4.5 CULTURAL RESOURCES

This section presents an evaluation of the potential for the proposed project to affect cultural resources that may be present at the site. It also includes a summary of impacts to cultural resources addressed in the SSEIR and mitigation measures that were adopted when the SSEIR was certified and Lake Yosemite was selected as the campus site.

Cultural resources include archaeological and historical objects, sites and districts, historic buildings and structures, cultural landscapes, and sites and resources of concern to local Native Americans and other ethnic groups. CEQA uses the term "historic resource." The term "historical resource" is defined by CEQA (P.R.C. § 21084.1) as sites listed in, or formally determined by the State Office of Historic Preservation to be eligible for listing in, the California Register of Historical Resources (CRHR). Sites officially designated as historically significant in a local register of historic resources or listed in a historical resources survey and found to be significant in accordance with P.R.C. § 5020.1(g) are presumed to be historically or culturally significant. A lead agency has discretion to find that other sites are historical resources, provided that such a determination is supported by substantial evidence. Under CEQA Guideline Section 15064.5(a)(3), generally, a lead agency should find that a property is a historic resource if it determines that it meets one or more of the criteria for listing on the CRHR, as described in Section 4.5.3.1, below.

The treatment of archaeological resources under CEQA is governed by P.R.C. § 21083.2, which contains specific standards for determining the significance of impacts to archaeological sites. Under that statute, an EIR must address impacts on "unique" archaeological resources, which are defined as an archaeological artifact, object, or site meeting specified criteria relating to whether the resource contains information needed to answer important scientific research questions, or has a special or particular quality, or is directly associated with a scientifically recognized important prehistoric or historic event or person. In addition, to qualify as a unique archaeological resource, the agency must determine that there is a high probability that the resource meets one of the listed criteria without merely adding to the current body of knowledge (P.R.C. § 21083.2(g)). An impact on a nonunique resource is not a significant environmental impact under CEQA (CEQA Guideline § 15064.5(c)(4)). If an archaeological resource qualifies as a historical resource under the standard in P.R.C. § 21084.1, then the resource is treated as a historical resource, and the limitations in P.R.C. § 21083.2 relating to treatment of archaeological resources do not apply (CEQA Guideline § 15064.5(c)(2)).

Paleontological resources are the mineralized (fossilized) remains of prehistoric plant and animal organisms, as well as the mineralized impressions (trace fossils) left as indirect evidence of the form and activity of such organisms. These resources are considered to be nonrenewable resources deserving special consideration under the CEQA Guidelines, Appendix G.

A single public comment with respect to cultural resources was received in response to the Notice of Preparation. The commenter stated that the possible presence of and potential impacts on paleontological resources should be assessed for this project. The following section includes results of a paleontological survey and of a paleontological impacts assessment for the proposed project.

4.5.1 Summary of Site Selection EIR Impacts and Mitigation Measures

The SSEIR addressed the potential effects of the selection and eventual development of a new campus at the Lake Yosemite site on archaeological and historic resources. All impacts identified in the SSEIR that are relevant to the proposed project are presented in the following table. For all impacts, the level of significance before and after application of mitigation measures identified in the SSEIR is also presented in the table. Although the location of the proposed campus has been shifted to a more southerly location on the VST property, this change in location does not affect the significance or the severity of impacts previously analyzed in the SSEIR. The campus location considered in the SSEIR did not contain any known features of the built environment that could be considered historic. The SSEIR therefore noted the impact to historic resources to be less than significant. The proposed campus site, however, contains a barn and a corral that are more than 50 years old. Therefore, for the LRDP EIR, an evaluation of the barn and the corral was conducted that determined that the structures were not significant historic resources.

SITE SELECTION EIR IMPACT	Level of Significance Prior to Mitigation	Level of Significance after/with Mitigation
Site selection, which could lead to development of a campus, could result in damage to or destruction of archaeological resources.	S	LS
Site selection, which could lead to development of a campus, could result in the damage to or the destruction of historical sites and/or artifacts.	LS	N/A
Development of a campus on the site, in conjunction with other development in the surrounding area, could result in a cumulative loss of archaeological and historical resources in the general region.	S	SU_2

PS=Potentially Significant; S=Significant; LS=Less than Significant; B=Beneficial; NI=No Impact; N/A=Not Applicable; SU_1= Impacts that cannot be mitigated, or for which it is not certain that mitigation could reduce the impact to a less-than-significant level; SU_2= Impacts that could be reduced to less-than-significant levels but require action by a jurisdiction other than the University; SU_3= Impacts that, even with mitigation, cannot, or might not, be reduced to a less-than-significant level, and for which mitigation would not be under the University's jurisdiction.

Mitigation measures in the SSEIR include the following:

- **SSEIR Mitigation Measure 4.5-1** — *Prior to or during preparation of the LRDP, a surface reconnaissance of the entire selected site shall be conducted.*
- **SSEIR Mitigation Measure 4.5-3** — *If significant archaeological resources are discovered, surface and subsurface surveys shall be conducted to determine boundaries of the resource. To the extent feasible, the campus shall be designed to avoid known cultural resources. Avoidance can be accomplished by the following, or equally effective measures.*
- *Designate areas with cultural resources "Open space" and limit public access,*
- *If public access cannot be prevented or limited, cap areas with cultural resources with a protective layer of fill and designate "Open space," or*

- *Develop sites with cultural resources with uses that do not require excavation and will provide a protective cover, such as a parking lot.*
- **SSEIR Mitigation Measure 4.5-4** — *The LRDP shall contain policies to ensure that appropriate procedures are implemented to protect existing archaeological resources.*

In compliance with the SSEIR Mitigation Measure 4.5-1, the 910-acre Main Campus site was surveyed for cultural resources in June 2001 and no significant archaeological or historical resources were discovered. Because there are no existing known archaeological resources on the campus site, SSEIR Mitigation Measure 4.5-4 is inapplicable. Because archaeological resources may be present in the subsurface of the site, in compliance with SSEIR Mitigation Measure 4.5-3, the LRDP includes policies for the protection of these resources, and the LRDP EIR (see below) describes mitigation measures that would be implemented in the event subsurface resources are encountered during excavation or grading activities.

4.5.2 Environmental Setting

In a broad context, the regional study area for the University of California Merced campus is the San Joaquin Valley of Central California. The environmental setting, prehistory, ethnography, and history of this region are fairly homogeneous and thus can be generalized for the Valley overall. Specifically, the project study area is the University of California Merced Campus site. The project site is located near the eastern margin of the San Joaquin Valley, about 5 miles northeast of the city of Merced, and immediately east of Lake Yosemite. The 2,000-acre campus site includes 910 acres that would be developed into the Main Campus under the proposed LRDP, 340 additional acres to the north and east designated Campus Land Reserve, and 750 acres designated Campus Natural Reserve. The study area for the archaeological records search (described below) includes the entire campus and a 1/2-mile-radius buffer zone around the campus site. The archaeological survey covered the proposed 910-acre Main Campus.

