

CALFED

**TECHNICAL REPORT
AFFECTED ENVIRONMENT**

SUPPLEMENT TO CULTURAL RESOURCES

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SUPPLEMENT TO CULTURAL RESOURCES

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SUPPLEMENT TO CULTURAL RESOURCES

The following information supplements the environmental setting for the Affected Environmental Technical Report for Cultural Resources.

ENVIRONMENTAL SETTING

Study Area

DELTA REGION

The Delta Region has been used by prehistoric and historic settlements dating back 4,500 years. Prior to 1850, before significant human modification, the Delta consisted of intertidal wetlands laced with about 100 square kilometers of subtidal waterways. Both prehistoric and early historic settlement occurred primarily adjacent to natural waterways. Historic exploration, use, and settlement of the study area began with several Spanish expeditions in the 1770s. Many other important historic-period events and activities (such as land grants, the Gold Rush, and land reclamation) have influenced the cultural history of the Delta Region.

BAY REGION

The Bay Region contains deep water and salt marsh environments. It is marked, however, by extensive urban, commercial, and industrial development.

SACRAMENTO RIVER REGION

The Sacramento River Region is rich in historic- and prehistoric-period resources. Considerable archeological research has been conducted in the area, including early work defining central California's prehistory. Of particular importance are the large, deep midden sites, which provide information on prehistoric culture extending over thousands of years. In the foothills, middens, lithic scatters, and bedrock mortars predominate. Historic archeological sites and architectural resources are plentiful because this area was settled early in California's history. As in other areas in the Central Valley, resources related to agricultural development are prevalent.

SAN JOAQUIN RIVER REGION

The valley floor of the San Joaquin River Region contains many of the same types of historic- and prehistoric-period resources found in the southern Sacramento Valley. In the foothills, the numerous prehistoric sites reflect a wide variety of occupational and resource procurement activities. Historic sites are primarily related to mining, settlement, and agricultural pursuits.

SWP AND CVP SERVICE AREAS OUTSIDE THE CENTRAL VALLEY

This region includes large areas along the southern California coast and eastward into the desert. Portions of the coastal counties ranging from Monterey County to San Diego County are included in this region. Urban and desert portions of Kern, San Bernardino, Riverside, and Imperial counties complete the Central Valley Project (CVP) and State Water Project (SWP) Service Areas Outside the Central Valley.

Regulatory Context

FEDERAL PROGRAMS

The most important federal laws applicable to archeological and historic resources are the National Historic Preservation Act of 1966 (NHPA), as amended, and the National Environmental Policy Act of 1969 (NEPA), and regulations associated with them, particularly the Code of Federal Regulations (CFR) Title 36 Section 800. These statutes and regulations, as well as others that apply to cultural resources (Public Law 93-291), include a consultation process with the State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation (ACHP) to ensure that potentially significant historic resources have been adequately considered in planning the project.

NATIONAL REGISTER OF HISTORIC PLACES

The National Register of Historic Places (NRHP) has been established by statute to list historic properties deemed to have historical significance (36 CFR 60). According to 36 CFR 60, cultural resources are considered significant if districts, sites, buildings, structures, and objects are of significance in American history, architecture, archeology, engineering, and culture and possess integrity of location, design, setting, materials, workmanship, feeling, and/or association, and:

- (a) are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) are associated with the lives of persons significant in our past; or
- (c) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, possess high artistic values, or 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.

A property is eligible for listing in the NRHP or may be listed in the NRHP, if it meets one of the above criteria for significance and it retains integrity. Integrity is defined as the "authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during the property's historic or prehistoric period (National Park Service 1982)." NRHP-eligible properties must retain at least two of seven types of integrity, including integrity of location, design setting, materials, workmanship, feeling, and association. Properties may be determined eligible under national, state or local levels of significance.

Any federal action that could affect an historic property listed on or eligible for listing on NRHP is subject to review and comment under Section 106 of the NHPA. Effects on these historic properties must be considered in accordance with the regulations of the ACHP (36 CFR 800). Insignificant cultural remains usually do not require management consideration unless they possess the qualities specified by the California Environmental Quality Act (CEQA) or other laws.

State agencies receiving federal funds also are required to comply with Section 106. In general, the steps to achieve compliance with Section 106 are described below:

Inventory. Site-specific inventories are required for each project or action. Each of the levels of inventory (Classes I, II, and III) represents a higher incremental level of study. A Class I inventory is illustrated by the Cultural Resources Draft Affected Environment Technical Report. Such inventories depict existing data. Class II inventories are designed to survey samples of large land areas to provide general trends of resource distributions. Finally, Class III inventories represent intensive, 100% coverage of specific areas of potential effect. The methods used for Class III inventories frequently include walking parallel transects with surveyors separated by 30 meters. Recording archeological and historical sites at any level of inventory involves preparing site forms and an inventory report. The agency can develop inventory methods in consultation with the SHPO.

Evaluation. The agency makes determinations of eligibility with concurrence of the SHPO. Cultural resources identified during the inventory phase are evaluated to determine whether they are eligible for inclusion in the NRHP. Evaluating properties may include mapping, surface collections, or subsurface testing to determine the site's content and information potential. Consultation usually involves the SHPO and the ACHP, but consultation can be directed to the Keeper of the National Register if disputes arise.

Determination of Effect. The agency determines which properties are going to be directly and indirectly affected by the undertaking. Consultation involves review by the SHPO and the ACHP. Several of these steps can be run concurrently under a single report cover. This approach would reduce time for consultation.

