

Archeological Resources

Archeological sites are important for their cultural value and for the information they can provide regarding prehistoric and historic lifeways. Culturally associated tribes and groups attach significance to prehistoric and historic sites for their religious and cultural value as tangible links to their heritage. Common objects that indicate the presence of prehistoric archeological sites within Yosemite include: scatters of stone tools (primarily of obsidian and often called lithic scatters); food processing features known as bedrock mortars; milling implements called ground stone artifacts; rock shelters; architectural features; fire hearths; rock alignments; artifact caches; evidence of daily refuse midden sediments; rock art; animal faunal remains indicating diet; and human remains. Historic-era sites related to continued occupation of the area by American Indians may also contain some of these cultural remains, in addition to artifacts of metal, glass, and other items that arrived with non-native settlers. Historic-era archeological sites of all cultural origins provide important information not available in written records, such as early building construction techniques, lifestyles of early inhabitants, trade and procurement of goods and materials, and interactions between non-native and native peoples.

Affected Environment

Regulations and Policies

Numerous federal laws, statutes, and regulations have been enacted to protect the country's cultural heritage. The most applicable regulations to the proposed undertaking are summarized below. In addition, NPS has several internal policies, also listed here.

Section 106 of National Historic Preservation Act (1966 as amended). Under NHPA and its implementing regulation, Protection of Historic Properties (36 CFR 800), a cultural resource is considered significant if it meets the Criteria for Evaluation (36 CFR 60) for the National Register of Historic Places (National Register).

Prior to implementing an "undertaking" (i.e., "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval"), section 106 of the NHPA requires federal agencies to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Officer a reasonable opportunity to comment on any undertaking that would potentially affect properties listed or eligible for listing in the National Register. The lead federal agency is responsible for project compliance with section 106 of the NHPA.

The National Register was established by the NHPA of 1966, as "an authoritative guide to be used by federal, state, and local governments, private groups and citizens to identify the Nation's historic resources and to indicate what properties should be considered for protection from destruction or impairment" (36 CFR 60.2). The National Register recognizes both historic-era and prehistoric properties that are significant at the national, state, and local levels.

To be eligible for listing in the National Register, a resource must be significant in American history, architecture, archeology, engineering, or culture. As indicated in section 101(d)(6)(A) of the NHPA, properties of traditional religious and cultural importance to culturally associated groups are eligible for inclusion in the National Register. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established criteria (36 CFR 60.4):

- A. are associated with events that have made a significant contribution to the broad patterns of our history;
- B. are associated with the lives of persons significant in our past;
- C. embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. have yielded, or may be likely to yield, information important in prehistory or history.

Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for national register listing (36 CFR 60.4).

In addition to meeting the criteria of significance, a property must have integrity, meaning the ability of a property to convey its significance. The National Register recognizes seven qualities that, in various combinations, define integrity. To retain integrity a property must possess several of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance. The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association (36 CFR 60.4).

Cultural Resources Management Plan (1973). The Cultural Resources Management Plan completed for the Yosemite General Management Plan was designed to protect the significant cultural resources of the park through compliance with all cultural resource legislative, executive, and regulatory requirements. The Cultural Resources Management Plan provides specific policies to guide cultural resources management at Yosemite, including consultation, survey and evaluation, preservation/restoration/reuse, and documentation.

The *Archaeological Resources Protection Act of 1979* prohibits unauthorized excavation of archeological sites on federal land, as well as other acts involving cultural resources, and implements a permitting process for excavation of archeological sites on federal or Indian lands. This act also establishes provisions for civil and criminal penalties for removal of, or damage to, archeological and cultural resources.

1999 Programmatic Agreement. Yosemite National Park, in consultation with the ACHP, the California SHPO, American Indian tribes, and the public, has developed a programmatic agreement for planning, design, construction, operations, and maintenance activities. This programmatic agreement provides a process for compliance with NHPA and includes stipulations for identification, evaluation, treatment, and mitigation of adverse effects for actions affecting historic properties, including potentially eligible historic properties. Under the 1999 PA, the park is obligated to “make every reasonable effort to avoid adverse effects to Historic Properties . . . through project design, facilities’ location, or other means.

Avoidance alternatives will be documented during the NEPA process.” The park will follow stipulations of this programmatic agreement for all future planning and design projects. The 1999 programmatic agreement allows the NPS to implement standard mitigating measures for some actions if the SHPO and the public are notified and provided an opportunity to comment. This programmatic agreement expires in 2014, and if a new programmatic agreement is not completed, the 2008 nationwide programmatic agreement in conjunction with standard compliance under 36 CFR 800 will provide guidance for park activities.

2008 Programmatic Agreement. This programmatic agreement provides nationwide coordination between the NPS, the ACHP, and the National Conference of SHPOs for the section 106 compliance process. The NHPA, 36 CFR 800, and the programmatic agreement provide the NPS with a roadmap to plan for and carry out undertakings to minimize harm to cultural resources.

Proposed Merced River Plan Programmatic Agreement. As a part of the current Merced Wild and Scenic River Comprehensive Management Plan, the Park is proposing, via consultation with the ACHP, SHPO, and culturally associated groups, the creation of a programmatic agreement regarding treatment of historic resources under the proposed management plan Merced River PA. This document, while not yet finalized, will provide guidance for the identification, evaluation, treatment, and mitigation of adverse effects for actions affecting historic properties, including potentially eligible historic properties, impacted by all future planning and design projects of the Merced River Plan. The PA will recognize that all people, and especially traditionally associated cultures have values assigned to archeological sites beyond their potential for data and information. Archeological sites could hold significance under criteria A through C, as well as D. These values are addressed in a separate section of this document.

The *Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (25 USC 3001 et seq.)* provides for the protection and return of Native American and Native Hawaiian human remains, funerary objects, sacred objects, and objects of cultural patrimony, and establishes ownership hierarchy for human remains and associated artifacts found on federal lands. NAGPRA also sets penalties for violations of the act, calls for cultural resource inventories of federal agency holdings and federally funded repositories, and contains provisions for the return of specified cultural items to the appropriate Native American tribe(s) and/or Native Hawaiian organizations. NAGPRA is initiated when a project and the finds are situated on federal lands.

CFR 36 2.1 provides for the preservation of natural, cultural, and archeological resources. These regulations prohibit possessing, destroying, injuring, defacing, removing, digging, or disturbing from its natural state living or dead wildlife, plants, or cultural or archeological resources; and walking on, climbing, entering, etc. an archeological or cultural resource.

Director’s Order 28 Cultural Resources Management Guideline (1998) guides the NPS to protect and manage cultural resources in its custody through effective research, planning, and stewardship and in accordance with the policies and principles contained in the *NPS Management Policies*. It also ensures that the NPS comply with the substantive and procedural requirements described in the Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation. Additionally, the NPS will comply with the 2008 programmatic agreement with the ACHP and the National Conference

of SHPOs. The NPS published the *2006 Management Policies* relating to the systemwide treatment of various types of resources on NPS lands. The following are some specific policies related to resources of the types discussed in the Director's Order; other sections within the *Management Policies* describe the processes for consultation with traditionally associated peoples:

5.3.5 Treatment of Cultural Resources. The Park Service will provide for the long-term preservation of, public access to, and appreciation of the features, materials, and qualities contributing to the significance of cultural resources. With some differences by type, cultural resources are subject to several basic treatments, including: (1) preservation in their existing states; (2) rehabilitation to serve contemporary uses, consistent with their integrity and character; and (3) restoration to earlier appearances by the removal of later additions and replacement of missing elements.

5.3.5.1 Archeological Resources. Archeological resources will be managed in situ, unless the removal of artifacts or physical disturbance is justified by research, consultation, preservation, protection, or interpretive requirements. Preservation treatments will include proactive measures that protect resources from vandalism and looting, and will maintain or improve their condition by limiting damage due to natural and human agents.

5.3.5.2 Cultural Landscapes. Treatment decisions will be based on a cultural landscape's significance over time, existing conditions, and use. Treatment decisions will consider both the natural and built characteristics and features of a landscape, the dynamics inherent in natural processes and continued use, and the concerns of traditionally associated peoples. The treatment implemented will be based on sound preservation practices to enable long-term preservation of a resource's significant features, qualities, and materials. There are three types of treatment for extant cultural landscapes: preservation, rehabilitation, and restoration.

5.3.5.3 Ethnographic Resources. Park ethnographic resources are the cultural and natural features of a park that are of traditional significance to traditionally associated peoples. These peoples are the contemporary park neighbors and ethnic or occupational communities that have been associated with a park for two or more generations 40 years, and whose interests in the park's resources began before the park's establishment. Living peoples of many cultural backgrounds—American Indians, Inuit Eskimos, Native Hawaiians, African Americans, Hispanics, Chinese Americans, Euro-Americans, and farmers, ranchers, and fishermen—may have a traditional association with a particular park.

Executive Order 11593: Protection and Enhancement of the Cultural Environment. Executive Order 11593 instructs all federal agencies to support the preservation of cultural properties. It directs them to identify and nominate cultural properties in Yosemite to the NRHP and to “exercise caution. . . to assure that any federally owned property that might qualify for nomination is not inadvertently transferred, sold, demolished, or substantially altered” NPS (1971).

Scope of the Analysis

The area now comprising Yosemite National Park has been inhabited by people for thousands of years. Some preliminary evidence from the El Portal area indicates people may have been living in the region as long as 9,500 years ago. The park area contains hundreds of archeological sites, representing the known duration of human occupation of the park (Hull and Moratto 1999). There is evidence of

technological change through time, a highly developed trade network, at least one population replacement, and resource management through the use of fire (Hull and Moratto 1999).

Through study of information provided on Geographic Information System (GIS), researchers estimate that approximately 12% of park lands have been systematically inventoried for archeological resources, and approximately 1,900 archeological sites have been documented (YNP 2010). A greater proportion of the inventories focus on lower elevation developed areas and road corridors, although some wilderness areas have been surveyed. In most cases, inventories have been conducted in support of park road, trail, and facility construction and maintenance, fire management, or restoration projects as part of the environmental and historic preservation planning and compliance processes. The most recent comprehensive overview of archeological resources and their information value is presented in *Archeological Synthesis and Research Design, Yosemite National Park, California* (Hull and Moratto 1999). The synthesis summarizes the results of past archeological research, and presents research questions and methodologies for furthering understanding of prehistoric and historic-era lifeways in the Yosemite region.

An area of potential effects (APE) describes the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties. The APE includes the .25 mile river boundary in addition to a 1.5 mile boundary on either side of the river. This APE encompasses the entirety of all National Register listed or National Register eligible properties located partially or entirely within the river corridor. This APE was identified in a letter to the State Historic Preservation Officer dated April 12, 2012. Concurrence on the APE was documented in a letter dated September 17, 2012.

Although land use in the early and mid-20th century has altered the landscape and affected archeological deposits in many places, YNP retains many significant archeological resources. Many archeological sites discussed below are on the National Register, or are eligible for the National Register. Three areas in particular stand out: Yosemite Valley National Register District, Wawona Archeological District, and the El Portal Archeological District. Some sites within these Districts are individually eligible, but as they are included in the district nomination, they are not individually nominated. These nominations were based on surface manifestations only. Since that time, the park has conducted many excavation projects, particularly in Yosemite Valley and El Portal. This work has been done on a project-specific basis, with the objective of characterizing the data potential of archeological deposits, and their contribution (or not) to existing archeological districts. Archeological research has shown that there is a high potential for deep or buried sites in many areas, especially in Yosemite Valley. Review of actions must take into consideration the methods, findings, and any inadequacies of previous surveys or excavations.

Text below identifies general areas that may be impacted by MRP actions. Appendix J provides more specific detail, as much of the information contained within archeological resources is considered to be confidential.

Segment 1: Merced River Above Nevada Fall

According to study of GIS data (YNP 2010), approximately 15% of the Merced River corridor has been archeologically surveyed, and less than 5% of the remaining APE has been included in the

boundaries of one or more archeological surveys. Much of Segment 1 outside the immediate river corridor is steep and inaccessible, and as a result, more complete surveys have been conducted of the main stem canyon bottom and Triple Peak Fork, with little to no inventory of Merced Peak, Red Peak, and Lyell forks. Some archeological resources have been recorded. Little Yosemite Valley, in particular, was used heavily by American Indians, stock men, and later by recreationists.

Twenty-eight prehistoric sites, six historic-era sites, and two sites with components from both the prehistoric and historic eras have been recorded within Segment 1 of the river corridor. An additional 10 prehistoric sites, 1 historic-era site, and 1 historic-era trail segment have been recorded within the remainder of the APE. To date, none of these sites have been formally nominated to the National Register, or determined to be eligible for the National Register.

A branch of the old Mono Trail, the east-west link across the Sierra Nevada, passed through Little Yosemite Valley. Remains of at least two villages are evident. Little Yosemite Valley also was one of the few places where the Merced River could be crossed at high water, a crossing made possible by a huge logjam that still exists today (Greene 1987).

The remains of the Archie Leonard homestead collapsed cabin (and park boundary fence) also exist in Little Yosemite Valley, and the eastern portions above the original Yosemite Grant were grazed (NPS 1990). Cavalry trails to patrol for trespass and resources related to hunting have been documented. Merced Lake High Sierra Camp was established along Sunrise Creek in Little Yosemite Valley in 1924 as a stopping point for hikers on the way to Merced Lake. Resources associated with these activities include tree blazes (an intentional mark used to establish direction), historic-era camps, and trash scatters (NPS 1990).

Segment 2: Yosemite Valley

The Yosemite Valley Archeological District consists of over 100 known sites significant for their ability to yield important information about prehistoric lifeways. Additional resources are also present in Segment 2 beyond those that contribute to the archeological district. Early archeological surveys of Yosemite Valley focused on prehistoric or historic-era Indian sites rather than historic-era resources representative of homesteading, visitor, and NPS facilities. The entire Valley has been surveyed to some extent for prehistoric resources, except for wet meadows, areas of impenetrable vegetation, and some talus slopes. As a result, study of GIS data (YNP 2010) suggests that approximately 70% of the Merced River corridor in Segment 2 has been subject to some degree of formal archeological survey. Surveys within the remainder of the APE outside the river corridor are scarcer because of the steep and inaccessible slopes on the margins of the Valley. Approximate survey coverage in these areas averages 10%.

Due to changes in groundcover and vegetation patterns, as well as more refined survey techniques and standards since the original (1970s) inventories, it is likely that more previously undocumented, prehistoric resources exist in the Valley. Over the past 15 to 20 years, historic-era resources have been more consistently inventoried than in the past. Some historic-era archeological deposits have been documented, and areas of known land use are documented on historical base maps. As of this writing, 60 prehistoric resources have been recorded within the river corridor in Segment 2 as well as 23

historic-era sites and 31 sites with components from both prehistoric and historic eras. An additional 41 prehistoric sites, 6 historic-era, and 7 multicomponent sites are located outside the river corridor but within the APE. Some sites have been merged from earlier recordings and have multiple numbers assigned to them.

Anderson and Morehead (1976) wrote the nomination form for the Yosemite Valley Archeological District. The district was listed in the National Register the same year. This archeological district consists of over 100 known sites significant for their ability to yield important information about prehistoric lifeways. The district nomination also notes the area's significance for traditionally associated American Indians.

Individual sites in the archeological district vary by type, size, depth, complexity, length of occupation, variety of remains, and potential to yield important scientific information. Archeological research (Hull and Moratto 1999) provides guidance in assessing the research potential of these sites. Important research domains identified include paleoenvironment, cultural chronology, economic patterns, settlement patterns, demography, and social organization. Sites are considered significant when they contain important information that relates to these areas of inquiry.

Although the majority of archeological sites in the Valley retain a relatively high degree of integrity and therefore maintain their eligibility for listing on the National Register, many sites have been disturbed by human activity and natural processes (Hull and Kelly 1995). Visitor use has been the most widespread impact, although its effect is not as serious as other types of impacts. Due to the scarcity of easily buildable land, several archeological sites were damaged by historic-era construction of facilities and utilities. Much of the road system was developed in the early 1900s. Other visitor accommodations, such as The Ahwahnee and Camp Curry, were constructed approximately 100 years ago. Many roads, hotels, and other visitor accommodations have been constructed since 1957, and preservation of archeological resources did not begin in earnest in Yosemite until the creation of the NHPA in 1966.

Segment 3: Merced River Gorge

Study of GIS data (YNP 2010) suggests that approximately 10% of the river corridor in Segment 3 has been subject to surveys. Most surveys followed the course of the river and the highway that runs parallel to it, due to the steep and inaccessible slopes forming the edge of the canyon. Archeological resources in the Merced River gorge include 4 prehistoric and 11 historic-era sites, as well as 2 sites with components from both eras. Approximately 15% of the APE outside the river corridor in upland areas has been surveyed, resulting in the recordation of 39 prehistoric resources, 6 historic-era sites, and 5 multicomponent sites.

Volpe (1997) made recommendations for the National Register eligibility of the Merced Canyon Travel Corridor Historic District, an area of prehistoric and historic travel. Four prehistoric American Indian archeological sites are located in and adjacent to the Cascades area, and are considered to be contributing elements to this National Register eligible district. These sites are likely seasonal villages and contain features such as mortar rocks, midden soil, lithic scatters, and rock shelters (Greene 1987). Historic-era sites are associated with use of this canyon as a travel corridor and source of hydroelectric

power, and include rock quarries, dumps, worker housing at the Cascades Diversion Dam, the remains of two work camps associated with the Civilian Conservation Corps (CCC), a few unidentified structural foundations, the Cascades Powerhouse, and the Coulterville Road blacksmith shop in the talus west of Cascades, where a forge was built to serve travelers along this road. The Old El Portal Road and older El Portal Trail have also been recorded along the bottom of the gorge, with additional trails crossing upland areas. Of these, Volpe (1997) notes the CCC camps and blacksmith forge area as contributing elements to the Merced Canyon Travel Corridor district, as are the old roadways. The district was determined eligible to the National Register but has not been nominated or listed.

Segment 4: El Portal

El Portal's location between Yosemite Valley and the San Joaquin Valley made it an important place of settlement, subsistence, and trade along the Merced River. Study of GIS data (YNP 2010) suggests that approximately 70% of Segment 4 has been subject to an archeological survey, and as a result 11 prehistoric sites, 15 historic-era sites, and 15 sites with components dating to both eras have been recorded. Surveys have not been conducted in much of the remaining APE outside the river corridor because the park's boundaries do not extend beyond the river corridor through much of Segment 4, and surveys have not been conducted on the adjoining private lands. Approximately 5% survey coverage has resulted in the recordation of two prehistoric sites, three multicomponent sites, and one historic-era trail segment.

The El Portal Archeological District, listed on the National Register (Moffitt and Anderson 1976), encompasses 1,910 acres and contains 36 known sites within the Merced River corridor, including some of the oldest known deposits in the Sierra Nevada foothills. These sites have sparse but intriguing evidence of use, perhaps as old as 9,500 years, and contain data important to interpreting early settlement patterns (Hull and Moratto 1999). Most sites date to between 2500 BC and AD 1900, with several 19th- and 20th-century homesteads and settlements by American Indians. The El Portal Archeological District may contain some of the best-preserved archeological resources from this protohistoric period reflecting American Indian cultural change as a result of contact with Euro-Americans (Moffitt and Anderson 1976). Although land use in the early and mid-20th century has altered the landscape and affected archeological deposits in many places, a great deal could be learned from the remaining resources. Despite the loss of some information, the original extent and complexity of the sites, especially the prehistoric village sites, indicate that valuable information is still available. Archeological resources in the El Portal Archeological District represent an important source of data on the growth of the area as a national park, as well as on the cultural transition experienced by American Indian communities during Euro-American settlement. In addition, these resources are exceptional in their significance to the local American Indian community.

The steep, narrow canyon at El Portal includes river terraces with level lands on which American Indian villages were built. As recently as the early 1900s, local American Indian inhabitants shared the names and histories of multiple villages within present-day Segment 4, including permanent year-round settlements with large winter populations in the 18th and 19th centuries (Merriam 1917). These sites would have included family homes, traditional roundhouses for dances and ceremonies, sweat lodges, acorn granaries, and mortars cut into the granite bedrock for processing acorns and other foods (Kroeber 1921). Surface remains include these bedrock mortars, house pits, and midden

deposits with lithic debris; excavations have shown that sometimes sparse surface manifestations provide little indication of the potentially high density of materials contained in subsurface deposits.

Prehistoric and historic-era American Indian burials, in both isolated locations and cemeteries, have been identified in El Portal. The presence of artifacts originating from the Great Basin and Pacific Coast indicate that El Portal was a location of continuous, far-reaching traffic and trade throughout prehistory. Eleven of the contributing sites in the El Portal Archeological District correlate with those villages named by Merriam's informants (1917). Particularly significant is the Johnny Wilson Ranch, a rare surviving example of an early 20th-century American Indian homestead and cemetery on the south side of the Merced River (Davis-King 1997). Mr. Wilson and his family occupied the 30-acre ranch, granted under the Dawes Act in 1917, until his death in 1937 (NPS 2011).

There is archeological evidence of historic-era activities in El Portal, including those associated with the early land use of El Portal as a gateway to the park. An extensive historic-era site consists of the remnants of Hennessey's Ranch, established in 1873. Remnants of the site include an orchard and rock walls as well as a prehistoric component of bedrock mortars. The ranch originally was home to an extensive farm that supplied produce to gold rush boomtowns throughout the Sierra Nevada and later to the Hotel Del Portal, contributing to the early growth of the area. El Portal also has remnants of mining operations, such as building foundations, tailings, and associated industrial refuse scatters. At the turn of the century, the Yosemite Valley Railroad brought tourists and led to the creation of the Hotel Del Portal, a stopover on the way into the Valley. The railroad also provided transport for mining and timber industries throughout its lifetime. Historic-era debris scatters, building foundations, mining and railroad remnants, and other archeological features remain from this era.