The following synopses of environmental and cultural background data are derived primarily from an Archaeological Survey Report prepared by URS for the County of Merced's Campus Parkway Project (URS, 2001), which is situated immediately south of the proposed project. Results of the archaeological survey of the proposed campus site are synopsized from a technical archaeological survey report for the project, prepared as a confidential technical appendix to this EIR. Paleontological background is synopsized from a technical paleontological report for the proposed project, prepared as a confidential technical appendix to this document.

4.5.2.1 Natural Setting

Dominant land uses in the project area presently include agricultural production and residential and commercial development. Surface cover is predominantly nonnative grassland, with areas of ruderal vegetation. This landscape is the result of historic land use changes that have included alterations of drainage patterns, vegetation clearance for farmlands, and construction of roads and infrastructure. The summary below details the known changes in the regional setting and provides a general environmental baseline for understanding the context of the local archaeological environment.

The primary geologic deposits in the low elevations of the Central Valley are Quaternary alluvium of decomposed granite, derived primarily from river flooding and meandering streams

associated with the San Joaquin/ Sacramento River systems. Flooding episodes, which were common historically, are now relatively uncommon in the valley because of water control projects.

The proposed project area is situated about midway between the Merced River and Bear Creek. Cottonwood Creek and several intermittent tributaries run through the project area. Streams in this vicinity originate in the foothills of the Sierra Nevada and ultimately drain into the San Joaquin River. Lake Yosemite, now the predominant hydrologic feature of the project study area, is an artificial lake, created in 1888. The lake basin was enclosed by construction of a very wide dam across a minor tributary of Fahrens Creek, then filled through a diversion canal (known as the Main Canal) from the Merced River. Water from Lake Yosemite is fed through the Fairfield and Le Grand canals southeast across the central part of the campus site for use in irrigation in towns and farms to the south.

Significant portions of the lowlands in the San Joaquin Valley were marshlands during prehistoric and ethnohistoric times. Massive agricultural water diversion and control programs throughout the valley, beginning in the 1800s and continuing to the present, have radically changed the natural vegetation. Vegetation on the project site includes nonnative grassland used for grazing cattle, interspersed with vernal pool complexes. The latter provide habitat for a wide variety of sensitive plant and animal species. Creeks follow their natural alignments for the most part but are intermittent within the project area. Little riparian vegetation is present. However, trees are absent from the area, with the exception of the so-called “lone tree,” a large euchalyptus that was planted by a rancher on the northern part of the campus site.

Before 1900, a range of large mammals including elk, antelope, and grizzly bear frequented the marshy habitats in this part of the San Joaquin Valley. During the rapid European migrations to the west, and the consequential settlements and expansions, many of the native species were extirpated or radically reduced. A variety of terrestrial and aquatic birds still are present in the valley.

4.5.2.2 Geologic and Paleoenvironmental Setting

The San Joaquin Valley region has been subjected to the combined influences of sporadic subsidence of the valley floor, uplift in the area of the Sierra Nevada Range, and worldwide sea level changes. It has provided a record of geologic and biologic history spanning more than 120 million years, starting in the late Cretaceous period. Sediments and fossils of marine and terrestrial organisms have accumulated to produce a significant but incomplete record of past life and geography. This complex record has been intermittently investigated beginning in the 1860s by Anderson (1958), Condit (1939), Gabb (1864), Marchand and Allwaldt (1979), Merrill and Palmer (1984), Stanton (1893), and Wagner (1975).

Surficial sedimentary units of predominately Cenozoic age underlie all of the project site. These sediments include the andesitic mudflow and intervolcanic channel sands of gravels of the Mehrten Formation (*Tm*), the alluvial fan-derived sediments from the North Merced Gravels (*QTnm*), the Riverbank Formation (*Qrb*), and the underlying Laguna Formation (*Ql*). Lithologies include locally derived, coarse pebble to cobble-size gravels, with interbedded sands, silts, and clays; all of which are potentially favorable to the preservation of paleontological resources. Geologic map data of Matthews and Burnett (1965), Marchand and Allwaldt (1979), and Clinkenbeard (1999) have been used for reference and analysis.

Available structural and stratigraphic evidence suggests significant westward tilting of the central Sierra Nevada may have occurred during Pliocene times. The Laguna Formation includes at least two major episodes of alluviation, separated by an extensive period of soil formation, and may record the earliest glaciation of the Sierra Nevada. The net result of these periods of late Tertiary Sierran tilting was a shift in drainage direction from southwesterly to westerly. The Late Tertiary uplift in the southern Sierra Nevada may have considerably exceeded that in the north. To the northeast of the project site, remnants of andesite mudflows form resistant ridges that stand high above the present land surface. These flow remnants define the ancestral course of fluvial systems, formed during deposition of the Mehrten Formation 10 to 4 million years ago (Curtis, 1954).

During latest Pliocene or earliest Pleistocene time, the Sierra Foothill pediment was beveled across Tertiary and older rocks along the entire western margin of the Sierra Nevada. Beginning in early Turlock Lake time, at least seven periods of glacial outwash deposits may have been superimposed on a progressively subsiding San Joaquin Valley. Extensive periods of stability and soil formation occurred, followed by subsequent incision and dissection.

Basin subsidence may have continued through Quaternary time. This may provide an explanation for the converging geomorphic surfaces and westward shifts in fan position. Some of the mapped lineaments in the southeastern San Joaquin Valley, especially the northwest-trending sets, may be tensional features associated with a hinge line along the boundary between the Sierra Nevada and the actively subsiding Sacramento and San Joaquin Valleys (Schleman, 1967, 1971, and 1972), (Marchand and Allwardt, 1978).

Paleoenvironmental Setting

The majority of the project site and vicinity includes the Mehrten Formation, the North Merced Gravels, and the Riverbank Formation; all late Tertiary and Quaternary age sedimentary rock formations. These formations range in facies type from indurated volcanic mudflow to conglomerate, unconsolidated siltstone, and clay; all of which are potentially fossiliferous. However, abundance and diversity of fossils can potentially vary widely from place to place, with paleontological resource sensitivity likewise varying according to geologic rock unit. This report emphasizes fossils of vertebrates, invertebrates and plants because of their relative rarity in respect to these geological periods in the Sierra Nevada region and the potential scientific importance of the individual specimens within the project area.

