley Implementation Plan/Supplemental Environmental Impact Statement*
VMT	vehicle miles traveled
VOC	volatile organic compound
WPOA	Wawona Property Owners Association
YA	Yosemite Association
YI	Yosemite Institute
YARTS	Yosemite Area Regional Transportation System
YATI	Yosemite Area Traveler Information
YCS	Yosemite Concession Services Corporation
yr	year
YVP/SEIS	*Yosemite Valley Plan/Supplemental Environmental Impact Statement*



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The Merced River and Half Dome, early 1900s.

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