Segment 5: South Fork Merced River Above Wawona

Study of GIS data (YNP 2010) suggests that less than 10% of Segment 5 has been surveyed for archeological resources, and less than 5% of the remaining APE outside the South Fork Merced River corridor has been inventoried. Steep slopes are frequent in this area. All five of the recorded historic-era archeological remains in Segment 5 are outside of the Merced River corridor. Fifteen prehistoric sites have been recorded within the river corridor, and an additional 17 prehistoric sites have been recorded in the remaining APE. Many of these sites are associated with the National Register-eligible Wawona Archeological District (determined to be eligible, but not yet formally listed). This District is 4,940 acres in size, spanning areas in Segments 5 to 8, and includes at least 74 archeological sites (Hammack and Anderson 1978, Darko 2011), many of which are located within the South Fork Merced River corridor. The importance of this eligible district as documented in 1978 lies in its ability to provide information pertaining to American Indian subsistence strategies, seasonal use of specific ecological zones, demographic patterns, and both prehistoric and historic-era occupation of the area (Hammack and Anderson 1978). It is likely that some sites in this district also possess additional significance not recognized at the time of their National Register nominations, both in terms of archeological information potential and traditional or cultural significance to associated American Indian groups. In addition, material cultural remains of previously under-reported ethnic groups such as African American and Chinese American are important. Historical contexts for these kinds of resources have yet to be developed. While not reflected in the existing National Register nominations, the NPS recognizes ethnicity as an aspect of significance in the Wawona Archeological District.

Wilderness areas above Wawona have regionally rare prehistoric archeological sites containing substantial rock-ring features with wooden remains. The rock-ring sites were first formally identified and reported by (Knierieman 1976), who interpreted them as protohistoric Miwok deer-hunting blinds that were created to take advantage of lines of sight along the river and the animals' attraction to local soda springs that contained essential mineral salts. Knierieman's interpretation of these features has neither been confirmed nor refuted, and the features remain enigmatic. The features were typically constructed of two or three courses of stacked rock coupled with the remains of wooden timbers that may once have formed a kind of superstructure. Associated charcoal and obsidian flaked-stone artifacts (including projectile points) have been found near some sites, reinforcing the possibility of an association with hunting activities.

Segments 6 and 7: Wawona Impoundment and Wawona

Segments 6 and 7 appear to be the most thoroughly surveyed of the South Fork Merced River corridor segments. Study of GIS data (YNP 2010) indicates that approximately 85% of the area has been subject to archeological inventory. As a result, 42 prehistoric sites, 5 historic-era sites, and 8 multicomponent sites have been recorded. Portions of the APE outside the river corridor have been surveyed with an average of 15% coverage, resulting in the recordation of an additional 16 prehistoric, 8 historic-era, and 3 multicomponent sites, plus segments of at least three separate historic-era trails. The Wawona Archeological District (described above) also extends into Segment 7.

The prehistory of the Wawona area is similar to that of the park as a whole, although most occupation by American Indians seems to have occurred somewhat earlier than in Yosemite Valley. Archeological sites range in size, and most include bedrock mortars and midden soil. At least 12 of the sites recorded as contributors to the district have 25 or more bedrock mortars with associated midden deposits, indicative of large village sites. These sites frequently occur in clusters with close spatial association. The Wawona area is sheltered from harsh winds and extreme climatic conditions by the surrounding ranges, thus allowing for possible year-round occupation. Acorn-gathering and processing apparently took place during the early fall at times of low water, as suggested by the presence of bedrock mortars in the river channel below the average mid-summer waterline. The time span of these sites is not accurately known, but it might range from before AD 500 to the historic era (Hammack and Anderson 1978).

From 1891 until 1916, the U.S. Army stationed troops at Yosemite during the summer to administer the fledgling park, enforce prohibitions on grazing and other incompatible uses, and construct much of the original park infrastructure (California Military Museum n.d.). Physical evidence of their tenure at the park can be found in the roads and trails they built, as well as other improvements such as a now-abandoned arboretum on the south side of the South Fork Merced River, west of its confluence with Big Creek (Palmer n.d.). Other historic-era archeological remains include sites related to an early hospitality and tourism industry based in the Wawona area.

Segment 8: South Fork Merced River Below Wawona

Less than 10% of the South Fork Merced River corridor in Segment 8 has been surveyed for archeological resources study of GIS data (YNP 2010). Only five prehistoric sites have been recorded, and no evidence of historic-era occupation has been found. Surveys along Wawona Road within the

APE outside the river corridor cover approximately 15% of the ground surface; this inventory has resulted in the recordation of one additional prehistoric site and a segment of the Wawona Road. Prehistoric sites in the APE represent smaller, limited-use areas, rather than permanent or seasonal villages.

Environmental Consequences Methodology

The archeological resource impact analysis in this *Merced River Plan/DEIS* is described in terminology consistent with the regulations of the Council on Environmental Quality (CEQ). CEQ regulations require that the impacts of alternatives and their component actions be disclosed. It is intended that the impact assessment will comply with the requirements of both the National Environmental Policy Act (NEPA) and section 106 of the NHPA. The determination of effect for the undertaking (implementation of the alternative) is included in the Summary of Impacts section for each alternative.

NEPA Compliance Methodology

Consistent with the CEQ regulations, analysis of individual actions includes identification and characterization of potential impacts. Under NEPA, impacts on archeological resources are assessed as either adverse or beneficial. While an archeological resource cannot be restored or repaired, a beneficial impact could be assessed if the resource would be stabilized to prevent future degradation, or appropriate active intervention would be performed to preserve the elements of the resource that qualify it for National Register eligibility. NPS could take other steps to improve upon these beneficial impacts, including activities such as increasing visitor education, increasing ranger patrols in no-camping areas, and reducing overnight use.

All known archeological resources within the APE are evaluated for impacts under NEPA, regardless of their eligibility for the National Register. Even sites that do not meet National Register criteria, or that have lost most of their integrity, can still be capable of conveying past culture or history, and may therefore have value in the context of public interpretation and/or traditional cultural resources. Analyses of impacts on archeological resources for the purposes of the NEPA are based on the following.

Context. The context of the impact considers whether the impact would be local, segmentwide, parkwide, or regional. For this analysis, local impacts would be those that occur in a specific area within a segment of the Merced River. This analysis further identifies whether there would be local impacts in multiple segments. Segmentwide impacts would consist of a number of local impacts within a single segment or larger-scale impacts that would affect the segment as a whole. Parkwide impacts would extend beyond the river corridor and the APE within Yosemite. Regional impacts would be those that extend to the Yosemite gateway region.

Intensity. The intensity of impact depends on the nature, location, and design of the proposed project. Intensity of impacts are described as:

- **Negligible.** Impact is barely perceptible and not measurable; confined to small areas of a particular site.

- **Minor.** Impact is perceptible and measurable; remains localized and confined to a single area of a particular site.
- **Moderate.** Impact is sufficient to cause a change in a character-defining feature; generally involves a single site or small group of sites.
- **Major.** Impact results in a substantial and highly noticeable change in character-defining features; involves a large area of one site, or groups of sites, with high to exceptional archeological value.

Duration. Impacts to archeological resources are described as short-term or long-term duration. Most changes to the data potential of archeological resources are permanent and would thus be characterized as having a long-term impact. Short-term impacts would consist of temporary changes to setting, association, and feeling.

Type of Impact. Impacts can be considered to either be adverse or beneficial, direct or indirect. Impacts are considered adverse when they have the potential to diminish significant characteristics of a resource. Specific actions, such as demolition, result in direct impacts. Indirect impacts generally occur after project completion, and result from changes in land use or pedestrian traffic patterns.

The assessment of impacts on archeological sites requires knowledge of the specific qualities of the resource that are considered culturally valuable. Under NEPA, cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency Federal or non-Federal) or person undertakes such other actions” (40 CFR § 1508.7). Cumulative impacts are generally those that take place within a specified geographic area that contains similar or related resources. NEPA also requires a discussion of mitigation, and the appropriateness and effectiveness of mitigation. To best meet these requirements, ongoing tribal consultation over the life of the project will be critical, as well as adherence to the plan-specific programmatic agreement that is currently being developed.

Archeological resources in the Merced River corridor are qualitatively analyzed based on existing knowledge, and assessing what potential modifications could alter character-defining features. Actions specific to individual alternatives that would affect these historic properties are described under each alternative.

Some assumptions were made in this analysis. For example, informal trails and high concentrations of visitor use in the vicinity of, or overlapping with, archeology sites have variable impacts depending on the depth and type of resource. For this analysis, informal trails and visitor use are assumed to be long-term, minor to moderate, adverse impacts. Additional monitoring and/or testing would be necessary to determine the extent of the disturbance to individual archeological resources.

Section 106 Compliance Methodology

In accordance with the ACHP regulations implementing section 106 of the NHPA, effects on historic properties are identified and evaluated using the following methodologies:

- Use a proposed APE, defined above. The proposal for this area was made by the park in its letter to SHPO and the ACHP in April 2012.
- Identify cultural resources present in the APE that were either listed, eligible for listing, or otherwise identified as eligible for listing in the National Register. Any prehistoric or historic archeological site or district that is included in, or is eligible for inclusion in, the National Register is termed a historic property and is managed for protection under the NHPA. Archeological sites are generally categorized as:
 - *Non-eligible resources.* These are resources that fail to meet the criteria of the NRHP as described above.
 - *Listed resources.* Listed historic resources are those properties that the Keeper of the National Register has officially added to the National Register of Historic Places.
 - *Eligible resources.* Eligible historic resources are those which meet the criteria for listing on the National Register of Historic Places, and have been determined eligible either in concurrence with the SHPO or the Keeper of the National Register of Historic Places. Formal nomination to the National Register has not occurred.
- Apply the criteria of adverse effect on affected historic properties to the best extent possible given the current understanding of the plan.
- Consider ways to: (1) avoid; (2) if avoidance is not possible, minimize; or (3) if minimization is not possible, mitigate adverse effects.

Examples of historic properties (listed or eligible resources) include archeological sites, historic built-environment resources, archeological and historic districts, cultural landscapes, and traditional cultural properties. Historic properties that could potentially be affected by the Merced River Plan include National Register-listed archeological districts, and individual archeological sites that are listed or determined to be eligible for the National Register. Appendix J contains more details. These resources may also be considered under the Archeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, the American Indian Religious Freedom Act, and EO 13007 (Indian Sacred Sites).

Section 106 of the NHPA requires the federal agency to consider the effects of its undertakings on historic properties and to provide the ACHP a reasonable opportunity to comment. The agency must also identify the appropriate SHPO/Tribal Historic Preservation Officers to consult with during the process. It should also plan to involve the public, and identify other potential consulting parties. Section 106 also applies to properties not formally determined eligible, but which meet eligibility requirements for the National Register and are therefore treated as eligible until a formal determination can be made.

NHPA Determinations of Effect

Conventional terms used by the NPS to measure the context, duration, intensity, and type of impact as part of NEPA analysis are not valid for assessing effects on historic properties under NHPA standards. Because the effect on a historic property is measured by the status of the historic property's eligibility for listing in the National Register, the negligible, minor, moderate, and major degrees do not apply.

Either a historic property maintains the characteristics making it eligible for listing in the National Register or it does not.

The ACHP has issued regulations for the implementation of section 106, entitled Protection of Historic Properties (36 CFR 800). ACHP regulations discuss the following types of effect:

- **No Historic Properties Affected:** When there are no historic properties present, or the action would have no effect on historic properties, the action is said to have no effect on historic properties.
- **No Adverse Effect:** Occurs when there would be an effect on a historic property, but the action would not alter characteristics that make the property eligible for inclusion in the National Register of Historic Places in a way that would diminish the integrity of the property.
- **Adverse Effect:** Occurs when an action would alter, directly or indirectly, any of the characteristics of a historic property that qualify it for inclusion in the National Register of Historic Places in a way that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects may include reasonably foreseeable effects caused by the action that may occur later in time, be farther removed in distance, or be cumulative.

The regulations allow an agency, such as the park, to defer both the identification of historic properties (that is, the identification of whether or not a resource is eligible for the NRHP) and the effects assessment through the development of a programmatic agreement. The agreement may also stipulate additional terms, such as consultation, reporting criteria, monitoring, and dispute resolution. Yosemite National Park's section 106 review process is governed by national and park-specific programmatic agreements among the NPS, the ACHP, and the National Council of SHPOs or the California SHPO (NPS, ACHP, and NCSHPO 2008; NPS, SHPO, and ACHP 1999). As described previously, the Park is also proposing, via consultation with the ACHP, SHPO, and Native tribes, the creation of a Merced River Plan PA regarding treatment of historic properties and other cultural resources under the proposed management plan.

Undertakings are designed to avoid adverse effects to the maximum extent possible. If complete avoidance of adverse effects is not possible, steps are taken to minimize those effects, including the implementation of mitigation measures. Data recovery does not constitute mitigation of adverse effects under the current NHPA regulations (36 CFR 800). Finally, if complete mitigation is not possible, memoranda of agreement are developed with the State Historic Preservation Officer to resolve adverse effects. Resolving and/or mitigating adverse effects in this manner does not necessarily mean that there would be no remaining adverse effects; in many cases, mitigation can result in reduced impacts.

Some assumptions are necessary in this analysis. For example, informal trails and high concentrations of visitor use have variable impacts depending on the depth and type of archeological resource on which they occur. For this analysis, informal trails and visitor use are assumed to be adverse effects. Additional monitoring and/or testing would be necessary to determine the extent of the disturbance to individual archeological resources. Another assumption is that past adverse effects to archeological resources will not be considered adverse effects under Alternative 1 (No Action). For example, the

adverse effects to the data potential of the now abandoned El Portal Wastewater Treatment Plant occurred when the structure was built in the 1960s. Alternative 1 (No Action) does not need to take responsibility for that adverse effect, but it should account for current adverse effects of the attractive nuisance and impacts to setting, feeling, and association should the structures remain in place.

Environmental Consequences of Alternative 1 (No Action)

This subsection and the following alternatives subsections summarize the effects from different types of proposed management actions (including no action) that would occur in each Merced Wild and Scenic River segment. Some actions have been determined to have no effect on archeological resources. In order to protect confidential site location data, resources are not individually named nor are their exact positions relative to the management actions revealed. The assessments are based on current site conditions, causes of current impacts, and potential for continuation or worsening of existing impacts under Alternative 1. Text below describes proposed actions and potential impacts. **Table 9-245** summarizes these proposed actions and potential impacts to archeological sites, and then offers analysis under NEPA and NHPA regulations.

All River Segments

Impacts of Actions to Protect and Enhance River Values

Under Alternative 1 (No Action), the park would leave informal trails as they currently exist. The estimated 8 miles of existing informal trails would continue to be used, including those that cross sensitive archeological sites. This would result in continuing erosion on these sites, which exposes artifacts and makes them vulnerable to collection or displacement. Other formal and informal infrastructure on, through, or near archeological sites would remain, including abandoned underground utilities, parking areas, nonessential roads and trails, campsites, and staging areas. Access formal and informal) to climbing areas would continue to result in inappropriate use and vandalism of rock art features.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

The continued high numbers of day use and total visitors proposed under Alternative 1 (No Action) would result in ongoing impacts on archeological sites that are currently experiencing effects of high visitor use. Effects that can be correlated specifically with visitor use include creation and use of informal trails, littering, artifact collection and other vandalism, general erosion and trampling, and inappropriate use of site features such as climbing.

Ground disturbance, alterations, and removal of existing historic and modern infrastructure would have potential impacts to archeological resources. Abandoned infrastructure and ditches are often historic archeological resources in and of themselves. In Wawona, for example, historic archeological resources contribute to the cultural ORV. Avoidance and other mitigation measures developed through consultation with SHPO and traditionally associated groups would target protection of archeological resources with respect to these actions.

TABLE 9-245: IMPACTS FROM ALTERNATIVE 1

Segment	Action Type	Proposed Action	Analysis under NEPA/NHPA
All segments	Actions to Protect and Enhance River Values	No restoration (removing and revegetating) of informal trails; continued use of existing trails, including those that cross areas of archeological sites Formal and informal infrastructure improvements continue as is; many areas of existing infrastructure such as campsites, roads) include relatively easy access to archeological sites, including rock art features	<i>NEPA:</i> Visitor use on informal trails and improvements to formal and informal infrastructure would result in local, long-term, minor to moderate, adverse impacts. <i>MHPA:</i> Determination of effects is site specific. Re-evaluation of integrity of NRHP-listed and eligible properties would be necessary to determine if there are adverse effects as a result of these on-going visitor use impacts. Site specific measures would be developed to avoid adverse effects when possible.
All segments	Actions to Manage Visitor Use and Facilities	High day use and total numbers of visitors continues. Ongoing impacts on relatively accessible archeological sites continues, including: littering, artifact collection, vandalism, etc. Changes to existing infrastructure may be necessary.	<i>NEPA:</i> High levels of visitor use and possible infrastructure improvements at specific locations would result in local, long-term, minor, adverse impacts. <i>MHPA:</i> Determination of effects is site specific. Re-evaluation of integrity of NRHP-listed and eligible properties would be necessary to determine if there are adverse effects as a result of these on-going visitor use impacts. Site specific measures would be developed to avoid adverse effects when possible.
Segment 1	Actions to Protect and Enhance River Values	No restoration of informal trails, decompaction of soils, or revegetation of heavily grazed areas would occur on or near known archeological sites.	<i>NEPA:</i> Impacts of informal trails and compromised meadow ecology would result in local, long-term, minor, adverse impacts to archeological resources. <i>MHPA:</i> There are no NRHP listed sites, or sites determined to be NRHP eligible in Segment 1. No historic properties would be affected.
Segment 1	Actions to Manage Visitor Use and Facilities	Continued use of Merced Lake High Sierra camp	<i>NEPA:</i> Continued visitor use at Merced Lake High Sierra Camp would result in local, long-term, minor, adverse impacts. <i>MHPA:</i> There are no NRHP listed sites, or NRHP sites determined to be eligible in Segment 1. No historic properties would be affected.
Segment 2	Actions to Protect and Enhance River Values	No decompaction of soils, revegetation of denuded areas, or removal of informal trails and abandoned infrastructure would occur. Stock use, operational staging, hiking trails, unauthorized camping, vandalism, and climbing would continue. Graffiti and climbing hardware would not be removed from rock shelters and rock art boulders.	<i>NEPA:</i> Impacts of compromised meadow ecology, visitor use, vandalism, and climbing would result in local, long-term, minor to moderate, adverse impacts to individual sites. <i>MHPA:</i> Determination of effects is site specific. Re-evaluation of integrity of NRHP-listed and eligible properties would be necessary to determine if there are adverse effects as a result of these on-going visitor use impacts. An adverse effect on a contributing element of the Yosemite Valley Archeological District may be an adverse effect on the whole.

TABLE 9-245: IMPACTS FROM ALTERNATIVE 1 (CONTINUED)

Segment	Action Type	Proposed Action	Analysis under NEPA/NHPA
Segment 2	Actions to Manage Visitor Use and Facilities	Current facilities and levels of visitor use in the Valley would continue unchanged. Camping and individual lodging units would continue on and near sensitive archeological resources.	<p><i>NEPA:</i> Impacts of visitor use, and maintenance of facilities would result in local, long-term, minor to moderate, adverse impacts to individual sites.</p> <p><i>NHPA:</i> Determination of effects is site specific. Re-evaluation of integrity of NRHP-listed and eligible properties would be necessary to determine if there are adverse effects as a result of these on-going visitor use impacts. An adverse effect on a contributing element of the Yosemite Valley Archeological District may be an adverse effect on the whole.</p>
Segments 3 and 4	Actions to Protect and Enhance River Values	Abandoned infrastructure at the Cascades Picnic Area would not be removed. Informal trails and a nonessential gravel road would remain. Visitor use would remain at current levels.	<p><i>NEPA:</i> Retention of abandoned infrastructure at Cascades Picnic Area would result in no ground disturbance to archeological resources in the area. This would result in local, long-term, negligible impacts.</p> <p><i>NHPA:</i> Retention of abandoned infrastructure at Cascades Picnic Area would result in no adverse effect to the contributing elements of the Merced Canyon Travel Corridor Historic District, an eligible property.</p>
Segments 3 and 4	Actions to Manage Visitor Use and Facilities	No action further removal of infrastructure would occur at El Portal Wastewater Treatment Plant. Abbeville and Trailer Village area in Segment 4 would continue to be used for temporary employee or park partner housing.	<p><i>NEPA:</i> Retention of abandoned infrastructure at the El Portal Wastewater Treatment Plant would result in no ground disturbance to archeological resources in the area, but the attractive nuisance would remain. This would result in local, long-term, minor, adverse impacts.</p> <p>Impacts of residential use at Abbeville and Trailer Village would result in local, long-term, negligible, adverse impacts to archeological resources</p> <p><i>NHPA:</i> Retention of abandoned infrastructure and the retention of existing employee housing and residential use at Abbeville and Trailer Village would result in an adverse effect to the contributing elements of the El Portal Archeological District.</p>
Segments 5, 6, 7, and 8	Actions to Protect and Enhance River Values	Informal trails in Segments 5 and 7 would remain open for use. In Segment 7, visitor and operational uses including camping) would also continue in the Wawona area.	<p><i>NEPA:</i> Impacts of informal trails and visitor and operational use would result in local, long-term, minor to moderate, adverse impacts to archeological resources.</p> <p><i>NHPA:</i> Determination of effects is site specific. Re-evaluation of integrity of NRHP-listed and eligible properties would be necessary to determine if there are adverse effects as a result of these on-going visitor use impacts. Site specific measures would be developed to avoid adverse effects when possible. An adverse effect on a contributing element of the Wawona Archeological District may be an adverse effect on the whole.</p>
Segments 5, 6, 7, and 8	Actions to Manage Visitor Use and Facilities	As above, with continued operation of the Wawona Campground and Wawona Stock Camp. No additional restroom and waste collection facilities would be constructed near the Wawona Swinging Bridge, resulting in continued use of a nearby archeological site for improper disposal of trash and human waste.	<p><i>NEPA:</i> Impacts of visitor use at Swinging Bridge, Wawona Campground, and Stock Camp would result in local, long-term, minor to moderate, adverse impacts to archeological resources.</p> <p><i>NHPA:</i> Continued operation of the Wawona Campground and Stock Camp, and lack of facilities at Swinging Bridge would result in an adverse effect to the known archeological site.</p>

Segment 1: Merced River above Nevada Fall

There are no NRHP listed or archeological resources determined to be NRHP eligible in Segment 1. Under Alternative 1 No Action), no historic properties would be affected. Under NEPA, archeological sites have other potential value, other than their National Register eligibility. Even sites that do not meet National Register criteria, or that have lost most of their integrity, can still be capable of conveying past culture or history, and may therefore have value in the context of public interpretation and/or traditional cultural resources. The presence of informal trails near archeological sites, visitor use, and compromised meadow ecology create a potential for local, long-term, minor, adverse impacts.