Much of the paleontological interest in the project area stems from the discovery and identification of marine and terrestrial vertebrate, invertebrate and paleobotanical fossils in the region. Alluvial fan-derived sediments provide potentially favorable conditions for preserving fossils of both animals and plants. All areas within the project site are potentially fossiliferous.

The majority of the project site is overlain by vegetation. Tertiary and Quaternary age sediments are obscured in most areas by soil or vegetation cover. Visual detection of fossils is possible only in those areas where erosion has removed the grassland vegetation cover.

4.5.2.3 Ethnography

The project area is located east of the San Joaquin River, between the Merced River (to the north) and Bear Creek (to the south). Historically, the project area was occupied by the Northern Valley Yokuts, who occupied the San Joaquin Valley from the confluence of the San Joaquin

River and Bear Creek to a point just north of the mouth of the lower Calaveras River at their southern limit. The Northern Valley Yokuts were a branch of the Valley Yokuts, whose members lived throughout the San Joaquin Valley and peripheral foothills (*cf.* Wallace, 1978; Kroeber, 1925).

The Northern Yokuts were divided into patrilineal groups that could be defined as tribes (Kroeber, 1925; Latta, 1949). Various dialects could be distinguished among the groups, and each separate village served as headquarters for a local patrilineage. The primary ethnographic occupation sites typically are located on perennial streams, although many outlying camps were used during the seasonal round to take advantage of isolated or seasonal resources.

One of the primary plant food sources for the Northern Valley Yokuts was the acorn, generally obtained from a variety of locally available oaks. Acorns normally were crushed utilizing mortars and pestles. Bedrock mortars were common. The Yokuts also exploited numerous other seeds, nuts, fruits, and roots for subsistence. Oaks are not now present in the immediate project area, but grass seeds would have been an important plant food resource. A wide variety of small game and fish also were obtained through a range of hunting techniques.

The Northern Valley Yokuts constructed boats, fashioned crude pottery, and made coiled baskets that were traded with neighboring groups. Their trade network extended to the Costanoans (Ohlone) in the Monterey Bay region, and the Salinans in the North Coast ranges. The Sierra Miwok, to the east, were their primary trading partners. Exchange between the Northern Valley Yokuts and the Miwok was extensive, both in material goods and in political and social patterns (Wallace, 1978: 465).

Not much is known of the religious practices of the Northern Valley Yokuts, and most of the information that is available has been gleaned from neighboring tribes (Wallace, 1978: 467). Informants from the Sierra Miwok claimed that the Northern Valley Yokuts living on the Stanislaus River used datura, a potent psychotropic plant alkaloid, in ceremonials (Kroeber, 1925: 502) to induce a trance-like state.

Very few Northern Valley Yokuts survived the protohistoric period. Population decline and erosion of Northern Valley Yokuts culture began in the Spanish-Mexican period (1769–1846), and rapidly accelerated with the onset of American settlement and the Gold Rush. The missions undertook intensive proselytizing in the Northern San Joaquin Valley in the early 1800s as native coastal populations declined. Many Northern Yokuts were taken more or less forcibly to the missions at San Jose, Santa Clara, Soledad, San Juan Bautista, and San Antonio. In the summer of 1833, a malaria epidemic decimated the local population. The arrival of American miners and settlers in the late 1840s completed the dispossession and disenfranchisement of native groups in the Northern San Joaquin Valley. Representatives of three Northern Valley Yokuts tribes signed land cessation treaties at that time in exchange for large reservations. These treaties were never ratified by the United States Senate, and the reservations never materialized. Most of the few Native American survivors of the protohistoric period were forced to adapt to European lifeways. Many found low-paying work on ranches in the area (Wallace, 1978: 470).

4.5.2.4 Archaeological Background

The archaeological overview in this section was synthesized from discussions of Central Valley prehistory in Moratto (1984), Chartkoff and Chartkoff (1984), and Wallace (1978b: 462–470).

There is well-substantiated evidence of Native American occupation in the San Joaquin Valley by 12,000–8000 before present (B.P.), although there are relatively few known sites. During this Pleistocene epoch, large lakes in the Central San Joaquin Valley were a major focus of human occupation. The paleo-shoreline sites of Tulare Lake have provided nearly all of the diagnostic materials for the period including fluted projectile points (described as Clovis-like), scrapers, and chipped crescents (Moratto, 1984: 81), an assemblage loosely characterized as a "Far Western Fluted Point Tradition" (WFPT). Characteristic sites appear along paleo-shorelines, piedmont zones of former grasslands, and in mountain passes associated with fossil lakes. The Witt site, on the paleo shoreline of Tulare Lake, yielded numerous specimens of extinct Early Holocene fauna in the same contexts as cultural materials of these types. In the Central Valley, Buena Vista Lake sites (Fredrickson 1977; Hartzell, 1991), the Skyrocket sites (CAL-629, CAL-630) in the foothills of Calaveras County (Pryor n.d.; in Caltrans 1999: 7–8), and the Clark's Flat site (STA-S342) in the Stanislaus County foothills (Peak and Crew, 1990) also have yielded early stemmed-type projectile points.

The stone tool assemblage after about 7,000 B.P. generally is quite similar to the WFPT/stemmed point tradition noted at earlier sites, but at this time there is an increase in the use of groundstone tools. Well-worn metates and manos suggest an increased dietary reliance on acorns, seeds, and other processed plant resources. As noted, many of the standard tools from the WFPT/stemmed point tradition continue to be used throughout the so-called Middle Period.

During the Late Period, from roughly 2,500 years B.P. to the time of significant European contact, the material culture patterns observed at the time of European contact emerged and developed. The ethnohistoric record provides a valuable resource for understanding Late Period archaeology. The archaeological record at this time reveals a significantly different suite of material culture than that noted in Middle Period stone tool assemblages. Heavily utilized mortars and pestles (evidence of an emphasis on acorn and seed processing), and bow-and-arrow technology emerge at this time. Large occupation sites, representing semipermanent and permanent villages, also appear during this time. Typical of these village sites are dark-colored midden deposits and associated house pit and remains of communal structures. Typical artifacts include ornaments of shell, steatite vessels, and bone implements, obsidian from eastern California sources, and notched cobbles possibly associated with fishing activities.

Archaeological investigations conducted at Pacheco Pass area (located west of the project area) and Buchanan Reservoir (to the east) have provided information for more detailed local chronologies. Detailed archaeological information on Pacheco Pass and Buchanan Reservoir sites is discussed to varying extents by Olsen and Payen (1968, 1969, 1983), Pritchard (1970), Mikkelsen and Hildebrandt (1990), Bennyhoff (1994), Moratto (1969, 1984), and in California Department of Transportation (1999).

4.5.2.5 Historic Background

A few Spanish explorations, incursions by American traders from east of the Sierra, and Mission recruitment forays constitute the earliest contacts between Europeans and natives of the Central Valley. These early forays had devastating effects on the native population, not only as the result of hostilities over mission recruitment but, more insidiously, through the introduction of nonnative diseases. A massive epidemic of malaria or possibly measles swept the valley in 1833, exterminating whole village and tribe populations. By the advent of the 1849 Gold Rush,

the native presence in the valley had been severely diminished. During the early 1850s, the first Euro-American settlers established farms and ranches along the rivers and creeks in the area now known as Merced County. Merced County was formed from a part of Mariposa County in 1855, and the county seat was established in the Bear Creek area. Rich soils in the central and eastern parts of the area supported prosperous cattle ranches. Local agricultural trade centers emerged. Farms situated along the numerous roads leading to Sierra Nevada mines prospered from the mining trade. Stock, as well as wheat and other "dry-farmed" grains, were the primary products. Many of these goods were shipped to Stockton via the San Joaquin River.

Although early agriculture in Merced County focused on "dry-farming" methods, during the 1860s many local ranchers and farmers began to develop small-scale irrigation projects. The Robla Canal Company and the Farmer's Canal Company (which eventually absorbed the Robla Canal Co.) expanded the extent of irrigation in the area. These irrigation networks relied heavily on existing natural waterways that were modified (i.e., channeled) for the purpose of irrigation. In the early 1870s, "dry-farmed" wheat continued as the dominant agricultural crop. However, as the newly arrived railroad provided a more efficient means of transport to various marketplaces (Lortie 1998, Hoover et al., 1990; Cabezut-Ortiz, 1987), farming began to diversify. In 1872, with the establishment of a new railroad stop, Merced became the county seat. Many businesses moved there from the former county seat at Bear Creek. The City of Merced was incorporated in 1889 (Greater Merced Chamber of Commerce, 2000). By the early 1880s, Charles H. Huffman, a prominent businessman and landowner instrumental in the formation of the railroad town of Merced, controlled the irrigation system through the Merced Canal and Irrigation Company. This company expanded existing irrigation systems and formed agricultural settlements known as "colonies." These "colonies" served as ready-made irrigated farmsteads and enticed new settlement and increased real estate values throughout the area (Lortie, 1998). In fact, the water development often was undertaken specifically for the purpose of increasing land values and encouraging settlement. Water developers typically bought up the lands to be served, in advance of their water development, in order to profit from the land boom that would follow.

In 1888, the Merced Canal and Irrigation Company was reorganized and refinanced to form the Crocker-Huffman Land and Water Company. With the financial backing of wealthy landowner Charles Crocker, this new entity organized the First National Bank, which financed numerous development projects in the county including a large creamery, the dam and canal that created Lake Yosemite, and the Fairfield and Le Grand canals leading out of the lake. By the 1890s, the Crocker-Huffman Company had organized 16 colonies comprising approximately 30,000 acres, with roughly 6,000 acres cultivated. A wide variety of crops was grown in the colonies, including fruits, nuts, and alfalfa, an important feed crop for dairy cattle in Merced and surrounding areas (Lortie, 1998).

In 1919, Merced County voters approved the creation of the Merced Irrigation District, a publicly owned entity that purchased the Crocker-Huffman system in 1922. Voters soon passed a bond issue funding improvements and expansion of the existing irrigation system, an effort that has continued into the present day (Lortie, 1998; McSwain, 1978; Radcliffe, 1940; Cabezut-Ortiz 1987; Adams, 1929; JRP, 1998). Naturally, the extensive irrigation system served as a catalyst for the expansion of agriculture in general, specifically fostering the production of a variety of crops. In support, the railroad further increased the efficiency of transporting agricultural products from Merced to other California locales.

By the beginning of the 20th century, irrigated agriculture had far surpassed "dry-farming" as the most profitable method of agriculture and allowed smaller farms to produce a variety of high-yielding cash crops. In the early 1900s, the dairy industry became a substantial contributor to the county's economy. Portuguese immigrants emerged as leaders in this industry. Italian immigrants excelled in the production of tomatoes, and by the 1950s, processing of such agricultural products (i.e., packing, freezing, etc.) had become a large part of the Merced economy.

The irrigation systems in the county continued to be improved, especially after World War II, when the wholesale replacement of wooden irrigation features with concrete began. The extensive irrigation system served crops such as cotton, figs, sweet potatoes, tomatoes, and onions—all of which emerged as leading crops and continue to be produced in Merced County today (Lortie, 1998; Cabezut-Ortiz, 1987; McSwain, 1978).

4.5.2.6 Historic Resources Data on the Project Site

Archaeological Records Search

An archaeological records search of the proposed campus site and a half-mile radius around it was conducted at the Central California Information Center of the California Historical Resources Information System, California State University, Stanislaus, in Turlock, on October 30, 2000. Data were collected on previous archaeological surveys of the study area and previously recorded archaeological sites and historic structures and features. Also reviewed were the National Register of Historic Places, the California Register of Historic Resources, the California Inventory of Historic Resources (1976), California Historic Landmarks (1996), California Points of Historic Interest (1992 and updates), the current Historic Property Data File of the State Office of Historic Preservation computer data base, the Caltrans Local Bridge Survey (1989), the Survey of Surveys (1989), Government Land Office Plats, and other pertinent local historic data sources.

There have been only two previous archaeological surveys within the proposed project site (Baker, Smith, and Shoup, 1991; Napton, 1980). Together, these covered about 200 acres of the proposed campus area, all within the area of the existing golf course. No cultural resources were identified in this inventory. No archaeological sites or other historic resources have been recorded on the proposed campus site. There nonetheless is a possibility that buried archaeological resources could be present in the surveyed area. In the unsurveyed areas of the Main Campus, both buried and surficial resources could be present.

Two bridges on Lake Road at the western margin of the project site, #30C-0180 at the Fairfield Canal and #39C-0181 at the Le Grand Canal, have been assessed by Caltrans and determined not eligible to the National Register of Historic Places (Caltrans, 1989).

Segments of the Le Grand Canal and the Fairfield Canal run through the proposed campus site. These canals recently were evaluated during a historic architectural survey for another project (JRP Historical Consulting, 2001). This evaluation found that, although both canals are over 100 years old, neither qualifies for either the National Register of Historic Places (NRHP) or the California Register of Historic Resources (CRHR). In a detailed assessment of these features, the evaluator states that these canals are examples of a very common type of irrigation feature and are not distinguished examples of their type, have no outstanding engineering characteriestics,

have been altered and regularly maintained over time, and "are not significant when viewed in the larger context of the development of irrigated agriculture in the Central Valley" (JRP Historical Consulting, 2001a:31). On the basis of this assessment, it appears that neither the Le Grand Canal nor the Fairfield Canal qualifies as a historic resource.