Segment 2: Yosemite Valley

Impacts of Actions to Protect and Enhance River Values

Under Alternative 1 (No Action), some of the sites in Segment 2 would continue to be adversely impacted by ongoing visitor and operational activities and formal or informal infrastructure, including trails and rock climbing routes. Decompacted soils, denuded areas, informal trails, and abandoned infrastructure would remain as they currently exist. Stock use, operational staging, hiking trails, unauthorized camping, vandalism, and climbing would continue to impact resources in the vicinity of the East Valley Campground, Ahwahnee, El Capitan, Housekeeping Camp, Yosemite Lodge, and Bridalveil/West Valley planning areas. Graffiti and climbing hardware would remain on and near rock shelters and rock art boulders. NEPA analysis would characterize these impacts as local, long-term, minor to moderate, and adverse. Under NPHA analysis, there may an adverse effect to contributing sites of the Yosemite Valley Archeological District, as well as several sites that are not contributors to the district that may be individually significant.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Current facilities and levels of visitor use in the Valley would continue unchanged under Alternative 1 (No Action). Camping and individual lodging units in Housekeeping Camp; Boys Town; Curry Village; and Lower Pines, North Pines, and Yellow Pine campgrounds would continue on and near sensitive archeological resources, resulting in local, long-term, minor to moderate, and adverse impacts (NEPA) and potentially adverse effects (NHPA) from visitor use, such as erosion of soils and consequent exposure, trampling, and collection of cultural materials. Final determination of adverse effects under NHPA requires site evaluations and specific analyses of visitor use impacts as they relate to the significant qualities of the sites.

Segments 3 and 4: Merced River Gorge and El Portal

Impacts of Actions to Protect and Enhance River Values

Archeological resources in the Merced River Gorge (Segment 3) and El Portal (Segment 4) include historic-era and prehistoric sites, as well as the Merced Canyon Travel Corridor Historic District (determined eligible) and the El Portal Archeological District (listed). Under Alternative 1 No Action), abandoned infrastructure at the Cascades Picnic Area would remain as it currently exists. Informal

trails and a nonessential gravel road would remain within two sites in Old El Portal, and visitor use would remain at current levels. Local, long-term, minor, adverse impacts (NEPA) on individual archeological sites from these conditions would include increased erosion and trampling, soil compaction, and opportunities for unauthorized artifact collection. Under NPHA analysis, there may be an adverse effect to contributing sites of the El Portal Archeological District, and no adverse effect to the Merced Canyon Travel Corridor Historic District.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 1 (No Action), the Abbeville and Trailer Village area in Segment 4 would continue to be used for temporary employee or park partner housing. The abandoned El Portal Wastewater Treatment Plant would remain as it is. These ongoing impacts generally include erosion, creation of informal trails, and unauthorized artifact collection or displacement. Under NEPA, these impacts would be characterized as local, long-term, minor, adverse impact from trampling and potential artifact collection or displacement. Under NHPA, there may be adverse effects to contributing resources to the El Portal Archeological District at Abbeville and Trailer Village.

Segments 5, 6, 7, and 8: South Fork Merced River

Impacts of Actions to Protect and Enhance River Values

Under Alternative 1 (No Action), informal trails and charcoal rings in Segment 5 would remain, continuing surface and subsurface disturbance of archeological resources. In Segment 7, visitor and operational uses, as well as informal trails, would continue in the Wawona Store area. Camping in the Wawona Campground would continue to result in ongoing adverse impacts on shallow subsurface deposits within historic-era sites. Informal trails would continue to be used through sites near the South Fork and Wawona Store picnic areas. The Wawona Hotel would continue to be used, resulting in ground disturbing impacts to surface and sub-surface archeological resources from construction, maintenance, and use of structures and infrastructure; foot traffic; and landscaping. Under NEPA, impacts would be long-term, minor to moderate, and adverse. Under NPHA analysis, there is an adverse effect to contributing sites of the Wawona Archeological District. It is unlikely that the sum of these conditions would affect eligibility of Wawona Archeological District as a whole.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 1 (No Action), no additional restroom and waste collection facilities would be constructed near the Wawona Swinging Bridge, resulting in continued use of a nearby archeological site for improper disposal of trash and human waste, considered to be an adverse impact. Also anticipated under Alternative 1 would be ongoing impacts to archeological resources from continued operation of the Wawona Campground. Under NEPA, impacts would be local, long-term, minor to moderate, and adverse. Under NHPA analysis, there is an adverse effect to the known archeological site.

Summary of Impacts from Alternative 1 (No Action)

Under Alternative 1 (No Action), there would be no change in the treatment and management of archeological resources. Local, long-term, negligible to moderate adverse impacts on archeological resources would occur as a result of ongoing park operations and programs, such as facilities maintenance and repair, as well as ongoing visitor use. Specifically, the creation and ongoing use of informal and formal trails leading through or adjacent to archeological sites; use of site areas for parking, staging, storage, or stock use; rock climbing routes or bouldering activities that traverse rock shelter and rock art features; and informal camping within sensitive sites all currently result in localized, minor to moderate, adverse effects on archeological resources, and would continue to do so under Alternative 1. Under NHPA analysis, these impacts would or may lead to adverse effects to individual archeological sites which are contributors to the Yosemite Valley Archeological District, the Merced River Travel Corridor Historic District, the El Portal Archeological District, and the Wawona Archeological District. It is unlikely that the sum of these conditions would affect eligibility of larger archeological districts.

Cumulative Impacts of Alternative 1 (No Action)

Cumulative impacts on archeological resources are based on analysis of past, present, and reasonably foreseeable actions in the Yosemite region in combination with potential effects of Alternative 1 (No Action). The projects identified below include only those projects that could affect archeological resources within the Merced River corridor.

Past Actions

Archeological resources are subject to damage from land use, visitor access, and natural processes. Appendix B contains the list of past actions that have resulted in cumulative impacts on environmental resources, including archeological sites in some areas. Construction and maintenance of facilities within the river corridor has disturbed or destroyed numerous archeological resources and compromised the integrity of numerous other such resources. Adverse effects have occurred to archeological historic properties, but they still retain their integrity as historic properties.

Present Actions

There are a number of archeological resource sites in the Merced River corridor at, or adjacent to trails, structures, utility systems, and other facilities and are subject to ongoing disturbances such as trampling, unauthorized collection, and ground disturbance associated with facility maintenance. Any present projects that would result in ground disturbance and/or excavation (trail/road improvements, new facility or infrastructure construction and maintenance, restoration) have the potential to result in adverse impacts (NEPA) and create an adverse effect (NHPA) on known or unknown archeological resources. Under the current, 1999 programmatic agreement with the ACHP, all present actions are reviewed for compliance with section 106 of the NHPA, and adverse effects are avoided or mitigated to the extent possible. Current projects that could result in beneficial impacts through increased knowledge of impacts and recommendation and implementation of protection measures include the *2009 Yosemite Fire Management Plan*, *Visitor Use and Impacts Monitoring Plan*, and the *Scenic Vista Management Plan*.

Reasonably Foreseeable Future Actions

Visitation to Yosemite is anticipated to increase at a rate of 3% annually, which would increase the risk of potential adverse impacts on archeological resources. Any future projects that would result in ground disturbance and/or excavation have the potential to result in adverse impacts on known or unknown archeological resources. The *Yosemite Wilderness Stewardship Plan* could potentially result in beneficial impacts to further protection of archeological resources in Segments 1 and 5. Future park operational actions would be subject to site-specific planning and compliance and be undertaken in accordance with stipulations in the servicewide 2008 programmatic agreement. Every effort would be made during the design phase to avoid adverse impacts and adverse effects.

Overall Cumulative Impacts of Alternative 1 (No Action)

Alternative 1 (No Action), in consideration with past, present and future actions, would result in no change in the current treatment and management of archeological resources. Any site-specific planning and compliance actions would be accomplished in accordance with stipulations in existing and future programmatic agreements; several sites would continue to undergo adverse impacts not related to any specific action. Under NHPA, there are existing cumulative adverse effects on individual archeological resources, and Alternative 1 would contribute to these adverse effects.

Environmental Consequences of Actions Common to Alternatives 2–6

All River Segments

Impacts of Actions to Protect and Enhance River Values

Proposed actions that could affect archeological resources under Alternatives 2–6 would include protection and revegetation of sensitive riparian habitats, stabilization and protection of riverbanks, removal of abandoned infrastructure, restoration of meadows, and restoration (removal and revegetating) of informal trails. In some areas, these actions would result in disturbances to the surface and subsurface within and adjacent to known archeological sites. In other areas, there is a potential for these activities to uncover unrecorded archeological sites, including those with no surface visibility. **Table 9-246** summarizes these proposed actions and potential impacts to archeological sites, and then offers analysis under NEPA and NHPA regulations.

Restoration of informal trails that encroach onto archeological sites would reduce visitor activities on archeological resources that may include unauthorized collection and potential displacement of artifacts, either inadvertently or through vandalism. Decompaction of soils and planting of native vegetation on denuded areas could adversely impact the vertical and horizontal contexts (stratigraphy) within these areas.

For the most part, removal of young conifers from meadows, restoration of hydrologic processes, and renewed use of low-intensity fire to restore meadows would not affect any known archeological resources, nor would the removal of riprap; incorporation of large woody debris or engineered logjams; and subsequent actions to revegetate, protect, and stabilize riparian areas and eroded riverbanks. Several

TABLE 9-246: IMPACTS FROM ACTIONS COMMON TO ALTERNATIVES 2-6

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Biological Resource Actions			
All segments	Actions to Protect and Enhance River Values	<p>Protection and revegetation of sensitive riparian habitats</p> <p>Removal of abandoned infrastructure, restoration of meadows</p> <p>Restoration of informal trails</p> <p>Abandoned underground infrastructure removal projects would be subject to review under section 106 on an individual basis</p> <p>Archeological site locations would be considered and avoided whenever possible</p>	<p><i>NEPA:</i> Impacts to specific sites are local; duration and type of impacts vary. For areas where proposed actions do not occur on or near known archeological sites, there would be a negligible impact on archeological properties.</p> <p>Activities that direct visitor activities away from archeological resources result in local to segmentwide, long-term minor to moderate beneficial impacts.</p> <p>Restoration activities and removal of abandoned infrastructure on or near archeological sites would result in local, long-term, minor to moderate adverse impacts.</p> <p><i>NHPA:</i> Site specific measures would be developed to avoid adverse effects when possible. Avoidance of significant archeological sites will occur when possible. When it is not, determination of effects is site specific. Re-evaluation of integrity of NRHP-listed and eligible properties would be necessary to determine if there are adverse effects when actions occur on or near archeological sites.</p>
Hydrologic/Geologic Resource Actions			
All segments	Actions to Protect and Enhance River Values	Stabilization and protection of riverbanks	<p><i>NEPA:</i> For areas where proposed actions do not occur on or near known archeological sites, there would be a negligible impact on archeological properties.</p> <p>Stabilization activities near or on archeological sites would result in local, long-term, minor to moderate adverse impacts.</p> <p><i>NHPA:</i> Site specific measures would be developed to avoid adverse effects when possible. Avoidance of significant archeological sites will occur when possible. When it is not, determination of effects is site specific. Re-evaluation of integrity of NRHP-listed and eligible properties would be necessary to determine if there are adverse effects.</p>
Cultural Resource Actions			
All segments	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	General reduction in focused visitor use at areas on or near known archeological resources	<p><i>NEPA:</i> Activities that direct visitor activities away from archeological resources result in local to segmentwide, long-term minor to moderate beneficial impacts.</p> <p><i>NHPA:</i> no historic properties are affected</p>

TABLE 9-246: IMPACTS FROM ACTIONS COMMON TO ALTERNATIVES 2-6 (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Programmatic Actions			
All segments	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	Various facilities would be removed, repurposed, or reduced Archeological site locations would be considered and avoided whenever possible	<i>NEPA:</i> Impacts to specific sites are local; duration and type of impacts vary. For areas where proposed actions do not occur on or near known archeological sites, there would be a negligible impact on archeological properties. Activities that involve ground disturbance on or near archeological sites would result in local, long-term, minor to moderate adverse impacts. <i>NHPA:</i> Site specific measures would be developed to avoid adverse effects when possible. When avoidance of archeological sites is not possible, determination of effects is site specific. Re-evaluation of integrity of NRHP-listed and eligible properties would be necessary to determine if there are adverse effects when actions occur on or near archeological sites.
Biological Resource Actions			
Segment 1	Actions to Protect and Enhance River Values	Sections of established trails would be rerouted out of sensitive habitats such as meadows and wetlands Boardwalks or fencing would be used as needed to prevent trail widening and elevate trails above wet areas Archeological site locations would be considered and avoided whenever possible	<i>NEPA:</i> Activities that direct visitor activities away from archeological resources result in local to segmentwide, long-term minor to moderate beneficial impacts. Activities that involve ground disturbance on or near archeological sites would result in local, long-term, minor to moderate adverse impacts. <i>NHPA:</i> There are not NRHP listed or NRHP eligible sites in Segment 1. No historic properties would be affected.
Segment 1	Manage Visitor Use and Facilities	No common actions to manage visitor use and facilities to Alternatives 2-6.	N/A
Segment 2	Actions to Protect and Enhance River Values	Restore meadows Remove abandoned infrastructure and facilities within 100 feet of the riverbanks Relocate, delineate, or restore trail segments that cross sensitive habitat areas or have fallen into disrepair Archeological site locations would be considered and avoided when possible	<i>NEPA:</i> Impacts to specific sites are local; duration and type of impacts vary. For areas where proposed actions do not occur on or near known archeological sites, there would be a negligible impact on archeological properties. Activities that involve ground disturbance on or near archeological sites would result in local, long-term, minor to moderate adverse impacts. <i>NHPA:</i> Site specific measures would be developed to avoid adverse effects when possible. When avoidance of archeological sites is not possible, determination of effects is site specific. An adverse effect on a contributing element of the Yosemite Valley Archeological District is an adverse effect on the whole. Re-evaluation of integrity of NRHP-listed and eligible properties would be necessary to determine if there are adverse effects when actions occur on or near archeological sites.

TABLE 9-246: IMPACTS FROM ACTIONS COMMON TO ALTERNATIVES 2-6 (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Cultural Resource Actions			
Segment 2	Actions to Protect and Enhance River Values	Protect archeological sites through rerouting and redirection of visitor activity	NEPA: Activities that direct visitor activities away from archeological resources result in local to segmentwide, long-term minor to moderate beneficial impacts. NHPA: no historic properties are affected
Hydrologic/Geologic Resource Actions			
Segment 2	Actions to Protect and Enhance River Values	Improve the free-flowing condition of the river Refocus visitor use to resilient areas; and relocate, delineate, or restore trail segments that cross sensitive habitat areas or have fallen into disrepair Archeological site locations would be considered and avoided when possible	NEPA: Impacts to specific sites are local; duration and type of impacts vary. For areas where proposed actions do not occur on or near known archeological sites, there would be a negligible impact on archeological properties. Activities that involve ground disturbance on or near archeological sites would result in local, long-term, minor to moderate adverse impacts. NHPA: Site specific measures would be developed to avoid adverse effects when possible. When avoidance of archeological sites is not possible, determination of effects is site specific. An adverse effect on a contributing element of the Yosemite Valley Archeological District may be an adverse effect on the whole. Re-evaluation of integrity of NRHP-listed and eligible properties would be necessary to determine if there are adverse effects when actions occur on or near archeological sites.
Programmatic Resource Action			
Segment 2	Actions to Manage Visitor Use and Facilities	Various facilities in Segment 2 would be removed, repurposed, or reduced New parking spaces would be provided in several locations, existing parking lots would be formalized, and one new shuttle bus stop would be constructed Specific areas: expansion of Camp 4 (Sunnyside Campground) and Backpackers area Improvements to visitor facilities at Bridalveil Fall Construction of new parking lots and expansion of existing lots Removal of Valley Garage Service and relocation to Government Utility Building	NEPA: Impacts to specific sites are local; duration and type of impacts vary. For areas where proposed actions do not occur on or near known archeological sites, there would be a negligible impact on archeological properties. Activities that involve ground disturbance on or near archeological sites would result in local, long-term, minor to moderate adverse impacts. NHPA: Site specific measures would be developed to avoid adverse effects when possible. When avoidance of archeological sites is not possible, determination of effects is site specific. An adverse effect on a contributing element of the Yosemite Valley Archeological District may be an adverse effect on the whole. Re-evaluation of integrity of NRHP-listed and eligible properties would be necessary to determine if there are adverse effects when actions occur on or near archeological sites.

TABLE 9-246: IMPACTS FROM ACTIONS COMMON TO ALTERNATIVES 2-6 (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Programmatic Resource Action (cont.)			
Segment cont.)		<p>Expansion of Camp 6 parking into previous footprint of Valley Garage area</p> <p>Construction of two-bay roads and trails maintenance building in proximity to the Government Utility Building</p> <p>Retain existing facilities and services of Ahwahnee Hotel, but remove pool and tennis courts associated with Hotel</p> <p>Remove old and temporary housing at Highland Court and the Thousand Cabins in the Yosemite Lodge area and replace with new housing</p> <p>Retain Yosemite Lodge maintenance and housekeeping</p> <p>Remove NPS Volunteer Office former Wellness Center), post office, swimming pool, and snack stand in Yosemite Lodge area</p> <p>Remove Concessioner General Office in Yosemite Village (use infill into other existing buildings)</p> <p>Archeological site locations would be considered and avoided when possible</p>	
Scenic Resource Actions			
Segments 3 and 4	Actions to Protect and Enhance River Values	Removal of conifers from the Cascade Fall viewpoint Archeological site locations would be considered and avoided when possible	<p><i>NEPA:</i> For areas where proposed actions do not occur on or near known archeological sites, there would be a negligible impact on archeological properties.</p> <p>Activities that involve ground disturbance in areas of known archeological sites would result in local, long-term, minor to moderate adverse impacts.</p> <p><i>NHPA:</i> When avoidance of archeological sites is not possible, determination of effects is site specific.</p>

TABLE 9-246: IMPACTS FROM ACTIONS COMMON TO ALTERNATIVES 2–6 (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Biological Resource Actions			
Segments 3 and 4	Actions to Protect and Enhance River Values	<p>Removal of abandoned infrastructure from the Cascades Picnic Area and El Portal Wastewater Treatment Plant</p> <p>Remove informal trails and a nonessential road from two locations in El Portal</p> <p>Remove asphalt and imported fill from within the Abbeville and Trailer Village area.</p>	<p><i>NEPA</i>: For areas where proposed actions do not occur on or near known archeological sites, there would be a negligible impact on archeological properties.</p> <p>Activities that involve ground disturbance in areas of known archeological sites would result in local, long-term, minor to moderate adverse impacts.</p> <p><i>NHPA</i>: When avoidance of archeological sites is not possible, determination of effects is site specific.</p> <p>Activities that remove infrastructure at Cascades Picnic Area (itself an archeological site) would result in an adverse effect to the contributing elements of the Merced Canyon Travel Corridor Historic District, an eligible property.</p>
Programmatic Resource Actions			
Segments 3 and 4	Actions to Manage Visitor Use and Facilities	<p>Temporary housing units would be moved from Yosemite Valley to El Portal</p> <p>Archeological sites would be considered in planning and avoided whenever possible</p>	<p><i>NEPA</i>: For areas where proposed actions do not occur on or near known archeological sites, there would be a negligible impact on archeological properties.</p> <p>Potential site-specific impacts from the relocation of housing units would result from ground-disturbing activities and concentration of uses in areas sensitive for archeological sites. Impacts are local, long-term, minor to moderate adverse impacts, including contributing sites of the El Portal Archeological District.</p> <p><i>NHPA</i>: When avoidance of archeological sites is not possible, determination of effects is site specific.</p>
Cultural Resource Actions			
Segments 5, 6, 7, and 8	Actions to Protect and Enhance River Values	<p>Design several actions to reduce or halt ongoing adverse impacts on known archeological sites through wilderness and developed camping, use of informal trails, and informal off-road vehicle travel and parking</p>	<p><i>NEPA</i>: Activities that direct visitor activities away from archeological resources result in local to segmentwide, long-term minor to moderate beneficial impacts.</p> <p><i>NHPA</i>: no historic properties are affected, including contributing elements of the Wawona Archeological District.</p>

TABLE 9-246: IMPACTS FROM ACTIONS COMMON TO ALTERNATIVES 2-6 (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Cultural Resource Actions (cont.)			
Segments 5, 6, 7, and 8 (cont.)		<p>Removal or relocation of Wawona Campground campsites and a road segment out of known archeological resources</p> <p>Development of a site management plan including restrictions on off-road and shoulder travel and parking in the vicinity of a known archeological site</p>	
Programmatic Resource Actions			
Segment 7	Actions to Manage Visitor Use and Facilities	<p>Replacement of current restroom facilities at the Wawona Store</p> <p>Construction of new formal river access and visitor amenities, such as restrooms and waste disposal, near the Wawona Swinging Bridge area</p>	<p><i>NEPA:</i> The current Wawona public restrooms are within a multicomponent archeological site. Replacement of the existing facilities with larger restrooms could impact this site, if previously undisturbed site soils are excavated during construction of the new restrooms. Adverse Impacts are local, long-term, minor to moderate.</p> <p>Providing formalized river access and visitor amenities such as restrooms, parking, and waste disposal outside archeological site boundaries near the Wawona Swinging Bridge could have a long-term, beneficial impact.</p> <p><i>NHPA:</i> As both actions are within or near known archeological sites, there is an adverse effect.</p>

archeological sites are adjacent to the river, and would be vulnerable to actions taken along the river banks. Removing ground-obscuring vegetation and shallow soil disturbances could lead to inadvertent discovery of unrecorded archeological resources. Additionally, impacts could occur during operation of heavy machinery on or near known or unknown resources that contain shallow cultural deposits, including during transit from a staging area or maintenance yard to the location of the management action. Dragging large logs or felled trees across the surface of a site could have similar effects. While inadvertent discovery of an unrecorded site is not necessarily an impact in and of itself, it can result in exposure of artifacts and other cultural materials to erosion, loss of stratigraphic information, trampling, vandalism, and collection. Mitigation measure MM-AR-1 (see Appendix C) describes the park's process of worker education, artifact recognition, resource evaluation, and development of a treatment plan to reduce or avoid) the potential impacts related to inadvertent discovery.