Architectural Inventory

An historic architectural survey of the campus site was carried out in May, 2001 (Mikesell, 2001).

A farm complex, which consists of a Midwest three-portal barn, wooden corrals, and related structures, is present in the project area near the north end of the proposed campus site. The barn, designated "the Smith Trust barn," was evaluated by an architectural historian (JRP, 2001b) with respect to the eligibility criteria of the CRHR. Although the structure was built in 1913 and merited consideration on the basis of its age, it does not appear to qualify for the CRHR as a built-environment feature for its association with important people or events or for its architectural characteristics. While the land on which the barn was built was owned by the Charles Smith family, an important pioneering family in the area, the Smiths never lived at this site; the barn almost certainly was built by a tenant family, the Robinsons. There appears to be no direct association between the barn and the Smith family. Although the barn was associated with the Robinson family between about 1913 and the 1940s, the association is diminished by the fact that the Robinson family only leased the land. The barn does not appear to represent a distinguished example of its type: a wood frame barn from the early 20th century. Neither is it a distinguished example of its method of construction. It utilizes features and techniques common to its period of construction. No other standing structures are present on the campus site.

In addition to the previous archaeological and architectural surveys on the proposed project site, two previous archaeological surveys extended to within one-half mile of the campus site. A survey of a large block of land to the northeast of the project site (Chavez and Hupman, 1994) did not reveal any historic resources. A block survey to the west of the project site (Francis, 1999), west of Lake Yosemite, resulted in the recordation of a number of historic period cultural resources, including trash scatters, a foundation, and features related to the Main Canal. In addition, the Crocker-Huffman Main Canal, which feeds Lake Yosemite, was recorded and was determined eligible for the NRHP (Maniery, 1992). This canal terminates at Lake Yosemite. Another block survey a little over a mile east of the campus site (Peak and Associates, 1992) revealed a number of prehistoric sites, including bedrock milling features, lithic scatters, midden, and in one case, a burial. All of these sites, located on Rascal Creek and its tributaries, are well over a mile outside the project area. However, the association of a cluster of prehistoric sites with a substantial creek suggests that creek zones and other water sources in the project area should be considered archaeologically sensitive.

Archaeological Inventory

An archaeological survey of the proposed campus site was carried out in June 2001, under the supervision of a registered professional archaeologist. The entire project area was examined in systematic parallel pedestrian transects at intervals of no more than 30 meters. More intensive examination was made of clearings, ridgelines, and drainages. Because of a high growth of primariliy nonnative grasses, ground visibility over most of the campus site was poor to moderate at best; overall ground visibility was no more than 15 to 20 percent. Intermittent soil

exposures were afforded by rodent burrows, drainage or road cuts, and cattle trails. All open ground was examined intensively.

No prehistoric resources were located as the result of archaeological survey. Two sites were recorded, which may contain materials of historic interest.

UCM-1 consists of the site of the tenant's farmstead. The site is located near the north-central end of the proposed campus site, about 1,000 feet north of the Le Grand Canal. A standing barn, corral, and cattle scale located on this site are described above. In addition to the standing features, the site includes a shallow rounded depression, about 70 feet long by 40 feet wide, that is almost certainly the location of the residence that originally was associated with the ranch. The house and several associated outbuildings, built in 1913, were demolished sometime after 1961. The house was a wood-frame two-story ranch house (Mikesell, 2001:4). Other structures originally on the site included a water tank, a windmill, a granary/automobile garage, and an outhouse. A metal water tank on a base of railroad ties, and a partially dismantled windmill on a concrete foundation were still present in May 2001. According to Mikesell, the house most likely was built by a lessee of the Smith family. The Smith family, who owned the property, apparently never lived there. In the 1930s and 1940s, the Stewart family lived in the upper story of the residence. The residence was demolished some time after the land was leased by the Cook Cattle Company, which ran cattle on the parcel for many years.

Archaeologically, UCM-1 consists of the entire residential and barn complex, including the 1913 barn, the water tank, and the windmill. It is likely that the corrals postdate the occupation of the residence, because they are quite close to the house site. The site overall encompasses an area about 550 feet NW-SE by 425 feet SW-NE.

About 1,000 feet southeast of the house depression, on the north bank of the Le Grand Canal, is what appears to be a relatively modern ranch dump. Noted on the surface were a post-1950s refrigerator, modern bottles, stacked lumber, and two ranch-type wooden plank gates. Nothing visible on the surface of this dump appears historic in age, but is it quite possible that this location also was used for disposal during the occupation of the residence. Because no historic materials were visible, the dump was not included within the boundaries of the recorded site; however, it is possible that older material is present beneath the modern refuse.

UCM-1 does not appear to meet the criteria for listing on the CRHR. The information the site contains appears to be captured in the historic record, as documented in the DPR 523 inventory form prepared for the barn (Mikesell, 2001). If older materials are present beneath the modern refuse dump (described above), it is possible that they would provide additional data about the lifestyles of rural ranch families in the period between the World Wars. However, there at present is no hard evidence that refuse of interest from this period is present.

UCM-2 consists of a segment of a standing barbed wire cattle fence that has iron farm machinery parts incorporated as weights for vertical wires in the fence. A machine part is used as a weight at three different locations along this alignment. The fence of which this augmented section is a part is an east-west-oriented alignment that appears on the USGS Merced 7.5' quadrangle (1967, photorevised 1987). The fence extends eastward across the center of Section 36, from its origin at the Le Grand Canal. The augmented section of fence is approximately 145 meters in length.

UCM-2 does not appear to meet the criteria for listing on the CRHR. The machine parts are isolated, lack integrity even as isolates because they are fragmentary, and have little potential to

provide additional information. Their use as fence weights represents serendipitous reuse of surplus materials at hand for a useful purpose and as such is an interesting commentary on the fence builder. However, their recordation essentially captures their data potential.

No other historic sites, and no prehistoric sites, were recorded during the surveys.

Native American Consultation

The Native American Heritage Commission (NAHC) performed a search of its Sacred Lands files on November 8, 2000. No Native American cultural resources were identified for the project area in the Sacred Lands File. The NAHC recommended three Native American contacts who might have knowledge about the project area. One of these contacts has since indicated that she did not wish to be contacted about Merced County projects. A letter and map describing the project were sent to one individual and one group on April 18, 2001, inquiring whether they had any knowledge of sites in the project area or related concerns. One individual responded to this inquiry. She stated that although she had no specific knowledge of the project area, she felt that it had a high potential for buried prehistoric resources and recommended that all excavation for the project be monitored by a Native American observer.

4.5.2.7 Paleontological Data on the Project Site

Exposures of the Mehrten Formation, North Merced Gravels, and the Riverbank Formation, all of which occur on the proposed campus site, are potentially fossiliferous (see Figure 4.6-1 in the Geology section). The underlying Laguna Formation is also fossiliferous but is not exposed at the project site. The Mehten and Riverbank Formations have been assigned a "High" potential for the discovery of paleontologic resources within the project site. However, the North Merced Gravels are assigned a "Moderate" sensitivity rating. This geological unit consists primarily of coarse pebble- to cobble-size clasts, with only the most durable paleontological resources expected to have survived alluvial transport.

Paleontological Inventory

A paleontological survey of the proposed campus site was carried out by a professional paleontologist in late May and early June 2001. No paleontologic resources were recovered from within the Main Campus site. Grassland vegetation cover obscured most sedimentary exposures, except in low-lying, ephemeral pond areas and along agricultural ditches.

4.5.3 Impacts and Mitigation

4.5.3.1 Historic Resources Standards of Significance

The following standards of significance are based on Appendix G of the CEQA Guidelines. For the purposes of this EIR, impacts of the proposed project on historical resources would be considered significant if they would

- cause a significant adverse change in the significance of a historical resource as defined in CEQA Guideline § 15064.5.

Under the provisions of CEQA Guideline § 15064.5(a)(3) generally, a lead agency should find that a property is a historic resource if it determines that it meets one or more of the criteria for listing on the California Register of Historical Resources, which extend to a site that:

- is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- is associated with lives of persons important in our past;
- embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- has yielded, or may be likely to yield, information important in prehistory or history.

With few exceptions, to qualify as a significant historic resource a property must be at least 50 years old and also must retain physical integrity and integrity to its period of significance. For historic structures and buildings, significantly altering the setting, remodeling, or moving the structure may diminish or destroy its integrity. However, under some conditions, a building that has been moved or altered may still retain its historic significance.

4.5.3.2 Archaeological Resources Standards of Significance

The following standards of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, impacts of the proposed project would be significant if they would

- cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guideline § 15064.5; or
- disturb any human remains, including those interred outside of formal cemeteries.

"Unique archaeological resources" are accorded significance under CEQA through P.R.C. § 21083.2. A unique archaeological resource implies an archaeological artifact, object, or site about which it can be clearly demonstrated that—without merely adding to the current body of knowledge—there is a high probability that it meets one of the following criteria:

- The archaeological artifact, object, or site contains information needed to answer important scientific questions and there is a demonstrable public interest in that information; or
- The archaeological artifact, object, or site has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
- The archaeological artifact, object, or site is directly associated with a scientifically recognized important prehistoric or historic event or person.

An archaeological artifact, object, or site that does not meet the above criteria is a nonunique archaeological resource. To qualify as a unique archaeological resource, the agency must determine that there is a high probability that the resource meets one of these criteria without merely adding to the current body of knowledge (P.R.C. § 21083.2(g)). An impact on a nonunique resource is not a significant environmental impact under CEQA (CEQA Guideline § 15064.5(c)(4)). Furthermore, if an archaeological resource qualifies as a historical resource under the standards in P.R.C. § 21084.1 defining historical resources, then the resource is treated as a historical resource for purposes of CEQA, and the provisions of P.R.C. § 21083.2 limiting

the mitigation that can be required for impacts to archaeological resources do not apply (CEQA Guideline § 15064.5(c)(2)).

Section 15064.5 of the CEQA Guidelines also assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under P.R.C. § 5097.98.

4.5.3.3 Paleontological Resources Standards of Significance

Under Appendix G of the CEQA guidelines, a project potentially would have significant impacts if it would directly or indirectly destroy a unique paleontolgical resource or site, or a unique geologic feature.

Although CEQA does not explicitly define a "unique paleontological resource," for purposes of this EIR, the relevant provisions of the statute used to define a "unique archaeological resource" (P.R.C. § 21083.2) are employed, that is, "a unique paleontological resource" is a fossil or paleontological locality for which it can be clearly demonstrated that—without merely adding to the current body of knowledge—there is a high probability that it

- contains information needed to answer important scientific questions and there is a demonstrable public interest in that information; or
- has a special and particular quality, such as being the oldest of its type or the best available example of its type.

It may not be possible to ascertain before project excavation whether significant fossils are present at a specific project location within a formation. This analysis assumes that if the rock units in the geologic formations that are to be disturbed have a high or moderate potential to contain fossil materials, these formations are considered likely to incur impacts.

4.5.3.4 Analytical Method for Historic Resources and Archaeological Resources

Impacts to archaeological resources and human remains most often occur as the result of excavation or grading within the vertical or horizontal boundaries of a significant archaeological site. Archaeological resources may also suffer impacts as the result of project activity that increases vehicular traffic across the site, or increases the accessibility of a surface resource, and thus increases the potential for vandalism or illicit collection.

Significant impacts to historic built-environment features (such as buildings, canals, bridges, and other engineering features) may result from demolition or direct alteration of the features. Significant impacts can also occur if the setting of an historic structure or feature is altered by the introduction of incompatible elements in cases where the setting of the resource contributes to its significance.

Only a small portion of the proposed project site has been subjected to archaeological survey. Even areas that have been subjected to archaeological survey may contain undiscovered resources, such as buried prehistoric archaeological deposits or human remains. It is assumed that cultural resources could be present anywhere on the campus site, with particularly high sensitivity at natural water sources, such as along the alignment of Cottonwood Creek. Archaeological resources may be affected by any activity that potentially disturbs the surface or subsurface, including increased vehicular traffic, grading, or excavation. Because the proposed

project is the long-range development plan for the campus, and specific locations of buildings, facilities, and related grading and excavations have not been established, it must be assumed that the entire campus site potentially could be affected by these activities.

Historically, the project area was relatively little developed and would be expected to be less sensitive for the presence of historic archaeological resources. Although two major irrigation canals cross the proposed campus site, both have been documented by an architectural historian and assessed as not historically significant, as discussed above.