Ground disturbances associated with actions proposed for areas within or immediately adjacent to the known boundaries of an archeological resource can result in loss of stratigraphic information and displacement of artifacts, when avoidance is not possible. Mitigation measure MM-AR-2 (see Appendix C) describes the process the park would follow to assess the presence of surface and subsurface archeological materials, and the subsequent steps to avoid or mitigate impacts from the proposed action. Mitigation measure MM-AR-3 (archeological monitoring, see Appendix C), would also be employed as appropriate either in conjunction with MM- AIR-2 or as an alternative to testing in areas where management actions would result in very minor ground disturbances. With implementation of these three mitigation measures, adverse impacts and effects on archeological resources from the proposed actions to protect and enhance river values would be reduced.

Because abandoned underground infrastructure removal projects would be subject to review under section 106 of the NHPA on an individual basis, impacts on archeological resources would be addressed on a case by case basis as part of planning, design, and implementation.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternatives 2–6, various facilities would be removed, repurposed, or reduced. These facilities range from those related to recreational activities (swimming, ice skating, tennis, rafting, and cycling) to retail, housing, and campsites. While a general reduction in focused visitor use at areas on or near known archeological resources would result in a reduction of ongoing minor impacts from trampling, erosion, inappropriate uses, and artifact collection or vandalism, the act of removing or renovating the facilities could disturb subsurface deposits of cultural materials.

Intact subsurface cultural deposits and individual artifacts could still exist in certain areas. Implementation of mitigation measure MM- AIR-2 (see Appendix C) would ensure that through a process of testing, action modification, and potential data recovery, the potential for adverse effects from actions to manage visitor use and facilities would be reduced or avoided. Inadvertent discovery of unknown resources is unlikely, given the amount of ground disturbance that occurred during initial construction of the facilities.

Segment 1: Merced River above Nevada Fall

Impacts of Actions to Protect and Enhance River Values

Under Alternatives 2–6, various sections of established trails would be rerouted out of sensitive habitats such as meadows and wetlands in Segment 1. Boardwalks or fencing would be used as needed to prevent trail widening and elevate trails above wet areas.

Although most existing trails are not known to cross any sensitive archeological resources, rerouting some trails could result in disturbance of some known sites, and the inadvertent discovery of previously unknown resources. Subsurface disturbances associated with trail construction could result in displacement of artifacts, disruption of stratigraphic information, and exposure of sensitive site areas to erosion, when avoidance is not possible. Under NEPA, these adverse impacts would generally occur only during trail construction, and are local, long-term, and minor to moderate in nature. Under NHPA, there are no NRHP listed, or sites determined to be eligible for the NRHP in Segment 1; no historic properties are affected.

Segment 2: Yosemite Valley

Impacts of Actions to Protect and Enhance River Values

Under Alternatives 2–6, actions would be taken in Segment 2 to restore meadows; improve the free-flowing condition of the river; protect archeological sites; remove abandoned infrastructure and facilities within 100 feet of the riverbanks; refocus visitor use to resilient areas; and relocate, delineate, or restore trail segments that cross sensitive habitat areas or have fallen into disrepair.

Meadow restoration would include actions to improve hydrologic function, restore native vegetation, and remove inappropriate uses or facilities. Some of the specific actions that could affect archeological resources include filling ditches using heavy equipment, removing encroaching conifers, relocating and/or elevating trails onto boardwalks, revegetation with willows and other native species, removing abandoned infrastructure, removing and restoration of informal trails and parking areas, decompacting soils, improving road crossings of meadows, and using low-level fire regimes to maintain healthy meadow ecosystems. Each of these actions would result in ground disturbance that could affect surface or shallow subsurface cultural materials, including those associated with the Yosemite Valley Archeological District. Activities associated with these actions (e.g., mechanical decompaction of soil) could expose artifacts to erosion and disturb the integrity of horizontal and vertical site patterning. Similarly, removing abandoned infrastructure, decompacting soils in former parking areas or roads, removing encroaching conifers, preparing areas for revegetation, constructing improvements at road crossings, and rerouting trails could involve the use of heavy equipment on known sites, which could disturb buried or surface cultural materials. Use of fire to keep meadows open and ecologically productive could temporarily expose artifacts on the ground surface, making them vulnerable to collection or dislocation.

Actions to improve the free-flowing condition of the river would include installation of engineered logjams and large woody debris, brush layering, and removal of abandoned bridge footings and gaging

station infrastructure. These actions would generally occur within the river and for the most part (except those sites adjacent to the river) would not directly affect any known archeological sites. Operation of heavy machinery on archeological resources, including during transit from a staging area or maintenance yard to the location of the management action, could affect known resources that contain shallow cultural deposits, as would dragging large logs across the surface of a site.

Removal of abandoned infrastructure is proposed under Alternatives 2–6 for several locations in Segment 2. Actions associated with infrastructure removal would include removing artificial fill and decompacting soils, recontouring the ground surface, and revegetating the area with native plant species. Some of the infrastructure removal actions are proposed for areas within the boundaries of known archeological sites. While these resources were likely adversely affected by original construction of the infrastructure to be removed, it is possible that intact deposits of subsurface cultural materials may still exist. Ground-disturbing actions associated with the removal of abandoned infrastructure could result in an adverse impact for those actions proposed within known sites.

Several management actions under Alternatives 2–6 would be undertaken specifically to protect archeological sites from further damage resulting from visitor use and infrastructure impacts. These actions include removing/limiting or rerouting formal roads and trails away from sensitive areas, removing and revegetating informal trails and parking turn-outs, removing unauthorized campfire rings and campsite furniture logs, removing climbing hardware from rock features, removing graffiti, and increasing law enforcement and/or archeological monitoring at sites known to attract unauthorized camping and climbing. The park would develop increased awareness and outreach programs to educate climbers about irreplaceable cultural resources and institute prohibitions on climbing at some locations. Sensitive features in high-use areas may be fenced off to prevent access, and some formal campsites and bear boxes would be removed from within site boundaries.

Proposed redirection of visitor uses to resilient areas away from unstable slopes and sensitive locations along riverbanks, and the associated restoration of eroded and denuded areas in Segment 2 would generally lessen impacts to archeological resources. Some of the proposed actions under Alternatives 2–6 would take place close to known archeological sites. These sites would be considered in planning for fencing of sensitive areas to exclude visitor access. Revegetation activities themselves might result impacts such as artifact displacement, exposure to erosion, and loss of vertical and horizontal site integrity.

Portions of hiking and stock trails in Segment 2 would be removed, relocated, reconstructed, or better delineated to focus visitor use on well-established trails that do not cross sensitive habitats or cultural sites. Removed portions of trails would be decompacted and revegetated, and new trail construction or fencing would be beyond the boundaries of known sites, whenever possible. Ground disturbances from soil decompaction, operation of heavy equipment, and preparation for revegetation could affect known archeological resources in the vicinity of each action.

Ground disturbances associated with actions proposed for areas within or immediately adjacent to the known boundaries of an archeological resource can result in loss of stratigraphic information and displacement of artifacts. Mitigation measure MM- AIR-2 (see Appendix C) describes the process the park would follow to assess the presence of surface and subsurface archeological materials, and the

subsequent steps to avoid or mitigate adverse effects from the proposed action. Mitigation measure MM-AR-3 (archeological monitoring, see Appendix C) would also be employed as appropriate either in conjunction with MM-AR-2 or as an alternative to testing in areas where management actions would result in very minor ground disturbances.

While inadvertent discovery of an unrecorded site is not necessarily an impact in and of itself, it can result in exposure of artifacts and other cultural materials to erosion, loss of stratigraphic information, trampling, vandalism, and collection, when avoidance is not possible. Mitigation measure MM-AR-1 (see Appendix C) describes the park's process of worker education, artifact recognition, resource evaluation, and development of a treatment plan to mitigate the potential impacts related to inadvertent discovery. With the implementation of these three mitigation measures, under NHPA, the potential for adverse effects on archeological resources from these proposed actions under Alternatives 2–6 to protect and enhance river values in Segment 2 would be reduced.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternatives 2–6, various facilities in Segment 2 would be removed, repurposed, or reduced. These facilities range from those related to recreational activities (swimming, ice skating, tennis, rafting, and cycling) to retail and other visitor services, housing, and campsites. Construction of new employee housing would add 210 beds in dormitory-style buildings, and expansion of an existing campground would add a net 51 new campsites, while some campsites and other campground facilities such as roads would be removed from a rockfall hazard zone and the bed and banks of the Merced River. New parking spaces would be provided in several locations, existing parking lots would be formalized, and one new shuttle bus stop would be constructed.

In many instances, initial construction of the facilities resulted in disturbances to archeological resources, when avoidance is not possible. Despite these previous disturbances, intact subsurface cultural deposits and individual artifacts could still exist in certain areas. Implementation of Mitigation measure MM-AR-2 (see Appendix C) would ensure that through a process of testing, action modification, and potential data recovery, the potential for adverse effects from actions to manage visitor use and facilities would be reduced. Inadvertent discovery of unknown resources is unlikely, given the amount of ground disturbance that occurred during initial construction of the facilities.

For proposed construction of new facilities or renovation of existing facilities for new uses under Alternatives 2–6, impacts could involve ground-disturbance, and have the potential to cause adverse effects to archeological resources. Planning for new construction would take into account the locations of known sensitive archeological sites in Segment 2. Mitigation measure MM-AR-1 (see Appendix C) describes the process by which the park would manage inadvertent discoveries to avoid or minimize impacts. Implementation of MM-AR-2 would also be applicable in some instances where proposed new construction or renovation would be located in or near a known site. With implementation of these measures, the potential for adverse effects from actions related to management of visitor use and facilities would be reduced.

Segments 3 and 4: Merced River Gorge and El Portal

Impacts of Actions to Protect and Enhance River Values

Under Alternatives 2–6, actions to protect and enhance river values would include the removal of abandoned infrastructure from the Cascades Picnic Area (itself an archeological site) and removal of conifers from the Cascade Fall viewpoint. The park would remove informal trails and a nonessential road from two locations in El Portal as well as asphalt and imported fill from within the Abbeville and Trailer Village area. Each of these actions would occur within or adjacent to the location of a known archeological resource, and each has the potential to affect those sites.

Given this, proposed removal actions could result in impacts due to artifact displacement and temporary exposure of soils to erosion, when avoidance is not possible. Mitigation measure MM-AR-2 (see Appendix C) is recommended to reduce potential effects. Monitoring of all removal processes, as described in Appendix C for mitigation measure MM-AR-3, could help to ensure that no intact cultural deposits would be disturbed. With implementation of these measures, the potential for adverse effects from the proposed actions to protect and enhance river values would be reduced.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternatives 2–6, 32 temporary housing units would be moved from Yosemite Valley to El Portal (Segment 4). Both of the proposed locations in El Portal are within or near one or more known archeological sites. Construction of housing units on or adjacent to archeological sites would likely have direct and indirect adverse effects. Mitigation measure MM-AR-2 (see Appendix C) describes a process for assessing surface and subsurface site conditions, and development of a treatment plan to reduce potential impacts.

Segments 5, 6, 7, and 8: South Fork Merced River

Impacts of Actions to Protect and Enhance River Values

In these segments, the park would design several actions to reduce or halt ongoing adverse impacts on known archeological sites through wilderness and developed camping, use of informal trails, and informal off-road vehicle travel and parking. Development of a site management plan for a specific multicomponent site, including restrictions on off-road and shoulder travel and parking in the vicinity of the site, would provide for long-term site study and preservation.

Minor adverse effects on known sites from ground-disturbing activities associated with actions to protect and enhance river values under Alternatives 2–6 would be mitigated by implementation of mitigation measure MM-AR-2, which outlines a process for treatment of sites according to each proposed action. Implementation of this measure would reduce impacts.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Proposed actions to manage visitor use and facilities include replacement of current restroom facilities at the Wawona Store with larger facilities, and construction of new restrooms and other visitor

amenities at the Wawona Swinging Bridge area. Both of these actions under Alternatives 2–6 would take place within or near known archeological resources. Construction activities on or near archeological sites would likely have direct and indirect adverse effects. Implementation of mitigation measure MM-AR-2 (see Appendix C) would reduce the potential for adverse effects.

The Wawona Swinging Bridge area is also located adjacent to a known prehistoric archeological site, which is frequently used by visitors for improper disposal of human waste. Under Alternatives 2–6, providing formalized river access and visitor amenities such as restrooms, parking, and waste disposal would intend to redirect visitor use outside of the archeological site boundaries.

Summary of Impacts Common to Alternatives 2–6

A portion of the management actions proposed for Alternatives 2–6 would have the potential to result in site-specific to local, minor to major, adverse impacts (NEPA) and adverse effects (NHPA) on known prehistoric and historic-era archeological resources through ground-disturbing actions related to restoration, construction, and facilities removal, when avoidance is not possible. These could result in short-term exposure of site soils to erosional forces, displacement of artifacts, and diminished integrity of horizontal and vertical site patterning. Mitigation measure MM-AR-2 (see Appendix C) would delineate the process by which a site could be tested and characterized and an appropriate treatment plan developed. Mitigation measure MM-AR-3 would provide for an archeological monitor to be present for minimally invasive construction and restoration ground-disturbing activities within sites. Under NHPA, these measures would help to avoid, minimize, or reduce potential adverse effects associated with the proposed actions.

Other management actions under Alternatives 2–6 would include ground-disturbing activities in areas that do not contain documented archeological resources, but where such resources may be present in a buried context. Although inadvertent discovery of a previously unknown resource is not an adverse effect in and of itself, such effects can result if project personnel do not act to protect the newly discovered resource from further ground-disturbing activities, vandalism, and inappropriate use. Mitigation measure MM-AR-1 (see Appendix C) describes the process by which any unanticipated discoveries would be handled so as to minimize disturbances to previously unknown sites.

On NEPA, a portion of the management actions associated with Alternatives 2–6 would result in long-term, beneficial impacts on known archeological sites, either through restrictions on types of visitor use that can cause damage to sites (such as rock climbing or camping), restoration of areas that have been the focus of inappropriate use (such as informal trails, campfire circles, or graffiti), or stabilization of site surfaces through revegetation and other restorative actions. In some instances, actions that may ultimately benefit a resource also have the potential to adversely affect site elements if done in an inappropriate or careless manner. Mitigation recommendations have been included in the impact discussion in Appendix C as appropriate.

In areas of known sites, intensity of impacts on archeological resources relates to the importance of the information they contain and the extent of disturbance or degradation. Even the disturbance of a small portion of a rare or unstudied site type impacts to less than 10% of the total site area) can be considered an adverse effect to a site's integrity. Conversely, impacts to 25% or more of the site area of

a well-known and common site type may be considered not adverse. As above, implementation of mitigation measures would reduce or avoid effects.

Environmental Consequences of Alternative 2: Self-Reliant Visitor Experiences and Extensive Floodplain Restoration

All River Segments

Table 9-247 summarizes proposed actions under Alternative 2, and potential impacts to archeological sites, and then offers analysis under NEPA and NHPA regulations.

Segment 1: Merced River above Nevada Fall

Impacts of Actions to Protect and Enhance River Values

None of the proposed Alternative 2 actions to protect and enhance river values, other than those actions common to Alternatives 2–6, would have the potential to affect archeological resources.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Several actions related to management of visitor use and facilities under Alternative 2 would have the potential to affect archeological resources in Segment 1. These actions would include removing infrastructure at Little Yosemite Valley Backpackers Campground and converting this campground to dispersed camping; closing the Merced Lake High Sierra Camp, removing infrastructure, and redesignating portions of the area as Wilderness; and expanding Merced Lake Backpackers designated camping into other portions of the former Merced Lake High Sierra Camp. Limits on the number of hikers between Little Yosemite Valley and Merced Lake would also be enacted through a pass or wilderness trailhead quota system.

Little Yosemite Valley Campground is largely within a known prehistoric archeological site. Removing infrastructure here would reduce the number of visitors and disperse visitor activities, lessening erosion and trampling.

The Merced Lake High Sierra Camp is partially within a known prehistoric archeological site. Proposed actions include closure of the camp, removal of infrastructure, and restoration of portions of the area to a natural condition. These actions would remove some sources of concentrated visitor-use disturbances. A portion of the area would be used for an expansion of the Merced Lake Backpackers Campground.

The trail between Little Yosemite Valley and Merced Lake crosses within or near the known boundaries of several archeological sites. Limiting pedestrian traffic on this trail through a zone pass or quota system (25 daily limit) would reduce the potential for impacts on these sites from trampling, erosion, vandalism, or artifact collection.

TABLE 9-247: IMPACTS FROM ALTERNATIVE 2 ACTIONS

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
All segments	Actions to Protect and Enhance River Values	None of the overall actions to protect and enhance river values in all river segments would affect archeological resources beyond those actions common to Alternatives 2–6.	Discussed in table 9-246: Impacts from Actions Common to Alternatives 2–6
All segments	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	None of the overall actions in any of the river segments to manage visitor use and facilities would affect archeological resources beyond except those actions common to Alternatives 2–6.	Discussed in table 9-246: Impacts from Actions Common to Alternatives 2–6
Segment 1	Actions to Protect and Enhance River Values	No proposed actions to protect and enhance river values in Segment 1 beyond those actions that are common to Alternatives 2–6.	Discussed in table 9-246: Impacts from Actions Common to Alternatives 2–6
Biological Resource Action			
Segment 1	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	<p>Remove infrastructure at Little Yosemite Valley Backpackers Campground and converting this campground to dispersed camping</p> <p>Close the Merced Lake High Sierra Camp, removing infrastructure, and redesignate portions of the area as Wilderness</p> <p>Expand Merced Lake Backpackers designated camping into other portions of the former Merced Lake High Sierra Camp</p> <p>Limit number of hikers between Little Yosemite Valley and Merced Lake</p> <p>Archeological sites would be considered in planning and avoided whenever possible</p>	<p><i>NEPA</i>: Proposed conversion of the existing 150-site Little Yosemite Valley Campground to dispersed camping and associated removal of infrastructure would potentially result in a site-specific, long-term beneficial impact on the known archeological site found within the Campground area, assuming avoidance is possible. Closure of the Merced Lake High Sierra Camp partially within a known prehistoric site) and limiting pedestrian traffic on the trail between Little Yosemite Valley and Merced Lake portions of which are within or near archeological sites) would have a similar site-specific, long-term beneficial impact. Proposed expansion of the Merced Lake Backpackers Campground is proposed in an area without archeological sites; there would be a negligible impact on archeological properties. Ground disturbing activities associated with removal of infrastructure and restoration of former camping areas may result in site-specific, short-term, minor, adverse impacts from artifact displacement, exposure to erosion, and loss of vertical and horizontal site integrity, in cases where avoidance is not possible.</p> <p><i>NHPA</i>: There are not NRHP listed or sites determined to be eligible for the NRHP in Segment 1. No historic properties would be affected.</p>
Segment 2	Actions to Protect and Enhance River Values	<p>Restore portions of Stoneman Meadow</p> <p>Remove portions of Southside Drive and the Curry Orchard parking lot</p>	<p><i>NEPA</i>: In areas where no archeological resources have been recorded (Stoneman Meadow, Curry Orchard parking lot, Boys Town housing area, Village Store, Ahwanee Meadow), there would be a negligible impact on archeological properties.</p>

TABLE 9-247: IMPACTS FROM ALTERNATIVE 2 ACTIONS (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Biological Resource Action (cont.)			
Segment 2 (cont.)		<p>Conduct several habitat restoration actions within the East Valley campgrounds</p> <p>Reroute portions of the Valley Loop Trail out of the meadow</p> <p>Remove housing and other constructions between Village Store and Ahwahnee Meadow; restore and revegetate this area</p> <p>Remove facilities and infrastructure, restoration of floodplain and riparian habitat, and conversion of the area into day use river access and picnicking in Housekeeping Camp</p> <p>Archeological sites would be considered in planning and avoided whenever possible</p>	<p>While site avoidance is always preferable, proposed removal of campsites and associated infrastructure within the East Valley campgrounds would potentially result in local, minor to moderate long-term beneficial impact on known archeological sites found within the campgrounds. Ground disturbing activities associated with removal of infrastructure and restoration of former camping areas may result in site-specific, short-term, minor, adverse impacts from artifact displacement, exposure to erosion, and loss of vertical and horizontal site integrity.</p> <p>Ground disturbance and rerouting of the Valley Loop Trail would result in a long-term moderate to major adverse effect, as this trail is itself an historic property.</p> <p><i>NHPA</i>: Site specific measures would be developed to avoid adverse effects when possible. Determination of effects is site specific, when avoidance is not possible. Mitigation may reduce the adverse effect for the Valley Loop Trail.</p>
Segment 2	<p>Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities</p>	<p>Remove campsites from Backpackers, Lower Pines, Upper Pines, and Yellow Pine campgrounds</p> <p>Restore areas with native vegetation</p> <p>Remove lodging facilities at Yosemite Lodge, and replace with campsites and day use areas</p> <p>Archeological sites would be considered in planning and avoided whenever possible</p>	<p><i>NEPA</i>: Long-term adverse impacts on known archeological resources from restoration, facilities demolition, removal, and other ground disturbing would potentially occur during active ground disturbance, and be local, minor to moderate, in cases where avoidance is not possible.</p> <p>Overall reduced visitor numbers would have a negligible impact on archeological sites.</p> <p><i>NHPA</i>: Site specific measures would be developed to avoid adverse effects when possible. Determination of effects is site specific.</p>
Hydrologic/Geologic Resource Actions			
Segment 2	<p>Actions to Protect and Enhance River Values</p>	<p>Remove Sugar Pine and Ahwahnee bridges and reroute trail that currently extends between these bridges</p>	<p><i>NEPA</i>: Removing the northern abutment of Sugar Pine Bridge would result in a local, long-term major adverse impact to the known archeological site. Mitigation measures may reduce the potential for this impact.</p> <p>Additional ground disturbing activities associated with removal of the bridges and rerouting trail may result in local, short- to long-term, minor, adverse impacts from artifact displacement, exposure to erosion, and loss of vertical and horizontal site integrity. If previously unknown archeological sites are discovered during associated ground disturbing activities, site-specific, short-term, minor to moderate, adverse impacts may result from artifact displacement, exposure to erosion, and loss of vertical and horizontal site integrity.</p>

TABLE 9-247: IMPACTS FROM ALTERNATIVE 2 ACTIONS (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Hydrologic/Geologic Resource Actions (cont.)			
Segment 2 (cont.)			<i>MHPA:</i> Determination of effects is site specific, when avoidance is not possible. There is an adverse effect to the archeological site associated with Sugar Pine Bridge. Mitigation measures may reduce this impact.
Programmatic Resource Actions			
Segment 2	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	Create new parking spaces west of Yosemite Lodge Construct a shuttle stop for Camp 4 Decrease peak day visitor numbers	<i>NEPA:</i> General reduction in focused visitor use at areas on or near known archeological resources would potentially result in local, long-term, minor to moderate beneficial impacts. Overall reduced visitor numbers would have a negligible impact on archeological sites. <i>MHPA:</i> In areas of known discovered sites, avoidance of archeological sites will occur when possible. Site specific measures would be developed to avoid adverse effects when possible. Determination of effects is site-specific.
Segments 3 and 4	Actions to Protect and Enhance River Values	No proposed actions to protect and enhance river values in Segments 3 and 4 beyond those actions that are common to Alternatives 2–6.	Discussed in table 9-246: Impacts from Actions Common to Alternatives 2–6
Segments 3 and 4	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	Temporary housing units would be moved from Yosemite Valley to El Portal Administrative campsites from Yellow Pine Campground moved to area within Segment 4. Archeological sites would be considered in planning and avoided whenever possible	<i>NEPA:</i> Potential local, minor to moderate, adverse impacts from the relocation of housing units could result from ground-disturbing activities and concentration of uses in areas sensitive for archeological sites, in cases where avoidance is not possible. <i>MHPA:</i> Site specific measures would be developed to avoid adverse effects when possible. Determination of effects is site specific.
Biological Resource Actions			
Segments 5, 6, 7, and 8	Actions to Protect and Enhance River Values	Decommission Wawona Golf Course and return area to natural setting	<i>NEPA:</i> For the Wawona Golf Course, turf removal, recounting of terrain, soil decompaction, revegetation, and/or other ground disturbing may occur in or near known archeological sites. During these actions, impacts would be site-specific, negligible to major, and potentially adverse. <i>MHPA:</i> As both actions are within or near known archeological sites, there is an adverse effect.