4.5.3.5 Analytical Method for Paleontological Resources

Since paleontological resources most commonly are buried in the substrate, surface examination often cannot reveal whether paleontological resources are present at a specific project location. For this reason, assessment of the potential for paleontological impacts from a project is based in part on an assessment of the paleontological sensitivity of the geological formations present or likely to be present on and under the project site, as well as on the results of field inspection. The assessment of paleontological sensitivity is based both on the presence of known paleontological sites near the project area, as well as extrapolated biostratigraphic information derived from rock units in adjacent areas or areas of regional context.

To perform this analysis, a review is made of geological maps of the project area—to determine the geologic formation likely to be present—and of previously recorded paleontological localities found in these formations. This assessment is accompanied by a field visit, for the purpose of "ground-truthing" existing geologic data and to examine exposures for exposed fossils. Finally, on the basis of records and field checks, geological formations present or likely to be present on the project site are assigned high, moderate, or low paleontological sensitivity ratings. High Potential, Moderate Potential, and Low Potential ratings are defined below:

- **High-Potential Rating.** Rock units with a High Potential for significant paleontological resources are known to have yielded vertebrate fossils within the project area or region. This does not necessarily imply that vertebrate fossils will always be recovered from a High-Potential rated rock unit, but only that there are recorded occurrences within the unit. Additional factors that are considered in making a determination pertain to inferred depositional environment and lithology.
- **Moderate-Potential Rating.** A Moderate-Potential rating is applied to rock units possessing some degree of potential, such as a favorable depositional environment for resource preservation or possessing characteristics of lithologically similar rock units in the region that have yielded vertebrate fossils. All Moderate Potential–rated rock units are recommended for field survey and construction monitoring.
- **Low-Potential Rating.** A Low-Potential rating is applied to rock units containing lithologies that do not commonly preserve significant fossil resources (i.e., coarse boulder conglomerates, or welded (ignimbrite) volcanic ash deposits). Igneous rocks, such as the granodiorite outcrops, are precluded from preservation of paleontological resources, because of their genesis within a magmatic environment.

For impact analysis, it is assumed that if high or moderate sensitivity ratings are assigned, the project may have the potential to result in paleontological impacts.

4.5.3.6 Project Impacts and Mitigation

Implementation of the proposed LRDP would result in the development and increased use of 910 acres at the proposed UC Merced campus site. Additional acres adjacent to the proposed development area are protected under the LRDP and would not be directly affected (Campus Land Reserve and Campus Natural Reserve). Because the built-environment features (barn and corral) on the proposed campus do not qualify as historic resources under the CRHR criteria (as described earlier), any project effects to these features are not considered to be significant impacts and are not discussed below.

There is a potential for both direct and indirect cultural resources impacts on the remaining 910 acres of the campus that are designated for development under the LRDP. Construction of roadways, buildings and structures, parking lots or structures, storm water detention basins, and utilities have the potential to disturb or destroy cultural resources that might be present.

4.5-1 Development of the Main Campus under the LRDP has the potential to disturb or destroy archaeological resources. This is considered a *potentially significant* impact.

As stated in the setting section, there is a potential for prehistoric archaeological resources to be present on the Main Campus site, particularly along water courses and at other natural water sources. Both surficial and buried resources could be present. Although the construction of canals across the project site has altered natural drainage patterns, both present and former creek channels would be sensitive. The margins of former and present vernal pools also could be archaeologically sensitive.

Two historic-period archaeological sites were recorded on the campus site as the result of the archaeological survey for the proposed project. Neither of these sites appears to meet the criteria for eligibility to the CRHR. However, it is possible that materials associated with the early use of the site lie buried under the refuse dump located 1,000 feet southeast of the historic ranch recorded as UCM-1 or at other undiscovered locations on the campus site. If such materials are present, they could have the potential to yield data about the early history of ranch families in this area.

Mitigation Measures

For archaeological resources valuable primarily for their data potential, implementation of the following measures would reduce potential impacts to a *less-than-significant* level.

4.5-1(a) *Prior to any construction on the Campus, the Campus will work with a qualified archaeologist to develop and conduct an appropriate construction monitoring plan and inadvertent discovery plan to ensure that any resource uncovered during construction is identified and appropriately treated. (Applicability—program level)*

4.5-1(b) *If a potentially significant archaeological resource is identified during preliminary phases of campus construction, the campus will incorporate into the proposed project design measures that will minimize or eliminate direct impacts to the deposit. These could include avoidance of the site by inclusion in landscaping or open space, placement of fill over the site, and/or project redesign. If this is not feasible, or if such measures will not ensure the avoidance*

of impacts, the University will ensure that an archaeological testing program is developed and carried out to assess the significance of the resource. (Applicability—project level)

4.5-1(c) *If a resource is determined to be significant, and if it cannot be preserved intact through project design measures, then the University will retain an archaeologist to design and carry out a treatment plan to document the data and/or preserve such scientific samples of the data for which the site is significant as may be appropriate, given the significance of the find. (Applicability—project level)*

4.5-1(d) *All projects on campus shall be conditioned with an inadvertent-discovery clause. Under this clause, construction crews and maintenance teams working on campus shall be informed by the University of pertinent cultural resources regulations and of the potential for buried resources. If an archaeological resource is uncovered during construction, work in the vicinity will halt until the potential resource has been evaluated by a qualified archaeologist and, if significant, has been treated appropriately. (Applicability—project level)*

4.5-1(e) *With respect to the refuse dump (described above), which may contain material of historic interest, if construction activity is planned in this area, or if the University elects to clear away the dump material as part of site preparation, the University will ensure that a qualified archaeologist is present during clearing of surface materials. If materials 50 years or older are revealed, the archaeologist will record the material and make a recommendation regarding the data potential of the find. If the material appears likely to contribute information regarding the lives of early 20th century ranch residents in the area, the archaeologist will, in consultation with the Campus, design and carry out a data recovery program to the extent one may be appropriate. (Applicability—project level)*

4.5-2 Development of the Main Campus under the LRDP has the potential to result in disturbance or destruction of Native American human remains. This is considered a *potentially significant* impact.

Native American burials in this area typically are found within the context of prehistoric or ethnographic archaeological sites. The mitigation measures described above therefore also apply to the avoidance of impacts to Native American burials. However, the State Public Resources Code includes additional requirements for the protection, recovery, and treatment of human remains. Further, the Advisory Council on Historic Preservation has determined that impacts to human remains cannot be mitigated through data recovery alone. Additional measures therefore are included to address potential impacts.

Mitigation Measures

Implementation of the following measures will reduce the potential impact to a *less-than-significant* level.

4.5-2(a) *Implement Mitigation Measures 4.5-1(a) through (d) to minimize the potential for disturbance or destruction of human remains in an archaeological context. (Applicability—program level)*

4.5-2(b) *A representative of the local Native American community will be offered the opportunity to monitor any excavation, including archaeological excavation, within the boundaries of any identified Native American archaeological site. (Applicability—project level)*

4.5-2(c) *In the event of the discovery on campus of a burial, human bone, or suspected human bone, all excavation or grading in the vicinity of the find will halt immediately and the area of the find will be protected. If a qualified archaeologist is present, he/she will determine whether the bone is human. If the archaeologist determines that the bone is human, or in the absence of an archaeologist, the University immediately will notify the Merced County Coroner of the find and comply with the provisions of P.R.C. § 5097 with respect to Native American involvement, burial treatment, and reinterment. (Applicability—project level)*

4.5-3 Development under the LRDP has the potential to result in disturbance or destruction of potential cultural resources through incidental activity and increased accessibility, which could result in vandalism or illicit collection. This is considered a *less-than-significant* impact.

Indirect impacts to unrecorded cultural resources may occur inadvertently through incidental campus activities not associated with specific projects, such as driving vehicles off road, geotechnical drilling for engineering data, or related planning activities. Impacts may also result if undeveloped areas adjacent to the Main Campus become more accessible to the uninformed visitor, and cultural resources there could be subject to illicit collection or excavation. However, the design of the Main Campus includes fencing on the eastern boundary and on a portion of the northern boundary to discourage human intrusion from impacting biological resources. This fencing would also help to prevent impacts on cultural resources.

Mitigation Measures

Implementation of the following mitigation measure will further reduce this *less-than-significant* impact.

4.5-3 *The University shall ensure that all campus planning and maintenance personnel are informed of the potential for cultural resources impacts, and University requirements for their protection. This shall include provision of written materials to familiarize personnel with the range of resources that might be expected, the kinds of activities that may result in impacts, and the legal framework of cultural resources protection. (Applicability—program level)*

4.5-4 Development of the Main Campus under the LRDP has the potential to disturb or destroy paleontological resources. This is considered a *potentially significant* impact.

There are no known paleontological resources within the project area. The closest known Pleistocene-age vertebrate locality is located approximately 3 miles from the project site. The geologic formations underlying the project area are judged to have either a moderate (North Merced Gravels [QTnm]), or a high potential (Merhten Formation [Tm] and Riverbank Formation [Qrb]) to contain significant paleontological resources. As defined in CEQA, when a

paleontological resource meets the eligibility criteria of a "unique paleontological resource," any disturbance to or removal of the resource would constitute a significant impact.

Construction of roadways, buildings and structures, parking lots or structures, storm water detention basins, and utilities would have the potential to disturb or destroy paleontological resources that might be present in these formations. These direct impacts could also result in the loss of geologic context, which is used to determine the age and significance of the resource. Indirect impacts of unauthorized collecting of significant fossils could occur or be increased by drawing attention to the presence and location of paleontological sites. While the potential impacts associated with construction activities could result in damage or destruction of undiscovered fossil deposits, their detection before and during construction would make these resources accessible until they are again covered over by the proposed project. The discovery and concomitant salvage of these fossils by professionals would add to paleontological knowledge and would represent a beneficial impact of construction.

The beneficial impact notwithstanding, the improper removal of a significant or unique paleontological resource without controlled data recovery could result in significant impacts to paleontological resources.

Mitigation Measures

In order to mitigate potential significant impacts associated with project construction, the following mitigation measure would be implemented.

4.5-4(a) *Prior to project construction, construction personnel will be informed of the potential for encountering significant paleontological resources. All construction personnel will be informed of the need to stop work in the vicinity of a potential discovery until a qualified paleontologist has been provided the opportunity to assess the significance of the find and implement appropriate measures to protect or scientifically remove the find. Construction personnel will also be informed of the requirement that unauthorized collection of fossil resources is prohibited. (Applicability—project level)*

4.5-4(b) *A qualified paleontologist will be intermittently present to inspect exposures of the Merhten Formation, North Merced Gravels, and Riverbank Formation during construction operations to ensure that paleontological resources are not destroyed by project construction. (Applicability—project level)*

With the implementation of these mitigation measures, the impact to paleontological resources would be *less than significant*.

4.5.3.7 Cumulative Impacts

4.5-5 Cumulative development could damage or destroy unidentified prehistoric, historic, or paleontological resources. This is a *less-than-significant* cumulative impact.

Campus, University Community, and Campus Parkway. Record searches and surveys of the Campus site, University Community, and the Campus Parkway areas have not found any evidence of prehistoric archaeological resources, historic resources, or paleontological resources within the sites of these projects or in the nearby vicinity of these projects. Record searches and

surveys of the proposed routes for the Campus Parkway have also not revealed any evidence of prehistoric archaeological resources, historic resources, or paleontological resources that might be adversely affected by that project.

Although extensive surveys have been conducted of each of these sites, the possibility that unidentified resources may exist within the areas that will be disturbed by development of the campus, the University Community, and the Campus Parkway cannot be ruled out. Prehistoric archaeological resources, historic resources, and paleontological resources that were not revealed during surveys might be uncovered during preconstruction excavation. However, as explained in Impacts 4.5-1–4.5-4, the mitigation measures for protection of prehistoric archaeological resources, historic resources, and paleontological resources in the event such resources are discovered during construction of the UC Merced campus will prevent adverse impacts to such resources. Similar mitigation measures have been proposed for the University Community and Campus Parkway projects. Implementation of these mitigation measures will ensure that significant cumulative impacts to prehistoric archaeological, historical, and paleontological resources do not occur.

Other Cumulative Development. The broader geographic area for the analysis of cumulative impacts to prehistoric archaeological resources, historic resources, and paleontological resources is Merced County. Any attempt to identify impacts to these resources that might occur because of long-term cumulative development within the county would involve undue speculation. However, the county and the incorporated cities within the county all implement policies requiring that projects that might adversely affect archaeological sites and artifacts be managed to avoid damage to those resources and that significant historic resources be protected when it is feasible to do so. In addition, CEQA and the CEQA Guidelines require that agencies assess the potential impacts that development projects they approve might have on prehistoric archaeological resources, historical resources, and paleontological resources and that appropriate measures to mitigate significant adverse effects to such resources be implemented when it is feasible to do so. It is possible, however, that damage to such resources that cannot be avoided or adequately mitigated will occur as a result of cumulative development within the county. Any attempt to assess the location, scope, or magnitude of such damage would entail speculation and cannot, therefore, be meaningfully evaluated in this EIR. Nevertheless, implementation of the LRDP project, as mitigated, will not itself cause or contribute to an adverse cumulative effect on prehistoric archaeological resources, historic resources, or paleontological resources, and there is therefore no significant project-related cumulative impact.

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