TABLE 9-247: IMPACTS FROM ALTERNATIVE 2 ACTIONS (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Biological Resource Actions (cont.)			
Segments 5, 6, 7, and 8	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	Eliminate Wawona stables operations Remove Wawona tennis courts	<p><i>NEPA:</i> For the removal of Wawona tennis courts, soil decompaction, revegetation, and/or other ground disturbing would occur in or near a known archeological site. During these actions, effects would be site-specific, negligible to major, and potentially adverse, in cases where avoidance is not possible.</p> <p>Elimination of stables within the Wawona Campground may have a long-term, beneficial impact on archeological sites within and near these areas.</p> <p><i>NHPA:</i> As actions are within or near known archeological sites, there is an adverse effect.</p>
Programmatic Resource Actions			
Segments 5, 6, 7, and 8	Actions to Protect and Enhance River Values	Remove two stock campsites from Wawona stock camp Relocate sites to Wawona stables	<p><i>NEPA:</i> Actions to remove two stock campsites from near known archeological sites would result in localized long-term, beneficial impacts by stabilizing elements of archeological features and preventing future disturbances.</p> <p><i>NHPA:</i> As both actions are within or near known archeological sites, there is an adverse effect.</p>
Segments 5, 6, 7, and 8	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	Remove two stock campsites from Wawona stock camp Remove 32 campsites in Wawona Campground Redesign bus stop at Wawona Store to accommodate visitor use	<p><i>NEPA:</i> Relocation of stock campsites, and removal of sites within the Wawona Campground may have a long-term, beneficial impact on archeological sites within and near these areas.</p> <p>As the bus stop is near a known archeological site, unless avoidance is possible, there is a potential for local, long-term minor to moderate adverse impacts.</p> <p><i>NHPA:</i> As actions are within or near known archeological sites, there is an adverse effect.</p>

Ground disturbance associated with removal of infrastructure and restoration of former camping areas could displace artifacts (and result in increased erosion when avoidance is not possible) and perhaps result in discovery of previously unknown sites. Implementation of mitigation measure MM-AR-2 (testing, assessment, and treatment; see Appendix C) would reduce potential impacts.

Segment 2: Yosemite Valley

Impacts of Actions to Protect and Enhance River Values

Some of the proposed Alternative 2 actions in Segment 2 to protect and enhance river values have the potential to affect archeological resources. Proposed actions include restoring portions of Stoneman Meadow, removing portions of Southside Drive and the Curry Orchard parking lot, conducting several habitat restoration actions within the East Valley campgrounds, and removing the Sugar Pine and Ahwahnee bridges and rerouting the trail that currently extends between these bridges. Portions of the Valley Loop Trail would be rerouted out of the meadows. Additionally, Alternative 2 calls for the removal of housing and other constructions, between the Village Store and Ahwahnee Meadow and restoration of the area, including recontouring and revegetation activities.

There are no recorded archeological sites within Stoneman Meadow in the vicinity of the proposed restoration, nor have sites been recorded near the Curry Orchard parking lot or in the Boys Town housing area. The proposed partial restoration of the Curry Orchard parking lot would have no effect on archeological resources. Removal of 1,335 feet of Southside Drive and realigning the road through the Boys Town housing area would occur in areas not known to contain archeological resources, although there could be unanticipated discoveries during construction of the realigned road segment.

Several archeological sites are located at least partially within the East Valley campgrounds. Removal of campsites and associated infrastructure and subsequent restoration of native vegetation within the campground areas restoration actions would result in ground disturbing activities that may result in impacts if artifacts are displaced or soils temporarily exposed to erosion during decompaction or revegetation activities. Similarly, known cultural resources are in the vicinity of Housekeeping Camp. Avoidance of known archeological sites is always the preference; there could be unanticipated discoveries during ground disturbing activities. Site specific measures would be developed to avoid adverse effects when possible.

A large archeological site is directly adjacent to and likely beneath) the northern abutment of Sugar Pine Bridge. Removal of the Sugar Pine Bridge has the potential to adversely effect this resource. Other than this exception, no archeological resources have been recorded in the immediate vicinity of either the Sugar Pine or the Ahwahnee bridges, or the multiuse trail between these two bridges. Rerouting the trail to the north side of the river may result in the trail encroaching on one or more of the known archeological sites in the likely reroute area. Avoidance of known archeological sites is always the preference.

The Valley Loop Trail, itself a known historic property, would be rerouted out of wetland areas through Slaughterhouse and Bridalveil meadows. Although no archeological resources are recorded in

the area between the Village Store and Ahwahnee Meadow, recontouring and revegetation of this area after removal of housing and other construction could result in the inadvertent discovery of one or more deeply buried archeological resources. As a programmatic action, all trail reroutes would consider impacts on archeological resources and be located away from known archeological sites to the extent practicable. Mitigation measures MM-AR-2 and/or -3(see Appendix C) would be necessary if it is not possible to reroute the trail off of archeological resources.

While inadvertent discovery of archeological resources is not necessarily an impact in and of itself, discovery can result in damage to sites through exposure of artifacts to erosion, collection, and displacement. Implementation of mitigation measure MM-AR-1 (see Appendix C) is recommended to reduce potential impacts associated with inadvertent discovery. Likewise, a program of intensive surface survey and/or limited subsurface testing (MM-AR-2) is recommended for actions that would take place within or near the boundaries of a known archeological resource. An appropriate treatment plan could then be developed to reduce or avoid potential impacts associated with ground disturbance through construction or restoration. With implementation of these two mitigation measures, the potential to adversely effect resources from actions to protect and enhance river values in Segment 2 would be reduced or avoided.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 2, campsites would be removed or relocated from Backpackers, Lower Pines, North Pines, Upper Pines, and Yellow Pine campgrounds. Removal areas would be restored with native vegetation. Lodging facilities at Yosemite Lodge would also be removed and replaced with campsites and day use areas. Some new parking spaces would be created west of Yosemite Lodge, a formal shuttle stop would be constructed for Camp 4 (Sunnyside Campground), and overall peak day visitor numbers to the Valley would decrease over current rates.

Known archeological sites exist within or adjacent to portions of the Backpackers, Lower Pines, North Pines, and Upper Pines campgrounds. Removal of campsites from these areas and restoration of native vegetation would reduce impacts to known archeological sites by stabilizing ground surfaces and reducing erosion, trampling, and artifact collection that can result from heavy visitor use. Ground disturbance associated with revegetation activities, including use of any heavy machinery may impact archeological sites. Avoidance of known archeological sites is always preferred.

No archeological sites have been recorded in or adjacent to the Yellow Pine administrative group campsites. Removal of the campsites and restoration of the area to a natural condition would not result in any impacts on archeological resources in Segment 2. Relocating administrative camping to the Abbieville and Trailer Village area in El Portal (Segment 4) would potentially affect a known archeological site in that area, as is discussed in the “Segments 3 and 4: Merced River Gorge and El Portal” subsection below. Similarly, replacing removed sites at Backpackers Campground at a western extension of the campground, and creating new camping areas and day-use facilities in the Yosemite Lodge area would occur within or near known sites.

The reduced numbers of day use and overnight visitors proposed under Alternative 2 actions to manage visitor use and facilities in Segment 2 would not have a measureable effect on archeological

resources. While visitor use can and does affect sites, effects are much more dependent on localized use specific to areas that contain one or more archeological resources. A reduction in the overall visitor numbers would not necessarily reduce impacts on individual sites.

When archeological sites cannot be avoided, implementation of mitigation measures MM-AR-2 (controlled subsurface testing and treatment plan; see Appendix C) and/or MM-AR-3 archeological monitoring(see Appendix C) would reduce the potential adverse. Similarly, implementation of MM-AR-2 would reduce adverse effects associated with construction of new or replacement campsites, parking spaces, and a shuttle stop.

Yosemite Lodge and Camp 4. Proposed new parking spaces west of Yosemite Lodge could encroach on a known archeological site in Segment 2. Ground disturbance associated with the creation of a parking lot could result in site-specific, minor to moderate, adverse effects on shallow subsurface cultural deposits. Under NHPA, this would result in an assessment of adverse effect. Ground disturbance associated with revegetation activities, including use of any heavy machinery may impact archeological sites. Construction of a formal shuttle stop at Camp 4 Sunnyside Campground) could also encroach on a known archeological site. Avoidance of known archeological sites is always preferred.

Segments 3 and 4: Merced River Gorge and El Portal

Impacts of Actions to Protect and Enhance River Values

None of the proposed Alternative 2 actions to protect and enhance river values in Segments 3 and 4, other than those actions common to Alternatives 2-6, would affect archeological resources.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 2, the Abbieville and Trailer Village area would be used for relocation of employee housing units from Yosemite Valley; administrative campsites from the Yellow Pine Campground would also be relocated to this area in Segment 4. Avoidance of known archeological sites is always preferred. When unavoidable, these actions have the potential to affect a known archeological site by concentrating uses onto the site and through ground disturbances associated with construction/relocation of housing units.

Implementation of mitigation measure MM-AR-2 (see Appendix C) would result in a program of intensive surface survey and/or limited subsurface testing to determine the nature of cultural materials in areas proposed for housing and camping. An appropriate treatment plan could then be developed, including modification of the proposed actions to avoid impacts, data recovery of selected site areas, and/or archeological monitoring during ground-disturbing activities mitigation measure (MM-AR-3). Adhering to this process would reduce potential impacts.

Segments 5, 6, 7 and 8: South Fork Merced River

Impacts of Actions to Protect and Enhance River Values

Under Alternative 2 in Segment 7, the Wawona Golf Course would be decommissioned and the area returned to a more natural setting through recontouring and revegetation. Two stock campsites would also be removed from the Wawona stock camp, and relocated to the Wawona stables.

Portions of several archeological sites are located within the Wawona Golf Course. Removal of the golf course, including turf removal and recontouring of terrain to a more natural landscape, has the potential to unearth artifacts associated with these sites, diminishing the ability to interpret the sites' stratigraphy and cultural patterning. Mitigation would be recommended for the proposed Wawona Golf Course removal and meadow restoration. Mitigation measure MM-AR-2 (see Appendix C) outlines a process of limited subsurface testing and development of an appropriate treatment plan for sites; the treatment plan could include modification of the proposed action to avoid impacts, data recovery of certain areas of the site, and/or archeological monitoring mitigation measure (MM-AR-3). These measures would reduce or avoid potential impacts.

Two stock campsites would be removed from the Wawona stock camp to halt trampling and erosion impacts on a sensitive cultural resource area. Replanted vegetation would stabilize the ground surface and may prevent further artifact displacement.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 2, Wawona stables operations would be eliminated and two stock campsites would be relocated to this area from the current Wawona stock camp. The Wawona tennis courts would be removed, and 32 campsites in the Wawona Campground would be removed from the floodplain and/or from cultural sites. A bus stop, near a known archeological site, would be redesigned. Each of these actions would have the potential to impact archeological resources in Segment 7.

Two stock campsites would be removed from the Wawona stock camp to halt trampling and erosion impacts on a sensitive cultural resource area. These sites would be relocated to an area at the Wawona stables, and the stables would no longer offer day rides or operate as they currently do. Replanted vegetation would stabilize the ground surface and prevent further artifact displacement.

The Wawona tennis courts are located within a multicomponent archeological site. Removal of the tennis courts may cause disturbance to the site on shallow cultural deposits of the site. An archeological monitor mitigation measure (MM-AR-3) is recommended during the removal of the Wawona tennis courts to ensure that the potential for impacts related to ground disturbance would be reduced.

Also in Segment 7, the Wawona Campground includes all or portions of at least two distinct archeological sites. The proposed removal of 32 sites within the floodplain and in the former location of A.E. Wood Campground within the Wawona Archeological District (that is National Register-eligible) would potentially reduce or avoid ongoing impacts on this site.

Summary of Impacts from Alternative 2: Self-Reliant Visitor Experiences and Extensive Floodplain Restoration

Under NEPA, a portion of the management actions under Alternative 2 would have the potential to result in site-specific and local, minor to major effects on known prehistoric and historic-era archeological resources through ground-disturbing actions related to restoration, construction, and facilities removal. These could result in short-term exposure of site soils to erosional forces, displacement of artifacts, and diminished integrity of horizontal and vertical site patterning. Mitigation measure MM-AR-2 (see Appendix C) would delineate the process by which a site could be tested and characterized, and an appropriate treatment plan developed. Mitigation measure MM-AR-3 (see Appendix C) would provide for an archeological monitor to be present for minimally invasive construction and restoration ground-disturbing activities within sites. These measures would reduce the potential impacts of relevant actions.

Other management actions under Alternative 2 would include ground-disturbing activities in areas that do not contain documented archeological resources, but where such resources may be present in a buried context. Impacts related to inadvertent discovery could range from minor to moderate, depending on the nature of the find and on the extent of damage. Mitigation measure MM-AR-1 (see Appendix C) describes the process by which any unanticipated discoveries would be handled so as to minimize disturbances to previously unknown sites. When implemented, this measure would reduce potential impacts associated with inadvertent discoveries during relevant actions.

A portion of the management actions associated with Alternative 2 would result in long-term, beneficial impacts on known archeological sites, either through restrictions on types of visitor use that can cause damage to sites (camping), restoration of areas that have been the focus of inappropriate use (such as informal trails or recreational facilities), or stabilization of site surfaces through revegetation and other restorative actions. In some instances, actions that may ultimately benefit a resource also have the potential to adversely affect site elements if done in an inappropriate or careless manner. Mitigation recommendations have been included in the impact discussion (in Appendix C) as appropriate.

In areas of known or newly discovered sites, intensity of impacts on archeological resources relates to the importance of the information they contain and the extent of disturbance or degradation. Even the disturbance of a small portion of a rare or unstudied site type (impacts to less than 10% of the total site area) can be considered an adverse effect to a site's integrity. Conversely, impacts to 25% or more of the site area of a well-known and common site type may be considered not adverse. As above, implementation of mitigation measures would reduce the potential for adverse effects.

Cumulative Impacts from Alternative 2: Self-Reliant Visitor Experiences and Extensive Floodplain Restoration

Past Actions

Past actions listed in Appendix C included some manner of ground-disturbing activities (road construction, housing unit removal or construction, recontouring land for habitat restoration), were subject to federal regulations, including NEPA and section 106 of the NHPA. The 2008 programmatic agreement (and the currently planned MRP-specific programmatic agreement) contains provisions for

archeological survey, testing, monitoring, and data recovery prior to each project. Information learned during this process continues to inform the current body of knowledge about archeological resources at Yosemite. To date, several major archeological research projects have resulted from activities conducted for these actions, with at least two additional reports (Wahhoga and Crane Flat Utilities projects) in progress.

Present Actions

The *Yosemite Fire Management Plan* contains provisions regarding proper treatment and recording of archeological resources; this plan does not contain specific plans for archeological research. In addition to the *Yosemite Fire Management Plan*, the *Programmatic Parkwide Yosemite Facelift Volunteer Event* (2011) resulted in categorical exclusions signifying that no significant environmental effects (including effects on cultural resources) has occurred or will occur.

Reasonably Foreseeable Future Actions

By following the processes and provisions of federal regulations and internal documents (e.g., the 1999 and/or 2008 programmatic agreements, *2006 Management Policies*, and others), the park would identify archeological resources in any areas scheduled for ground-disturbing actions and provide worker education, monitoring, and/or subsurface testing to reduce or avoid potential impacts. If mitigation through these means is not feasible, park archeologists may consult with the ACHP to resolve adverse effects. Beneficial impacts on individual sites may result from restoration of natural vegetation communities and resulting reduction of erosion, trampling, and other visitor use impacts.

Overall Cumulative Impact from Alternative 2: Self-Reliant Visitor Experiences and Extensive Floodplain Restoration

Many of the combined past, present, and reasonably foreseeable future actions would have a negligible or beneficial impact on archeological resources. For those actions with potential adverse impacts, implementation of all appropriate mitigation and consultation would reduce or avoid those impacts. With avoidance measures in place, many sites may still be adversely affected by facilities construction, especially in Yosemite Valley and El Portal.

Environmental Consequences of Alternative 3: Dispersed Visitor Experiences and Extensive Riverbank Restoration

All River Segments

Table 9-248 summarizes proposed actions under Alternative 3, and potential impacts to archeological sites, and then offers analysis under NEPA and NHPA regulations.

Impacts of Actions to Protect and Enhance River Values

None of the proposed Alternative 3 actions to protect and enhance river values, other than those actions common to Alternatives 2–6, would have the potential to affect archeological resources.

TABLE 9-248: IMPACTS FROM ALTERNATIVE 3 ACTIONS

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
All segments	Actions to Protect and Enhance River Values	None of the overall actions to protect and enhance river values in all river segments would affect archeological resources beyond those actions common to Alternatives 2–6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2–6
All segments	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	None of the overall actions in any of the river segments to manage visitor use and facilities would affect archeological resources beyond except those actions common to Alternatives 2–6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2–6
Segment 1	Actions to Protect and Enhance River Values	No proposed actions to protect and enhance river values in Segment 1 beyond those actions that are common to Alternatives 2–6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2–6
Biological Resource Actions			
Segment 1	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	<p>Reduce designated camping and remove bear boxes at Little Yosemite Valley Backpackers Campground</p> <p>Convert Merced Lake High Sierra Camp into temporary pack camp, removing permanent infrastructure</p> <p>Expand Merced Lake Backpackers Campground into portions of former Merced Lake High Sierra Camp</p> <p>Limit numbers of hikers</p>	<p><i>NEPA</i>: Proposed reduction of camping and limiting numbers of hikers in Segment and associated removal of infrastructure would potentially result in local, long-term beneficial impacts on known archeological site found within the Yosemite Valley Backpackers Campground and Merced Lake High Sierra Camp area.</p> <p>Proposed expansion of the Merced Lake Backpackers Campground is proposed in an area without archeological sites; there would be no adverse impact.</p> <p>Ground disturbing activities associated with removal of infrastructure and restoration of former camping areas may result in local, long-term, minor, adverse impacts on known archeological sites, in cases where avoidance is not possible.</p> <p><i>MHPA</i>: There are not NRHP listed, or sites determined to be NRHP eligible in Segment 1. No historic properties would be affected.</p>
Segment 2	Actions to Protect and Enhance River Values	<p>Restore portions of Stoneman Meadow</p> <p>Remove portions of Southside Drive and the Curry Orchard parking lot</p> <p>Conduct several habitat restoration actions within the East Valley campgrounds</p>	<p><i>NEPA</i>: In areas where no archeological resources have been recorded Stoneman Meadow, Curry Orchard parking Lot, Boys Town housing area, Village Store, Ahwanee Meadow), there is no adverse impact.</p> <p>Proposed removal of campsites and associated infrastructure within the East Valley campgrounds would result in local, minor to moderate long-term beneficial impact on known archeological sites found within the campgrounds, by redirecting and/or reducing visitor use.</p>

TABLE 9-248: IMPACTS FROM ALTERNATIVE 3 ACTIONS (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Biological Resource Actions (cont.)			
Segment cont.)		<p>Remove facilities and infrastructure, conversion of the area into day use river access and picnicking in Housekeeping Camp</p> <p>Remove Sugar Pine and Ahwahnee bridges and reroute trail that currently extends between these bridges</p> <p>Reroute portions of the Valley Loop Trail out of the meadow</p> <p>Archeological sites would be considered in planning and avoided whenever possible</p>	<p>When avoidance is not possible, ground disturbing activities associated with removal of infrastructure, restoration of former camping areas, bridge replacement, and trail rerouting may result in local, long-term, minor to moderate adverse impacts from artifact displacement, exposure to erosion, and loss of vertical and horizontal site integrity.</p> <p>Removing the northern abutment of Sugar Pine Bridge would result in a long-term major adverse impact to the known archeological site, assuming avoidance is not possible.</p> <p>Ground disturbance and rerouting of the Valley Loop Trail would result in a local, long-term moderate to major adverse impact, as this trail is itself an historic property.</p> <p><i>NHPA</i>: Site specific measures would be developed to avoid adverse effects when possible. Determination of effects is site specific, when avoidance is not possible.</p> <p>Removal of the Sugar Pine Bridge and rerouting of the Valley Loop Trail would result in an adverse effect. Mitigation measures may reduce the potential for adverse effects.</p>
Programmatic Resource Actions			
Segment 2	<p>Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities</p>	<p>Remove and/or relocate campsites from Backpackers, Lower Pines, North Pines, and Upper Pines campgrounds</p> <p>Restore areas with native vegetation</p> <p>Create new recreational vehicle campsites at Upper Pines Loop addition</p> <p>Remove various facilities associated with Yosemite lodge</p> <p>Construct new concessioner employee housing and parking areas</p> <p>Construct new parking west of Yosemite Lodge</p> <p>Construct a shuttle stop for Camp 4</p> <p>Reroute Northside Drive south of the parking area, and formalize Camp 6/Village Center Parking Area</p>	<p><i>NEPA</i>: Reduction in focused visitor use at areas on or near known archeological resources would potentially result in local, long-term beneficial impacts.</p> <p>Adverse impacts on known archeological resources from restoration, facilities demolition, removal, and other ground disturbing would potentially occur during active ground disturbance, and be local, long-term minor to moderate adverse in cases where avoidance is not possible.</p> <p>Overall reduced visitor numbers would have a negligible effect on archeological sites.</p> <p><i>NHPA</i>: Determination of effects is site specific.</p>

TABLE 9-248: IMPACTS FROM ALTERNATIVE 3 ACTIONS (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Programmatic Resource Actions (cont.)			
Segment 2 (cont.)		Decrease peak day visitor numbers Archeological sites would be considered in planning and avoided whenever possible	
Segments 3 and 4	Actions to Protect and Enhance River Values	No proposed actions to protect and enhance river values in Segments 3 and 4 beyond those actions that are common to Alternatives 2–6.	Discussed in table 9-246: Impacts from Actions Common to Alternatives 2–6
Segments 3 and 4	Manage Visitor Use and Facilities	Construction of replacement employee housing and administrative group camping in the Abbeville/Trailer Village area Archeological sites would be considered in planning and avoided whenever possible	<i>NEPA</i> : Adverse impacts on known archeological resources from restoration, facilities demolition, removal, and other ground disturbing would potentially occur during active ground disturbance, and be local, long-term minor to moderate adverse in cases where avoidance Site specific measures would be developed to avoid adverse effects when possible. is not possible. <i>NHPA</i> : Determination of effects is site specific.
Biological Resource Actions			
Segments 5, 6, 7, and 8	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	Eliminate Wawona stables operations Archeological sites would be considered in planning and avoided	<i>NEPA</i> : Elimination of stables, relocation of stock campsites, and removal of camping sites within the Wawona Campground may have a long-term, beneficial impact on archeological sites within and near these areas. <i>NHPA</i> : No historic properties are affected.
Programmatic Resource Actions			
Segments 5, 6, 7, and 8	Actions to Protect and Enhance River Values	Remove two stock campsites from Wawona stock camp Relocate sites to Wawona stables Archeological sites would be considered in planning and avoided	<i>NEPA</i> : Actions to remove two stock campsites from near known archeological sites may have a long-term, beneficial impact on archeological sites within and near these areas. <i>NHPA</i> : No historic properties are affected.
Segments 5, 6, 7, and 8	Manage Visitor Use and Facilities	Remove two stock campsites from Wawona stock camp Remove Wawona tennis courts Remove 32 campsites in Wawona Campground Redesign bus stop at Wawona Store	<i>NEPA</i> : Actions to remove campsites from near known archeological sites may have a long-term, beneficial impact on archeological sites within and near these areas. Soil decompaction, revegetation, and/or other ground disturbing activities would occur in or near a known archeological site. During these actions, adverse impacts would be local, long-term, and minor to moderate. <i>NHPA</i> : As actions are within or near known archeological sites, there is an adverse effect. Mitigation measures may reduce the potential for adverse effects.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

None of the proposed Alternative 3 actions to manage visitor use and facilities, other than those actions common to Alternatives 2–6, would have the potential to affect archeological resources.

Segment 1: Merced River above Nevada Fall

Impacts of Actions to Protect and Enhance River Values

None of the proposed Alternative 3 actions to protect and enhance river values, other than those actions common to Alternatives 2–6, would have the potential to affect archeological resources in Segment 1.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Several actions related to management of visitor use and facilities would have the potential to affect archeological resources in Segment 1. These actions include reducing designated camping and removing bear boxes at Little Yosemite Valley Backpackers Campground; converting the Merced Lake High Sierra Camp into a temporary pack camp with a daily limit of 15 people, removing permanent infrastructure, and redesignating the area as Wilderness; and expanding Merced Lake Backpackers Campground into portions of the former Merced Lake High Sierra Camp. Ground disturbance associated with these actions could displace artifacts and result in increased erosion. Limits on the number of hikers between Little Yosemite Valley and Merced Lake would also be enacted through a pass or wilderness trailhead quota system. Under NEPA, ground disturbance on or near archeological sites would result in local, long-term, minor to moderate adverse impacts. There are not NRHP listed, or sites determined to be eligible for the NRHP in Segment 1. Under NHPA, no historic properties would be affected.

Little Yosemite Valley Campground is largely within a known prehistoric archeological site. The proposed reduction in designated campsites and removal of bear boxes would potentially result reduce the number of visitors, thereby lessening erosion and trampling.

The Merced Lake High Sierra Camp is also partially within a known prehistoric archeological site. Proposed conversion of the camp to a temporary pack camp with a limit of 15 daily visitors, removal of permanent infrastructure, and restoration of the area to a natural condition, would remove some sources of concentrated visitor use disturbances. A portion of the area would be used for an expansion of the Merced Lake Backpackers Campground.

The trail between Little Yosemite Valley and Merced Lake crosses within or near the known boundaries of several archeological sites. Limiting pedestrian traffic on this trail through a zone pass or wilderness trailhead quota system (75 hikers daily limit) would reduce the potential for disturbance on these sites through trampling, erosion, vandalism, or artifact collection.

Segment 2: Yosemite Valley

Impacts of Actions to Protect and Enhance River Values

Some of the Alternative 3 proposed actions in Segment 2 to protect and enhance river values have the potential to disturb archeological resources. Proposed actions include several habitat restoration actions within the East Valley campgrounds, and the removal of the Sugar Pine and Ahwahnee bridges and rerouting the trail that currently extends between these bridges. Portions of the Valley Loop Trail would also be rerouted onto upland areas in Slaughterhouse and Bridalveil meadows. Actions relating to the restoration of Stoneman Meadow and Curry Orchard parking lot, and realignment of Southside Drive through the Boys Town housing area do not occur in the vicinity of archeological sites.

Under Alternative 3, some campsites would be removed from the East Valley campgrounds, and limited restoration of floodplains and other sensitive habitats would occur. Several archeological sites are located at least partially within the East Valley campgrounds. Removal of campsites and associated infrastructure and subsequent restoration of native vegetation within the campground areas would reduce visitor impact, although the restoration actions themselves could cause adverse impacts if artifacts are displaced or soils temporarily exposed to erosion during decompaction or revegetation activities. Similarly, known cultural resources are in the vicinity of Housekeeping Camp.

Avoidance of known archeological sites is always the preference; there could be unanticipated discoveries during ground disturbing activities.

Alternative 3 calls for removal of the Sugar Pine and Ahwantee bridges, and some rerouting of the associated trail. A large archeological site is directly adjacent to (and likely beneath) the northern abutment of Sugar Pine Bridge. Removal of Sugar Pine Bridge has the potential to cause an adverse effect on this archeological resource. Other than this exception, no archeological resources have been recorded in the immediate vicinity of either the Sugar Pine or the Ahwahnee bridges, or the multiuse trail between these two bridges. Rerouting the trail to the north side of the river may result in the trail encroaching on one or more of the known archeological sites in the likely reroute area. Avoidance of known archeological sites is always the preference.

The Valley Loop Trail, itself a known historic property, would be rerouted out of wetland areas through Slaughterhouse and Bridalveil meadows. Changes to this Trail is an adverse impact (NEPA) and effect (NHPA). Although no archeological resources are recorded in the area between the Village Store and Ahwahnee Meadow, recontouring and revegetation of this area after removal of housing and other construction could result in the inadvertent discovery of one or more deeply buried archeological resources. As a programmatic action, all trail reroutes would consider impacts on archeological resources and be located away from known archeological sites to the extent practicable. Mitigation measures MM-AR-2 (and/or -3, see Appendix C) would be necessary if it is not possible to reroute the trail off of archeological resources.

While inadvertent discovery of archeological resources is not necessarily an impact in and of itself, discovery can result in damage to sites through exposure of artifacts to erosion, collection, and displacement. Implementation of mitigation measure MM-AR-1 (see Appendix C) is recommended to reduce or avoid the potential impacts associated with inadvertent discovery. Likewise, a program of

intensive surface survey (and/or limited subsurface testing mitigation measure MM-AR-2, see Appendix C) is recommended for actions that would take place within or near the boundaries of a known archeological resource. An appropriate treatment plan could then be developed to reduce or avoid potential adverse impacts and effects associated with ground disturbance through construction or restoration.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 3, some campsites would be removed or relocated from Backpackers, Lower Pines, North Pines, and Upper Pines campgrounds. Removal areas would be restored with native vegetation. New recreational vehicle (RV) campsites would be constructed at the Upper Pines Loop addition. Various facilities associated with Yosemite Lodge would be removed, and new concessioner employee housing and parking would be constructed in areas close to known archeological sites. New parking would also be provided west of Yosemite Lodge, and a formal shuttle stop would be constructed for Camp 4. Overall, peak day visitor numbers to the Valley would decrease over current rates.

Under Alternative 3, removal of campsites from sensitive areas in the Backpackers, Lower Pines, North Pines, and Upper Pines campgrounds and restoration of native vegetation would lessen visitor impact, stabilize ground surface, and reduce erosion, trampling, and artifact collection that can result from heavy visitor use. Ground disturbance associated with revegetation activities, including use of any heavy machinery, could disturb shallow cultural deposits.

Replacement of removed sites at Backpackers Campground at a western extension of the campground and construction of new concessioners' housing and parking near Yosemite Lodge would occur within or near known sites in Segment 2. All ground-disturbing activities associated with the creation of new campsites and facilities would have the potential to adversely impact those sites.

The reduced numbers of day use and overnight visitors proposed under the Alternative 3 actions to manage visitor use and facilities in Segment 2 would not have a measureable effect on archeological resources. While visitor use can and does affect sites, impacts are much more dependent on local use specific to areas that contain one or more archeological resources. A reduction in the overall visitor numbers would not necessarily reduce impacts on individual sites.

Restoration of floodplain and other ecosystems in former campsites would result a potential for impacts restoration activities. Implementation of mitigation measures MM-AR-2 (controlled subsurface testing and treatment plan) and/or MM-AR-3 (archeological monitoring) presented in Appendix C would reduce or avoid the potential adverse effects. Similarly, implementation of MM-AR-2 would reduce or avoid adverse effects associated with construction of new or replacement campsites, concessioners' housing, parking spaces, and a shuttle stop.

Yosemite Lodge and Camp 4. Under Alternative 3, proposed new parking spaces west of Yosemite Lodge and a formal shuttle stop at Camp 4 could encroach on known archeological sites. Ground disturbances associated with these actions could result in adverse impacts on shallow subsurface cultural deposits.

Segments 3 and 4: Merced River Gorge and El Portal

Impacts of Actions to Protect and Enhance River Values

No actions under Alternative 3 to protect and enhance river values in Segments 3 and 4 would affect archeological resources beyond those actions common to Alternatives 2–6.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

No actions under Alternative 3 to manage visitor use and facilities in Segments 3 and 4 would affect archeological resources beyond those actions common to Alternatives 2–6.

Segments 5, 6, 7 and 8: South Fork Merced River

Impacts of Actions to Protect and Enhance River Values

Under Alternative 3, actions include removal and restoration of the Wawona Golf Course and relocation of two Wawona stock camp sites out of a known cultural site to a location next to the Wawona stables. Mitigation measures MM-AR-2 (and/or 3 see Appendix C) are recommended to avoid potential adverse effects, resulting in no historic properties affected.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 3, the Wawona tennis courts would be removed and two stock campsites would be relocated to the Wawona stables from their current location within a sensitive resource area in the Wawona stock camp. Similarly, some campsites would be removed from archeological sites within the Wawona Campground. A bus stop at Wawona Store would be redesigned to accommodate visitor use.

Implementation of mitigation measure MM-AR-3 (archeological monitoring, see Appendix C) during removal of the tennis courts would reduce or avoid potential adverse effects.

Summary of Impacts from Alternative 3: Dispersed Visitor Experiences and Extensive Riverbank Restoration

A number of the Alternative 3 management actions would have the potential to result in minor to major impacts on known prehistoric and historic-era archeological resources through ground-disturbing actions related to restoration, construction, and facilities removal. These could result in short-term exposure of site soils to erosional forces, displacement of artifacts, and diminished integrity of horizontal and vertical site patterning. Mitigation measure MM-AR-2 (see Appendix C) would delineate the process by which a site could be tested and characterized, and an appropriate treatment plan developed. Mitigation measure MM-AR-3 (see Appendix C) would provide for an archeological monitor to be present for minimally invasive construction and restoration ground-disturbing activities within sites. Under NHPA, these measures would help to avoid, minimize, or reduce potential adverse effects associated with the proposed actions.

Some of the management actions associated with Alternative 3 would result in long-term, beneficial impacts on known archeological sites, either through restrictions on types of visitor use that can cause damage to sites (camping), restoration of areas that have been the focus of inappropriate use such as informal trails or recreational facilities), or stabilization of site surfaces through revegetation and other restorative actions. In some instances, actions that may ultimately benefit a resource also have the potential to adversely impact site elements if done in an inappropriate or careless manner. Mitigation recommendations have been included in the impact discussion as appropriate, to reduce or avoid adverse effects. Under Alternative 3, fewer campsites and other facilities would be removed from archeologically sensitive areas, but correspondingly less new construction would occur in known archeological sites.

Cumulative Impacts from Alternative 3: Dispersed Visitor Experiences and Extensive Riverbank Restoration

Past Actions

Past actions listed in Appendix C included some manner of ground-disturbing activities (road construction, housing unit removal or construction, recontouring land for habitat restoration), were subject to federal regulations, including NEPA and section 106 of the NHPA. Furthermore, the 2008 programmatic agreement contains provisions for an archeological survey, testing, monitoring, and data recovery prior to each project. Information learned during this process continues to inform the current body of knowledge about archeological resources at Yosemite. To date, several major archeological research projects have resulted from activities conducted for these actions, with at least two additional reports (Wahhoga and Crane Flat Utilities projects) in progress.

Present Actions

The *Yosemite Fire Management Plan* contains provisions regarding proper treatment and recording of archeological resources; however, this plan does not contain specific plans for archeological research. In addition to the *Yosemite Fire Management Plan*, the *Programmatic Parkwide Yosemite Facelift Volunteer Event* (2011) resulted in categorical exclusions signifying that no significant environmental effects including effects on cultural resources) has occurred or will occur.

Reasonably Foreseeable Future Actions

By following the processes and provisions of federal regulations and internal documents (e.g., the 1999 and/or 2008 programmatic agreements, *Management Policies 2006*, and others), the park would identify archeological resources in any areas scheduled for ground-disturbing actions and provide worker education, monitoring, and/or subsurface testing to reduce potential adverse effects. If mitigation through these means is not feasible, park archeologists may consult with the ACHP. With avoidance measures in place, many sites may still be adversely affected by facilities construction, especially in Yosemite Valley and El Portal. Beneficial impacts on individual sites may result from restoration of natural vegetation communities and resulting reduction of erosion, trampling, and other visitor use impacts.

Overall Cumulative Impact from Alternative 3: Dispersed Visitor Experiences and Extensive Riverbank Restoration

Many of the combined past, present, and reasonably foreseeable future actions would have a negligible or beneficial impact on archeological resources. For those actions with potential adverse impacts, implementation of all appropriate mitigation and consultation would reduce the potential for, or avoid those impacts.

Environmental Consequences of Alternative 4: Resource-Based Visitor Experiences and Targeted Riverbank Restoration

All River Segments

Table 9-249 summarizes proposed actions under Alternative 4, and potential impacts to archeological sites, and then offers analysis under NEPA and NHPA regulations.

Impacts of Actions to Protect and Enhance River Values

No actions to protect and enhance river values, other than those actions common to Alternatives 2–6, would have the potential to affect archeological resources.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

None of the proposed Alternative 4 actions to manage visitor use and facilities, other than those actions common to Alternatives 2–6, would have the potential to affect archeological resources.

Segment 1: Merced River above Nevada Fall

Impacts of Actions to Protect and Enhance River Values

None of the proposed Alternative 4 actions to protect and enhance river values, other than those actions common to Alternatives 2–6, would have the potential to affect archeological resources.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Some of the Alternative 4 actions related to management of visitor use and facilities in Segment 1 include reducing designated camping and removing bear boxes at Little Yosemite Valley Backpackers Campground, and expanding Merced Lake Backpackers Campground into the former Merced Lake High Sierra Camp. The Merced Lake High Sierra Camp would be closed, restored to a natural condition, and redesignated as Wilderness, while limits on the number of hikers between Little Yosemite Valley and Merced Lake would also be enacted through a pass or wilderness trailhead quota system.

Little Yosemite Valley Campground is located largely within a known prehistoric archeological site. The proposed reduction in designated campsites and removal of bear boxes under Alternative 4 would reduce the number of visitors, thereby lessening erosion and trampling.

TABLE 9-249: IMPACTS FROM ALTERNATIVE 4 ACTIONS

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
All segments	Actions to Protect and Enhance River Values	None of the overall actions to protect and enhance river values in all river segments would affect archeological resources beyond those actions common to Alternatives 2-6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2-6
All segments	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	None of the overall actions in any of the river segments to manage visitor use and facilities would affect archeological resources beyond except those actions common to Alternatives 2-6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2-6
Segment 1	Actions to Protect and Enhance River Values	No proposed actions to protect and enhance river values in Segment 1 beyond those actions that are common to Alternatives 2-6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2-6
Biological Resource Actions			
Segment 1	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	<p>Reduce designated camping and remove bear boxes at Little Yosemite Valley Backpackers Campground</p> <p>Expand Merced Lake Backpackers Campground into portions of former Merced Lake High Sierra Camp</p> <p>Close Merced Lake High Sierra Camp, with restoration</p> <p>Limit numbers of hikers</p> <p>Archeological sites would be considered in planning and avoided when possible</p>	<p><i>NEPA</i>: Proposed reduction of camping and limiting numbers of hikers in Segment and associated removal of infrastructure would potentially result in a local, long-term beneficial impact on known archeological sites found within the Yosemite Valley Backpackers Campground and Merced Lake High Sierra Camp area, by redirecting visitor use away from sensitive areas. Proposed expansion of the Merced Lake Backpackers Campground is proposed in an area without archeological sites; there would be no adverse impact.</p> <p>Assuming avoidance is not possible, ground disturbing activities associated with removal of infrastructure and restoration of former camping areas may result in local, long-term, minor to moderate adverse impacts on known archeological sites.</p> <p><i>NHPA</i>: There are not NRHP listed, or sites determined to be eligible for NRHP eligible sites in Segment 1. No historic properties would be affected.</p>
Segment 2	Actions to Protect and Enhance River Values	<p>Restore portions of Stoneman Meadow</p> <p>Remove portions of Southside Drive and the Curry Orchard parking lot</p> <p>Conduct several habitat restoration actions within the East Valley campgrounds</p> <p>Remove facilities and infrastructure restoration of floodplain and riparian habitat in Housekeeping Camp</p>	<p><i>NEPA</i>: In areas where no archeological resources have been recorded Stoneman Meadow, Curry Orchard parking Lot, Boys Town housing area), there would be a negligible impact on archeological properties.</p> <p>Proposed removal of campsites and associated infrastructure within the East Valley campgrounds would potentially result in local, long-term beneficial impacts on the known archeological sites found within the campgrounds, by redirecting visitor use away from sensitive areas.</p>

TABLE 9-249: IMPACTS FROM ALTERNATIVE 4 ACTIONS (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Biological Resource Actions (cont.)			
Segment 2 (cont.)		Remove Sugar Pine and Ahwahnee bridges and reroute trail that currently extends between these bridges Reroute portions of the Valley Loop Trail out of the meadow Archeological sites would be considered in planning and avoided when possible	Ground disturbing activities associated with removal of infrastructure and facilities, and restoration of former camping areas may result in local, long-term, minor to moderate, adverse impacts from artifact displacement, exposure to erosion, and loss of vertical and horizontal site integrity, in cases where avoidance is not possible. Removing the northern abutment of Sugar Pine Bridge would result in a local, long-term major adverse impact to the known archeological site. Ground disturbing activities associated with removal of the bridges and rerouting the associated trail may also result in local, long-term, minor to major adverse effects from artifact displacement, exposure to erosion, and loss of vertical and horizontal site integrity. Ground disturbance and rerouting of the Valley Loop Trail would result in a local, long-term major adverse effect, as this trail is itself an historic property. <i>NHPA</i> : Determination of effects is site specific, when avoidance is not possible. Removal of the Sugar Pine Bridge and rerouting of the Valley Loop Trail would result in an adverse effect. Mitigation measures may reduce the effects.
Programmatic Resource Actions			
Segment 2	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	Remove and/or relocate campsites from Backpackers, Lower Pines, North Pines, and Upper Pines campgrounds Restore areas with native vegetation Create new recreational vehicle campsites at Upper Pines Loop addition Create new campsites at the Upper and Lower River campgrounds, Upper Pines addition, the Curry Village stables area, and west of Yosemite lodge Remove various facilities associated with Yosemite lodge Move Camp 6 north from the river, and formalize parking in Camp 6/Village Parking Area Construct new concessioner employee housing and parking areas	<i>NEPA</i> : General reduction in focused visitor use at areas on or near known archeological resources would potentially result in a local, long-term beneficial impact. Adverse impacts on known archeological resources from restoration, facilities demolition, removal, new construction and other ground disturbing activities would be local, long-term, and minor to moderate, in cases where avoidance is not possible. <i>NHPA</i> : Determination of effects is site specific, when avoidance is not possible.

TABLE 9-249: IMPACTS FROM ALTERNATIVE 4 ACTIONS (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Programmatic Resource Actions (cont.)			
Segment 2 (cont.)		<p>Construct new parking west of Yosemite Lodge</p> <p>Construct a pedestrian underpass and roundabout at the Village Drive/Northside Drive intersection</p> <p>Construct a shuttle stop for Camp 4</p> <p>Archeological sites would be considered in planning and avoided when possible</p>	
Segments 3 and 4	Actions to Protect and Enhance River Values	No proposed actions to protect and enhance river values in Segments 3 and 4 beyond those actions that are common to Alternatives 2–6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2–6
Segments 3 and 4	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	Construction of high-density employee housing and remote visitor parking in Abberville and Trailer Village	<p><i>NEPA</i>: Assuming avoidance is not possible, ground disturbing may occur in or near known archeological site. During these actions, impacts would be local, long-term, minor to moderate, and adverse.</p> <p><i>NHPA</i>: As actions are within or near a known archeological site, there is an adverse effect, unless avoidance is possible.</p>
Segments 5, 6, 7, and 8	Actions to Protect and Enhance River Values	<p>Remove two stock campsites from Wawona stock camp</p> <p>Relocate sites to Wawona stables</p> <p>Continued use of Wawona golfcourse</p>	<p><i>NEPA</i>: Actions to remove two stock campsites from near known archeological sites would result in local long-term, beneficial impacts by stabilizing elements of archeological features and preventing future disturbances.</p> <p>At the Wawona Golf Course, continued use of golf course will occur in or near known archeological sites; impacts would likely be negligible as golf course fill covers the site.</p> <p><i>NHPA</i>: These actions would not affect historic properties.</p>
Segments 5, 6, 7, and 8	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	<p>Remove two stock campsites from Wawona stock camp</p> <p>Remove 32 campsites in Wawona Campground</p>	<p><i>NEPA</i>: Relocation of stock campsites, and removal of sites within the Wawona Campground may have a long-term, beneficial impact on archeological sites within and near these areas, by redirecting visitors away from sensitive areas.</p> <p>Ground disturbing may occur in or near known archeological site during these actions, and there would be local, long-term, minor to moderate adverse impacts.</p> <p><i>NHPA</i>: Determination of effects is site specific, when avoidance is not possible.</p>

The Merced Lake High Sierra Camp is located partially within a known prehistoric archeological site. Closure of the camp and its infrastructure, with restoration of the area to a natural condition would remove some sources of concentrated visitor-use disturbances.

The trail between Little Yosemite Valley and Merced Lake crosses within or near the known boundaries of several archeological sites. Limiting pedestrian traffic on this trail through a zone pass or wilderness trailhead quota system (limit 100 hikers daily) would reduce the potential for disturbances to these sites by trampling, erosion, vandalism, or artifact collection.

There are not NRHP listed, or sites determined to be NRHP eligible in Segment 1. Under NHPA, no historic properties would be affected.

Segment 2: Yosemite Valley

Impacts of Actions to Protect and Enhance River Values

Some of the Alternative 4 proposed actions to protect and enhance river values in Segment 2 have the potential to impact archeological resources. Proposed actions include restoring portions of Stoneman Meadow, removing portions of Southside Drive and the Curry Orchard Parking Area, conducting several habitat restoration actions within the East Valley campgrounds, rerouting portions of the Valley Loop Trail, and removing the Sugar Pine and Ahwahnee bridges and rerouting the trail that currently extends between these bridges.

There are no recorded archeological sites within Stoneman Meadow in the vicinity of the proposed restoration, nor have sites been recorded near the Curry Orchard Parking Area or in the Boys Town housing area. The proposed partial restoration of the Curry Orchard Parking Area is not in the vicinity of archeological resources. Removal of 1,335 feet of Southside Drive and realigning the road through the Boys Town housing area would occur in areas not known to contain archeological resources.

Under Alternative 4, removal of campsites from the East Valley campgrounds and restoration of floodplains and other sensitive habitats would be identical to that proposed under Alternative 3. Several archeological sites are located at least partially within the East Valley campgrounds. Removal of campsites and associated infrastructure and subsequent restoration of native vegetation within the campground areas would reduce visitor disturbance, although the restoration actions themselves could cause adverse impacts if artifacts are displaced or soils temporarily exposed to erosion during decompaction or revegetation activities. Several archeological sites are at least partially within the East Valley campgrounds. Removal of campsites and associated infrastructure and subsequent restoration of native vegetation within the campground areas restoration actions would result in ground disturbing activities that may result in impacts if artifacts are displaced or soils temporarily exposed to erosion during decompaction or revegetation activities. Avoidance of known archeological sites is always the preference.

Construction of a pedestrian underpass and roundabout at the Village Drive/Northside Drive intersection is intended to address traffic congestion and pedestrian/vehicle conflicts. This is in the

vicinity of known resources. Consideration (and avoidance if possible) of resources will occur during the planning stages.

Alternative 4 also calls for removal of the Sugar Pine and Ahwahnee bridges and the pedestrian trail between them. A large archeological site is directly adjacent to (and likely beneath) the northern abutment of Sugar Pine Bridge. Removal of the Sugar Pine Bridge has the potential to cause an adverse effect on this archeological site. Other than this exception, no archeological resources have been recorded in the immediate vicinity of either the Sugar Pine or the Ahwahnee bridges, or the multiuse trail between these two bridges. Rerouting the trail to the north side of the river may result in the trail encroaching on one or more of the known archeological sites in the likely reroute area.

Alternative 4 would reroute 420 feet of the Valley Loop Trail, itself a known historic property, out of wetland areas through Slaughterhouse and Bridalveil meadows. For other areas of trail reroutes, planning would consider impacts on archeological resources, and be located away from known archeological sites to the extent practicable. Mitigation measures MM-AR-2 (and/or -3, see Appendix C) would be necessary if it is not possible to reroute the trail off of, or away from, archeological resources.

While inadvertent discovery of archeological resources is not necessarily an impact in and of itself, discovery can result in damage to sites through exposure of artifacts to erosion, collection, and displacement. Implementation of mitigation measure MM-AR-1 (see Appendix C) is recommended to reduce potential impacts associated with inadvertent discovery. Likewise, a program of intensive surface survey and/or limited subsurface testing (MM-AR-2) is recommended for actions that would take place within or near the boundaries of a known archeological resource. An appropriate treatment plan could then be developed to reduce potential impacts associated with ground disturbance through construction or restoration. With implementation of these two mitigation measures, under NHPA, the potential for adverse effects resulting from Alternative 4 actions to protect and enhance river values in Segment 2 would be reduced.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 4, some campsites would be removed or relocated from Backpackers, Lower Pines, North Pines, and Upper Pines campgrounds. Removal areas would be restored with native vegetation. New RV campsites would be constructed at the Upper Pines Loop addition, and more new campsites (walk-in, drive-in, and RV) would be constructed at the former Upper and Lower River campgrounds, an Upper Pines addition, the Curry Village stables area, and west of Yosemite Lodge. Various facilities associated with Yosemite Lodge would be removed, and new concessioner employee housing and parking would be constructed in areas close to known archeological sites. Overall, peak day visitor numbers to the Valley would be about the same as current rates.

New pedestrian undercrossings would be constructed at the Camp 6 intersection with Northside Drive and at the intersection of Yosemite Lodge Drive and Northside Drive. New parking would be provided west of Yosemite Lodge, and a formal shuttle stop would be constructed for Camp 4. Construction of pedestrian undercrossings would likely result in adverse impacts on known archeological resources from restoration, facilities demolition, removal, new construction, and other

ground disturbing activities. Unless avoidance is possible, this may result in local, long-term minor to major adverse impacts. Under NHPA, site specific measures would be developed to avoid adverse effects when possible. Determination of effects is site specific. Mitigation measure MM-AR-1 for procedures in the event of inadvertent discovery and mitigation measure MM-AR-2 for testing, assessment, and treatment of known sites prior to ground disturbance may reduce the potential for, or avoid potential effects.

Under Alternative 4, replacement of removed sites at Backpackers Campground at a western extension of the campground and construction of new concessioner housing and parking near Yosemite Lodge would occur within or near known archeological sites in Segment 2. Likewise, construction of new campsites near the Curry Village stables and west of Yosemite Lodge would have the potential to encroach on known sites. All ground-disturbing activities associated with the creation of new campsites and facilities would have the potential to impact these sites.

New campsite construction at the former Upper and Lower River campgrounds would not affect known sites. An archeological resource is known to exist in the vicinity of the proposed Upper Pines Loop addition walk-in campground. Under NHPA, this site is not considered to be significant, and no historic property is affected. The site may still retain traditional cultural resource values under NEPA.

The numbers of day use and overnight visitors proposed under the Alternative 4 actions to manage visitor use and facilities in Segment 2 would not change enough from current levels to have a measureable impact on archeological resources. While visitor use can and does affect sites, effects are more dependent on local use specific to areas that contain one or more archeological resources.

Restoration of floodplain and other ecosystems in former campsites would potentially cause adverse effects on archeological sites during restoration activities. Implementation of mitigation measures MM-AR-2 (controlled subsurface testing and treatment plan) and/or MM-AR-3 (archeological monitoring) presented in Appendix C may reduce the potential adverse effects. Similarly, implementation of MM-AR-2 would reduce or avoid adverse effects associated with construction of new campsites and other facilities in the vicinity of known sites.

While inadvertent discovery of archeological resources is not necessarily an impact in and of itself, discovery can result in damage to sites through exposure of artifacts to erosion, collection, and displacement. Implementation of mitigation measure MM-AR-1 (see Appendix C) is recommended to reduce or reduce potential impacts associated with inadvertent discovery during construction of new campsites in the former Upper and Lower River campgrounds.

Yosemite Lodge and Camp 4. Proposed new parking spaces with Alternative 4 west of Yosemite Lodge and a formal shuttle stop at Camp 4 could encroach on known archeological sites, as could the proposed pedestrian undercrossing at Yosemite Lodge Drive. There are no known sites near the proposed Camp 6 intersection undercrossing.

Segments 3 and 4: Merced River Gorge and El Portal

Impacts of Actions to Protect and Enhance River Values

No actions proposed under Alternative 4 to protect and enhance river values in Segments 3 and 4 would affect archeological resources beyond those actions common to Alternatives 2–6.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 4, high-density employee housing and remote visitor parking would be constructed in the Abbeville and Trailer Village area in Segment 4. Proposed housing for 258 employees and parking for 200 vehicles would potentially be located on or near a known archeological site, and could result in impacts due to ground disturbance during construction. Avoidance of archeological sites is always the preferred action. If avoidance is not possible, mitigation measure MM-AR-2 (see Appendix C) describes the process of testing, assessment, and treatment that should be followed prior to beginning ground-disturbing activities within or near the known site boundary. Under NHPA, implementation of this measure would ensure that the potential for adverse effects from these actions would be reduced or avoided.

Segments 5, 6, 7 and 8: South Fork Merced River

Impacts of Actions to Protect and Enhance River Values

Under Alternative 4, two stock campsites would be removed from the Wawona stock camp (within a sensitive resource area). The Wawona Golf Course would not be removed under Alternative 4. Portions of several archeological sites are located within the Wawona Golf Course; the presence of golf course fill overlying cultural deposits may protect them. Continued use of the golf course would likely have a negligible impact on archeological resources.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 4, two stock campsites would be relocated to the Wawona stables area. Thirty-two campsites would be removed from the Wawona Campground, many in archeologically sensitive areas.

Summary of Impacts from Alternative 4: Resource-based Visitor Experiences and Targeted Riverbank Restoration

Several of the management actions proposed under Alternative 4 would have the potential to result in minor to major adverse impacts (NEPA) and adverse effects (NHPA) on known prehistoric and historic-era archeological resources through ground-disturbing actions related to restoration, construction, and facilities removal. These actions could result in short-term exposure of site soils to erosional forces, displacement of artifacts, and diminished integrity of horizontal and vertical site patterning. Mitigation measure MM-AR-2 (see Appendix C) would delineate the process by which a site could be tested and characterized, and an appropriate treatment plan developed. Mitigation measure MM-AR-3 (see Appendix C) would provide for an archeological monitor to be present for

minimally invasive construction and restoration ground-disturbing activities within sites. Under NHPA, these mitigation measures would reduce or avoid adverse effects. Mitigation measure MM-AR-1 (see Appendix C) describes the process by which any unanticipated discoveries would be handled so as to reduce or avoid disturbances to previously unknown sites.

A few of the management actions associated with Alternative 4 may result in long-term, beneficial impacts on known archeological sites, either through restrictions on types of visitor use that can cause damage to sites (camping), restoration of areas that have been the focus of inappropriate use (informal trails or recreational facilities), or stabilization of site surfaces through revegetation and other restorative actions. In some instances, actions that might ultimately benefit a resource also have the potential to adversely impact site elements.

Cumulative Impacts from Alternative 4: Resource-based Visitor Experiences and Targeted Riverbank Restoration

Past Actions

Past actions listed in Appendix C included some manner of ground-disturbing activities (road construction, housing unit removal or construction, recontouring land for habitat restoration), were subject to federal regulations, including NEPA and section 106 of the NHPA. The 2008 programmatic agreement contains provisions for archeological survey, testing, monitoring, and data recovery prior to each project. Information learned during this process continues to inform the current body of knowledge about archeological resources at Yosemite. To date, several major archeological research projects have resulted from activities conducted for these actions, with at least two additional reports (Wahhoga and Crane Flat Utilities projects) in progress.

Present Actions

The *Yosemite Fire Management Plan* and *Yosemite General Management Plan* contain provisions regarding proper treatment and recording of archeological resources; however, neither contains specific plans for archeological research. The *Programmatic Parkwide Yosemite Facelift Volunteer Event* (2011) resulted in categorical exclusions signifying that no significant environmental effects (including effects on cultural resources) has occurred or will occur.

Reasonably Foreseeable Future Actions

By following the processes and provisions of federal regulations and internal documents (e.g., the 1999 and/or 2008 programmatic agreements, *Management Policies 2006*, and others), the park would identify archeological resources in any areas scheduled for ground-disturbing actions and provide worker education, monitoring, and/or subsurface testing to reduce potential adverse effects. If mitigation through these means is not feasible, park archeologists may consult with the ACHP to resolve adverse effects. With avoidance measures in place, many sites may still be adversely affected by facilities construction, especially in Yosemite Valley and El Portal. Beneficial impacts on individual sites may result from restoration of natural vegetation communities and resulting reduction of erosion, trampling, and other visitor use impacts.

Overall Cumulative Impact from Alternative 4: Resource-based Visitor Experiences and Targeted Riverbank Restoration

Many of the combined past, present, and reasonably foreseeable future actions would have a negligible or beneficial impact on archeological resources. For those actions with potential adverse impacts, implementation of all appropriate mitigation and consultation would reduce the potential for, or avoid those impacts.

Environmental Consequences of Alternative 5: Enhanced Visitor Experiences and Essential Riverbank Restoration

All River Segments

Table 9-250 summarizes proposed actions under Alternative 5, and potential impacts to archeological sites, and then offers analysis under NEPA and NHPA regulations.

Impacts of Actions to Protect and Enhance River Values

None of the proposed Alternative 5 actions to protect and enhance river values would have the potential to affect archeological resources beyond those actions common to Alternatives 2–6.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

None of the proposed Alternative 5 actions to manage visitor use and facilities would have the potential to affect archeological resources beyond those actions common to Alternatives 2–6.

Segment 1: Merced River above Nevada Fall

Impacts of Actions to Protect and Enhance River Values

There are no actions under Alternative 5 to protect and enhance river values in Segment 1 other than those actions common to Alternatives 2–6.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 5, some infrastructure would be removed at the Little Yosemite Valley Backpackers Campground, Merced Lake Backpackers Campground, and the Merced Lake High Sierra Camp. Bear boxes would be removed from both backpackers campgrounds and flush toilets would be replaced with composting ones at the Merced Lake Backpackers Camp, but other infrastructure and campground capacities would remain the same as current conditions. Capacity at Merced Lake High Sierra Camp would be reduced to 42 beds per night, and the flush toilets and wastewater treatment system would be removed and replaced with composting toilets. No limits would be placed on the number of hikers on the trail between Little Yosemite Valley and Merced Lake.

TABLE 9-250: IMPACTS FROM ALTERNATIVE 5 ACTIONS

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
All segments	Actions to Protect and Enhance River Values	None of the overall actions to protect and enhance river values in all river segments would affect archeological resources beyond those actions common to Alternatives 2–6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2–6
All segments	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	None of the overall actions in any of the river segments to manage visitor use and facilities would affect archeological resources beyond except those actions common to Alternatives 2–6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2–6
Segment 1	Actions to Protect and Enhance River Values	No proposed actions to protect and enhance river values in Segment 1 beyond those actions that are common to Alternatives 2–6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2–6
Biological Resource Actions			
Segment 1	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	Remove some infrastructure at Little Yosemite Valley Backpackers Campground, Merced Lake Backpackers Campground, Merced Lake High Sierra Camp Reduce capacity at Merced Lake High Sierra Camp	<i>NEPA:</i> Proposed reduction of camping at Merced Lake High Sierra Camp would have a negligible impact on archeological sites in the area. Ground disturbing activities associated with removal of infrastructure may result in local, long-term, minor to moderate adverse impacts on known archeological sites, if avoidance is not possible. <i>NHPA:</i> There are no NHPHP listed, or sites determines to be eligible for the NRHP in Segment 1. No historic properties are affected.
Segment 2	Actions to Protect and Enhance River Values	Conduct limited habitat restoration actions within the East Valley campground floodplains Redesign of Curry Orchard parking lot and associated infrastructure Removal of some East Valley campground sites, with restoration Remove Sugar Pine Bridge and reroute trail that currently extends between these bridges Reroute portions of the Valley Loop Trail out of the meadow Archeological sites would be considered in planning and avoided when possible	<i>NEPA:</i> In areas where no archeological resources have been recorded such as Curry Orchard parking Lot), there would be a negligible impact on archeological properties. Proposed removal of campsites and associated infrastructure within the East Valley campgrounds would potentially result in a local, long-term beneficial impact on the known archeological sites found within the campgrounds. Removing the northern abutment of Sugar Pine Bridge would result in a local, long-term major adverse impact to the known archeological site. Ground disturbing activities associated with removal of infrastructure and restoration of former camping areas and areas of floodplains, and rerouting of the trail between bridges may result in local, long-term, minor to moderate adverse impacts from artifact displacement, exposure to erosion, and loss of vertical and horizontal site integrity, if site avoidance is not possible. Ground disturbance and rerouting of the Valley Loop Trail would result in a local, long-term major adverse effect, as this trail is itself an historic property.

TABLE 9-250: IMPACTS FROM ALTERNATIVE 5 ACTIONS (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Biological Resource Actions cont.)			
Segment 2 (cont.)			<p><i>NHPA</i>: Site specific measures would be developed to avoid adverse effects when possible. Determination of effects is site specific, when avoidance is not possible.</p> <p>Removal of the Sugar Pine Bridge has the potential to cause an adverse effect on an archeological resource. Ground disturbing activities associated with removal of infrastructure and restoration of former camping areas and areas of floodplains, and rerouting of the trail between bridges may also potentially result in adverse effects. Rerouting of the Valley Loop Trail would result in an adverse effect. Mitigation measures may reduce the potential for adverse effects.</p>
Programmatic Resource Actions			
Segment 2	<p>Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities</p>	<p>Remove and/or relocate some campsites from Backpackers, Lower Pines, North Pines, and Upper Pines campgrounds</p> <p>Restore areas with native vegetation</p> <p>Create new campsites at the Upper River Campground, Upper Pines (additional RV sites)</p> <p>Construct new concessioner employee housing and parking areas</p> <p>Construct new parking west of Yosemite Lodge</p> <p>Move Camp 6 north from the river and formalize Camp 6/Village Center Parking</p> <p>Construct a pedestrian underpass and roundabout at the Village Drive/Northside Drive intersection, as well as a roundabout in the same vicinity</p> <p>Construct a shuttle stop for Camp 4</p> <p>Archeological sites would be considered in planning and avoided when possible</p>	<p><i>NEPA</i>: General reduction in focused visitor use at areas on or near known archeological resources would potentially result in a local, long-term beneficial impact.</p> <p>Adverse impacts on known archeological resources from restoration, facilities demolition, removal, new construction, and other ground disturbing activities would potentially occur during active ground disturbance. Unless avoidance is possible, this may result in local, long-term minor to moderate adverse impacts.</p> <p><i>NHPA</i>: Site specific measures would be developed to avoid adverse effects when possible. Determination of effects is site specific.</p>

TABLE 9-250: IMPACTS FROM ALTERNATIVE 5 ACTIONS (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Programmatic Resource Actions (cont.)			
Segments 3 and 4	Actions to Protect and Enhance River Values	No proposed actions to protect and enhance river values in Segments 3 and 4 beyond those actions that are common to Alternatives 2–6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2–6
Segments 3 and 4	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	Construction of high-density employee housing and remote visitor parking in Abbeville and Trailer Village Archeological sites would be considered in planning and avoided when possible	<i>NEPA</i> : Ground disturbing may occur in or near known archeological sites during these actions; impacts would be local, long-term, minor to moderate, and adverse. <i>NHPA</i> : As actions are within or near a known archeological site, there is an adverse effect, unless avoidance is possible.
Segments 5, 6, 7, and 8	Actions to Protect and Enhance River Values	Remove two stock campsites from Wawona stock camp Relocate campsites to Wawona maintenance area Archeological sites would be considered in planning and avoided when possible	<i>NEPA</i> : Actions to remove two stock campsites from near known archeological sites would result in local, long-term, beneficial impacts by stabilizing elements of archeological features and preventing future disturbances. <i>NHPA</i> : Given the concentration of archeological resources in the vicinity of Wawona maintenance area, there is a likely potential for adverse effects, unless avoidance is possible.
Segments 5, 6, 7, and 8	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	Remove two stock campsites from Wawona stock camp Remove some campsites in Wawona Campground Archeological sites would be considered in planning and avoided when possible	<i>NEPA</i> : Relocation of stock campsites, and removal of sites within the Wawona Campground may have a long-term, beneficial impact on archeological sites within and near these areas, by redirecting visitors away from sensitive areas. Ground disturbing activities may occur in or near known archeological site during these actions; impacts would be local, minor to moderate, and potentially adverse, if site avoidance is not possible. <i>NHPA</i> : As actions are within or near a known archeological site, there is an adverse effect, unless avoidance is possible.

Removal of permanent infrastructure at the Little Yosemite Valley Backpackers Campground and Merced Lake High Sierra Camp may have the potential to disturb subsurface cultural materials of known archeological sites. Avoidance of archeological sites is always preferred (even if the sites have not been formally evaluated, or determined to be ineligible for the NRHP, as they may have traditional cultural values outside of criterion D). If impractical to avoid, archeological monitoring (mitigation measure MM-AR-3, see Appendix C) is recommended during ground disturbing activities.

No archeological sites are known to exist in the immediate vicinity of the Merced Lake Backpackers Campground. The slight reduction in facilities and camping capacity would likely not result in any impact on cultural resources.

Segment 2: Yosemite Valley

Impacts of Actions to Protect and Enhance River Values

Some restoration of East Valley campground floodplains and other sensitive habitats would occur under Alternative 5. Hydrologic function of Stoneman Meadow would be improved through redesign of the Curry Orchard Parking Area and associated infrastructure. Removal of some East Valley campground sites would result in restoration of these areas. Sugar Pine Bridge would be removed and the multiuse trail rerouted to the north.

Actions to reroute sections of the Valley Loop Trail would be the same as described for Alternative 2. Limited floodplain restoration under Alternative 5 means there would likely be fewer impacts to archeological sites during ground-disturbing activities. The proposed rerouting of the multiuse trail with Alternative 5 may disturb known archeological sites, unless avoidance is possible. Under NHPA, implementation of mitigation measures MM-AR-2 (Appendix C) for restoration and trail reroute may reduce the potential for, or avoid adverse effects.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 5, facilities would be removed from the Yosemite Lodge area, and some concessioner's housing and parking. Some campsites would be removed from Backpackers, Lower Pines, and North Pines campgrounds, as well as two sites from Upper Pines Campground. Sixteen replacement sites would be constructed at the Backpackers Campground western extension. New camping at the former Upper River Campground, Upper Pines Loop (additional RV sites), and Upper Pines walk-in addition would also be created. Under Alternative 5, day use capacity would accommodate nearly all the current peak day use in Segment 2, accommodating more overnight visitors.

Pedestrian undercrossings would be constructed at Yosemite Lodge Drive and Camp 6 intersections with Northside Drive, and a shuttle stop would be constructed for Camp 4. Construction of the pedestrian undercrossing at Yosemite Lodge Drive would likely result in adverse impacts on known archeological resources from restoration, facilities demolition, removal, new construction, and other ground disturbing activities. Unless avoidance is possible, this may result in local, long-term minor to major adverse impacts. Under NHPA, site specific measures would be developed to avoid adverse effects when possible. Determination of effects is site specific. Ground disturbing activities may likely result in

adverse effects. Mitigation measure MM-AR-1 for procedures in the event of inadvertent discovery and mitigation measure MM-AR-2 for testing, assessment, and treatment of known sites prior to ground disturbance may reduce the potential for, or avoid potential effects.

The reduction in campsite removal and habitat restoration proposed at the East Valley campgrounds would result in some lessening visitor use impacts on known sites in those areas. There may be potential impacts from ground disturbances associated with soil decompaction and revegetation. Under NHPA, mitigation measure MM-AR-1 for procedures in the event of inadvertent discovery and mitigation measure MM-AR-2 for testing, assessment, and treatment of known sites prior to ground disturbance may reduce the potential for or avoid potential effects.

The numbers of day use and overnight visitors proposed under Alternative 5 to manage visitor use and facilities in Segment 2 would not change from current levels enough to have a measureable impact on archeological resources. While visitor use can and does impact sites, effects are much more dependent on local use specific to areas that contain one or more archeological resources.

Segments 3 and 4: Merced River Gorge and El Portal

Impacts of Actions to Protect and Enhance River Values

No actions proposed under Alternative 5 to protect and enhance river values in Segments 3 and 4 would affect archeological resources beyond those actions common to Alternatives 2–6.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 5, high-density employee housing and remote visitor parking would be constructed in the Abbeville and Trailer Village area in Segment 4. Proposed housing for 258 employees and parking for 200 vehicles would potentially occur on or near a known archeological site, resulting in an adverse impact (NEPA) and adverse effect (NHPA). Under NHPA, if avoidance is not possible, mitigation measure MM-AR-2 (see Appendix C) describes the process of testing, assessment, and treatment that should be followed prior to beginning ground-disturbing activities within or near the known site boundary. Implementation of this measure may reduce the potential for adverse effects.

Segments 5, 6, 7 and 8: South Fork Merced River

Impacts of Actions to Protect and Enhance River Values

Two stock campsites would be removed from the Wawona stock camp (within a sensitive resource area). These campsites would be relocated to the Wawona Maintenance area where no archeological sites are known to occur) instead of the Wawona stables. This would result in a long-term beneficial impact.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

As above, the two campsites removed from the Wawona stock camp would be relocated to the Wawona Maintenance area. Some campsites would be removed from the Wawona Campground. Ground disturbing activities may occur in or near known archeological site during these actions. Under NHPA, site specific measures would be developed to avoid adverse effects when possible. Determination of effects is site specific. Mitigation measure MM-AR-1 for procedures in the event of inadvertent discovery and mitigation measure MM-AR-2 for testing, assessment, and treatment of known sites prior to ground disturbance may reduce the potential for, or avoid potential effects.

Summary of Impacts from Alternative 5: Enhanced Visitor Experiences and Essential Riverbank Restoration

Several of the management actions proposed under Alternative 5 have the potential to result in minor to major impacts on known prehistoric and historic-era archeological resources through ground-disturbing actions related to restoration, construction, and facilities removal. These could result in short-term exposure of site soils to erosional forces, displacement of artifacts, and diminished integrity of horizontal and vertical site patterning. Mitigation measure MM-AR-2 (see Appendix C) would delineate the process by which a site could be tested, characterized, and an appropriate treatment plan developed, assuming site avoidance is not possible. Mitigation measure MM-AR-3 (see Appendix C) would provide for an archeological monitor to be present for minimally invasive construction and restoration. Mitigation measure MM-AR-1 (see Appendix C) describes the process by which any unanticipated discoveries would be handled so as to reduce or avoid disturbances to previously unknown sites.

A few of the Alternative 5 management actions would result in long-term, beneficial impacts on known archeological sites, either through restrictions on types of visitor use that can cause damage to sites (camping), restoration of areas that have been the focus of inappropriate use (informal trails or recreational facilities), or stabilization of site surfaces through revegetation and other restorative actions. In some instances, actions that may ultimately benefit a resource also have the potential to adversely impact site. Appropriate mitigation recommendations are addressed above.

Cumulative Impacts from Alternative 5: Enhanced Visitor Experiences and Essential Riverbank Restoration***Past Actions***

Past actions listed in Appendix C included some manner of ground-disturbing activities (road construction, housing unit removal or construction, recontouring land for habitat restoration), were subject to federal regulations, including NEPA and section 106 of the NHPA. The 2008 programmatic agreement contains provisions for archeological survey, testing, monitoring, and data recovery prior to each project. Information learned during this process continues to inform the current body of knowledge about archeological resources at Yosemite. To date, several major archeological research projects have resulted from activities conducted for these actions, with at least two additional reports (Wahhoga and Crane Flat Utilities projects) in progress.

Present Actions

The *Yosemite Fire Management Plan* and *Yosemite General Management Plan* contain provisions regarding proper treatment and recording of archeological resources; however, neither contains specific plans for archeological research. In addition to the *Yosemite Fire Management Plan*, the *Programmatic Parkwide Yosemite Facelift Volunteer Event* (2011) resulted in categorical exclusions signifying that no significant environmental effects including effects on cultural resources) has occurred or will occur.

Reasonably Foreseeable Future Actions

By following the processes and provisions of federal regulations and internal documents (e.g., the 1999 and/or 2008 programmatic agreements, *2006 Management Policies*, and others), the park would identify archeological resources in any areas scheduled for ground-disturbing actions and provide worker education, monitoring, and/or subsurface testing to reduce potential adverse effects under NHPA. If mitigation through these means is not feasible, park archeologists may consult with the ACHP to resolve adverse effects. With avoidance measures in places, many sites may still be adversely affected by facilities construction, especially in Yosemite Valley and El Portal.

Beneficial impacts on individual sites may result from restoration of natural vegetation communities and resulting reduction of erosion, trampling, and other visitor use impacts.

Overall Cumulative Impact from Alternative 5: Enhanced Visitor Experiences and Essential Riverbank Restoration

Many of the combined past, present, and reasonably foreseeable future actions may have a beneficial impact on archeological resources. Following NHPA regulations, implementation of all appropriate mitigation and consultation actions may reduce or avoid potential adverse effects.

Environmental Consequences of Alternative 6: Diversified Visitor Experiences and Selective Riverbank Restoration

All River Segments

Table 9-251 summarizes proposed actions under Alternative 6, and potential impacts to archeological sites, and then offers analysis under NEPA and NHPA regulations.

Impacts of Actions to Protect and Enhance River Values

Beyond those actions common to Alternatives 2–6, none of the proposed Alternative 6 actions to protect and enhance river values would have the potential to affect archeological resources.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Beyond those actions common to Alternatives 2–6, none of the proposed Alternative 6 actions to manage visitor use and facilities would have the potential to affect archeological resources.

TABLE 9-251: IMPACTS FROM ALTERNATIVE 6 ACTIONS

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
All segments	Actions to Protect and Enhance River Values	None of the overall actions to protect and enhance river values in all river segments would affect archeological resources beyond those actions common to Alternatives 2-6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2-6
All segments	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	None of the overall actions in any of the river segments to manage visitor use and facilities would affect archeological resources beyond except those actions common to Alternatives 2-6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2-6
Segment 1	Actions to Protect and Enhance River Values	No proposed actions to protect and enhance river values in Segment 1 beyond those actions that are common to Alternatives 2-6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2-6
Biological Resource Actions			
Segment 1	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	Remove some infrastructure at Little Yosemite Valley Backpackers Campground, Merced Lake Backpackers Campground, Merced Lake High Sierra Camp Reduce some capacity at Merced Lake High Sierra Camp Archeological sites would be considered in planning and avoided when possible	<i>NEPA:</i> Proposed reduction of camping at Merced Lake High Sierra Camp would have a negligible impact on archeological sites in the area. Ground disturbing activities associated with removal of infrastructure may result in local, long-term, minor, adverse impacts on known archeological sites, if avoidance is not possible. <i>NHPA:</i> There are no NRHP listed or eligible sites within Segment 1. No historic properties are affected.
Segment 2	Actions to Protect and Enhance River Values	Conduct limited habitat restoration actions within the East Valley campground floodplains Redesign of Curry Orchard parking lot and associated infrastructure Removal of some East Valley campground sites, with restoration Reroute portions of the Valley Loop Trail out of the meadow Archeological sites would be considered in planning and avoided when possible	<i>NEPA:</i> In areas where no archeological resources have been recorded (such as Curry Orchard parking Lot), there is a negligible impact. Proposed removal of campsites and associated infrastructure within the East Valley campgrounds would potentially result in a local, long-term beneficial impact on the known archeological sites found within the campgrounds, by redirecting visitor use. Ground disturbing activities associated with removal of infrastructure and restoration of former camping areas and areas of floodplains may result in local, long-term, minor adverse effects from artifact displacement, exposure to erosion, and loss of vertical and horizontal site integrity, if site avoidance is not possible. Ground disturbance and rerouting of the Valley Loop Trail would result in a local, long-term major adverse impact, as this trail is itself an historic property.

TABLE 9-251: IMPACTS FROM ALTERNATIVE 6 ACTIONS (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Biological Resource Actions (cont.)			
Segment 2 (cont.)			<p><i>MHPA:</i> Site specific measures would be developed to avoid adverse effects when possible. Determination of effects is site specific.</p> <p>There is an adverse effect to the Valley Loop Trail. Mitigation measures may reduce this effect.</p>
Programmatic Resource Action			
Segment 2	<p>Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities</p>	<p>Remove and/or relocate some campsites from Backpackers, Lower Pines, North Pines, and Upper Pines campgrounds</p> <p>Remove buildings in the Yosemite Lodge floplain, and facilities in Housekeeping Camp</p> <p>Restore areas with native vegetation</p> <p>Create new campsites at the Upper and Lower River campgrounds, Upper Pines (additional RV sites)</p> <p>Construct new concessioner employee housing and parking areas</p> <p>Construct new parking west of Yosemite Lodge</p> <p>Construct new RV campsites west of Yosemite Lodge</p> <p>Construct a pedestrian underpass and roundabout at the Village Drive/Northside Drive intersection</p> <p>Construct a shuttle stop for Camp 4</p> <p>Construct three-way intersection and a roundabout at the intersection with Northside Drive</p> <p>Move Camp 6 north from river and formalize Camp 6/Village Center Parking Area</p> <p>Archeological sites would be considered in planning and avoided when possible</p>	<p><i>NEPA:</i> Reduction in campsite visitor use at areas on or near known archeological resources would potentially result in local, long-term beneficial impacts, by redirecting visitor use away from sensitive areas, although this impact could also be negligible.</p> <p>Impacts on known archeological resources from restoration, facilities demolition, removal, new construction, and other ground disturbing activities would potentially occur during active ground disturbance. Unless avoidance is possible, this may result in local, long-term minor to moderate adverse impacts.</p> <p><i>MHPA:</i> Site specific measures would be developed to avoid adverse effects when possible. Determination of effects is site specific.</p>

TABLE 9-251: IMPACTS FROM ALTERNATIVE 6 ACTIONS (CONTINUED)

Segment	Action Type	Proposed Actions	Analysis under NEPA/NHPA
Programmatic Resource Action cont.)			
Segments 3 and 4	Actions to Protect and Enhance River Values	No proposed actions to protect and enhance river values in Segments 3 and 4 beyond those actions that are common to Alternatives 2–6.	Discussed in table 9-253: Impacts from Actions Common to Alternatives 2–6
Segments 3 and 4	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	Construction of more high-density employee housing and remote visitor parking in Abbieville and Trailer Village Archeological sites would be considered in planning and avoided when possible	<i>NEPA</i> : Ground disturbing may occur in or near known or newly discovered archeological sites during these actions, impacts would be local, long-term, minor to moderate, and potentially adverse, in cases where avoidance is not possible. <i>NHPA</i> : As actions are within or near a known archeological site, there is an adverse effect, unless avoidance is possible. Mitigation measures may reduce the potential for adverse effects.
Segments 5, 6, 7, and 8	Actions to Protect and Enhance River Values	Remove two stock campsites from Wawona stock camp Relocate sites to Wawona stables	<i>NEPA</i> : Actions to remove two stock campsites from near known archeological sites would result in local, long-term beneficial impacts by stabilizing elements of archeological features and preventing future disturbances. <i>NHPA</i> : These actions do not appear to affect historic properties.
Segments 5, 6, 7, and 8	Actions to Protect and Enhance River Values and Manage Visitor Use and Facilities	Remove two stock campsites from Wawona stock camp Remove some campsites in Wawona Campground	<i>NEPA</i> : Relocation of stock campsites, and removal of sites within the Wawona Campground may have a long-term, beneficial impact on archeological sites within and near these areas. Ground disturbing may occur in or near known archeological site during these actions; impacts would be local, long-term, minor to moderate, and potentially adverse, in cases where avoidance is not possible. <i>NHPA</i> : As actions are within or near a known archeological site, there is an adverse effect to historic properties, unless avoidance is possible.

Segment 1: Merced River above Nevada Fall

Impacts of Actions to Protect and Enhance River Values

No actions to protect and enhance river values are proposed for Segment 1 under Alternative 6 beyond those actions common to Alternatives 2–6.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

The proposed Alternative 6 actions to manage visitor use and facilities would retain 60 beds at the Merced Lake High Sierra Camp.

Segment 2: Yosemite Valley

Impacts of Actions to Protect and Enhance River Values

Both Sugar Pine and Ahwahnee bridges would remain in place and the multiuse trail between these bridges would not be rerouted. Therefore, there would be no potential for an impact on a known archeological site north of the road. All other potential impacts are a result of actions to protect and enhance river values in Segment 2; recommended mitigation measures would be identical to those described for Alternative 5.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Actions related to campsite removal and relocation in the East Valley campgrounds, new campsites and parking, new concessioner's housing and parking, and construction of a pedestrian undercrossing and a shuttle stop at Camp 4 would be identical to those described for Alternative 5. Construction of 20 new RV campsites west of the Yosemite Lodge parking lot would occur as with Alternative 4. Each of these actions would have the potential to impact archeological sites.

Actions unique to Alternative 6 in Segment 2 would include the construction of a roundabout at the Camp 6 intersection with Northside Drive as well as the previously described pedestrian undercrossing. Another roundabout would be constructed at the intersection of Sentinel Drive and Southside Drive. Each of the proposed roundabouts would be located within or near known archeological sites, and consequently would have the potential to impact subsurface cultural deposits during ground-disturbing construction activities. Implementation of mitigation measure MM-AR-2 (see Appendix C) would result in site testing, assessment, and development of an appropriate treatment plan prior to construction, and may reduce potential adverse effects, unless site avoidance is possible.

The numbers of day use and overnight visitors proposed in Segment 2 under Alternative 6 would be the highest of Alternatives 2–6, and accommodate current peak day visitor parking and allow for annual growth of 3%. While visitor use can and does affect archeological resources, effects are much more dependent on local use specific to areas that contain one or more archeological resources. A steady increase in the rate of visitor use would not necessarily result in more impacts to individual sites.

Segments 3 and 4: Merced River Gorge and El Portal

Impacts of Actions to Protect and Enhance River Values

No actions proposed under Alternative 6 to protect and enhance river values in Segments 3 and 4 would affect archeological resources beyond those actions common to Alternatives 2–6.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 6, proposed high-density housing would be developed to accommodate as many as 405 employees in the Abbieville and Trailer Village area in Segment 4. Remote visitor parking would also be constructed in this area. Construction of these facilities could result in an impact to a known archeological resource that exists in this area. Implementation of mitigation measure MM-AR-2 (see Appendix C) would provide a process for site testing, evaluating, and developing an appropriate treatment plan prior to ground-disturbing activity. Following NHPA regulations, if avoidance is not possible, mitigation measures may reduce the potential adverse effects associated with Alternative 6 actions to manage visitor use and facilities.

Segments 5, 6, 7 and 8: South Fork Merced River

Impacts of Actions to Protect and Enhance River Values

Actions that would have the potential to affect archeological resources in Segments 5–8 under Alternative 6 would be the same as those described for Alternative 4. Removal of two stock camp sites from the sensitive resource that is located near the Wawona stock camp may reduce the potential for impacts.

Impacts of Actions to Manage User Capacities, Land Use, and Facilities

Under Alternative 6, two stock campsites would be relocated to the Wawona stables, and 13 campsites would be removed. No other actions, other than those common to Alternatives 2–6, would have the potential to affect cultural resources in Segments 5–8.

Summary of Impacts from Alternative 6: Diversified Visitor Experiences and Selective Riverbank Restoration

Several of the management actions proposed under Alternative 6 would have the potential to result in minor to moderate impacts on known prehistoric and historic-era archeological resources through ground-disturbing actions related to restoration, construction, and facilities removal. These could result in exposure of site soils to erosional forces, displacement of artifacts, and diminished integrity of horizontal and vertical site patterning. Mitigation measure MM-AR-2 (see Appendix C) would delineate the process by which a site could be tested, characterized, and an appropriate treatment plan developed, whenever site avoidance is not possible. Mitigation measure MM-AR-3 (see Appendix C) would provide for an archeological monitor to be present for minimally invasive construction and restoration ground-disturbing activities within sites. Mitigation measure MM-AR-1 (see Appendix C)

describes the process by which any unanticipated discoveries would be handled so as to minimize disturbances to previously unknown sites. Following NHPA regulations, these measures may reduce the adverse effects of relevant actions.

A few of the management actions associated with Alternative 6 would result in long-term, beneficial impacts on known archeological sites, either through reductions of types of visitor use that can cause damage to sites (camping), restoration of areas that have been the focus of inappropriate use (informal trails or recreational facilities), or stabilization of site surfaces through revegetation and other restorative actions. In some instances, actions that may ultimately benefit a resource also have the potential to adversely impact site elements.

Cumulative Impacts from Alternative 6: Diversified Visitor Experiences and Selective Riverbank Restoration

Past Actions

Past actions listed in Appendix C included some manner of ground-disturbing activities (road construction, housing unit removal or construction, recontouring land for habitat restoration), were subject to federal regulations, including NEPA and section 106 of the NHPA. The 2008 programmatic agreement contains provisions for archeological survey, testing, monitoring, and data recovery prior to each project. Information learned during this process continues to inform the current body of knowledge about archeological resources at Yosemite. To date, several major archeological research projects have resulted from activities conducted for these actions, with at least two additional reports (Wahhoga and Crane Flat Utilities projects) in progress.

Present Actions

The *Yosemite Fire Management Plan* contains provisions regarding proper treatment and recording of archeological resources; however, this plan does not contain specific plans for archeological research. The *Programmatic Parkwide Yosemite Facelift Volunteer Event* (2011) resulted in categorical exclusions signifying that no significant environmental effects including effects on cultural resources) has occurred or will occur.

Reasonably Foreseeable Future Actions

By following the processes and provisions of federal regulations and internal documents e.g., the 1999 and/or 2008 programmatic agreements, *2006 Management Policies*, and others), the park would identify archeological resources in any areas scheduled for ground-disturbing actions and provide worker education, monitoring, and/or subsurface testing to reduce potential impacts to a negligible level. If mitigation through these means is not feasible, park archeologists may consult with the ACHP to resolve adverse effects. With avoidance measures in places, many sites may still be adversely affected by facilities construction, especially in Yosemite Valley and El Portal. Beneficial impacts on individual sites may result from restoration of natural vegetation communities and resulting reduction of erosion, trampling, and other visitor use impacts.

Overall Cumulative Impact from Alternative 6: Diversified Visitor Experiences and Selective Riverbank Restoration

Many of the combined past, present, and reasonably foreseeable future actions would have a negligible or beneficial impact on archeological resources. For those actions with potential adverse impacts, implementation of all appropriate mitigation and consultation would reduce or avoid those impacts.