Mitigation. Mitigation measures are developed for those NRHP-eligible properties that would be affected by a specific CALFED undertaking. Mitigating measures are established through completion of a memorandum of agreement (MOA) with consultation among the SHPO, the ACHP, other state and federal agencies, as appropriate, and interested members of the public. The final decision regarding implementing an action or undertaking lies with the agency. The Section 106 regulations are designed to allow the ACHP an opportunity to comment.

NATIONAL HISTORIC LANDMARK

The National Historic Landmark (NHL) designation was established by the Historic Sites Act of 1935. An NHL can be a district, site, building, structure, or object that the Secretary of the Interior has

determined possesses exceptional value in commemorating or illustrating the history of the United States. NHL properties are significant at the national level and are automatically placed on the NRHP. The National Park Service manages this program.

STATE PROGRAMS

The most important state regulations providing for the protection of historic properties, including prehistoric and historic archeological resources, is contained within CEQA Appendix K (14 California Administrative Code, Section 15000 et seq.), which outlines procedures appropriate for the protection and preservation of such resources. Sections of the Public Resources Code (Sections 5025, 5024.5, 5097.5, and 6313) prohibit unauthorized disturbance or removal of archeological or historical resources that are to be altered. The State Penal Code (Section 622.5) applies to objects of historical or archeological interest located on public or private land and, specifically exempting the landowner, provides penalties for damaging such objects. Special state designations for cultural resources include the following.

CALIFORNIA HISTORICAL LANDMARKS

The California Historical Landmarks program recognizes properties that are of statewide historical importance to California. Historical Landmark registration recognizes the following historical influences: anthropological, cultural, military, political, architectural, economic, scientific and technical, religious, and experimental. Properties that have been designated California Historical Landmarks 770 and higher are automatically included in the California Register of Historic Resources (CRHR).

CALIFORNIA POINTS OF HISTORICAL INTEREST

The California Points of Historical Interest designation recognizes properties and localities that are of local, city, or county interest. The criteria for designation are generally the same as those used for the state Historical Landmarks program.

CALIFORNIA REGISTER OF HISTORICAL RESOURCES

The CRHR provides a parallel state process for identifying and evaluating cultural resources. The register represents a comprehensive listing of California's historical resources. The CRHR places a greater emphasis on local values in assessing significance. The CRHR significance criteria is mirrored after the federal NRHP. Also currently in effect at the state level are the CEQA Statutes and Guidelines, Appendix K, Section III, which define an "important" archeological resource.

More recently, the CRHR has defined site significance using criteria closely paralleling those for eligibility to NRHP (Office of Historic Preservation 1994); however, the guidelines for implementation of these criteria have not been formally issued.

OTHER LAWS

Treatment of human remains is covered under both state and federal laws and regulations. The Archeological Resources Protection Act (except for interstate transport) and the Native American Graves Protection and Repatriation Act are specific to federal lands; State law covers state, nonfederal public and private lands. The California Health and Safety Code (Section 7052) prohibits the disturbance of human remains except under certain conditions and also specifies procedures, including consultation with the California Native American Heritage Commission, to be followed in the event that Native American graves are found.

The American Indian Religious Freedom Act (42 USC 1996) sets forth a governmental policy that federal agencies consider the consequences of their decisions on Native American religious practices.

In addition, local counties and cities have adopted policies, plans, and ordinances to protect cultural, historical, and archaeological resources within their respective jurisdictions.

Delta Region

HISTORICAL PERSPECTIVE

ARCHEOLOGY

The use and occupation of the study area by native peoples depended, in large part, on the natural setting and conditions. Prior to 1850, before significant human modification, the Delta consisted of intertidal wetlands laced with about 100 square kilometers of subtidal waterways (Atwater and Belknap 1980). Floodplains of tributary rivers, mainly the Sacramento, San Joaquin, and Mokelumne, merged with these tidal environments, producing supratidal channels within the Delta and seasonally converting many tidal wetlands into alluvial flood basins. It was primarily along the channel banks that both prehistoric and early historic settlement occurred. Additional areas of relatively high ground are the relict aeolian sand mounds scattered throughout the Delta. These were used for burial, resource procurement, and habitation sites by prehistoric populations and, later, by settlers. The Piper series soils (Cosby 1941) are representative of some of the aeolian deposits. Many of the sand deposits are strongly indurated, suggesting considerable age. Atwater (1982) dated the dunes on Bradford Island at from 10,000 to 14,000 years old; elsewhere in the Delta, dune deposits dated to a minimum of 7,000 and an approximate maximum of 40,000 years before present (B.P.).

The Mokelumne River is the largest of the San Joaquin River tributaries, contributing about 22% of the entire San Joaquin Valley runoff. The result of this large amount of runoff is an alluvial fan that deflects the Sacramento River to the west. Schenck and Dawson (1929) noted that this interaction was significant in the interpretation of the area's archeology. The distribution, density, and age of the prehistoric sites is consistent with their contention (Pierce 1988).

The Central California culture sequence is based on the stratigraphic position of culturally distinct components, recognized on the basis of recurring funeral patterns, artifact types, and induration (Lillard et al. 1939). Three periods, or horizons, are recognized: the Early Period (now dated approximately 2500 to 500 before Christ [B.C.]), the Middle Period (500 B.C. to after death [A.D.] 300) and the Late Period (A.D. 300 to 1840). This sequence has proven extremely useful, particularly because many of the

temporally diagnostic artifact types are distributed widely and contemporaneously throughout Central California and neighboring areas.

Marked cultural differences between localities have occurred at various times, differences that are not reflected in the temporal sequence. Consequently, attempts have been made to classify the cultural complexes of Central California independently. The most acceptable classification thus far is that of Fredrickson (1974), which defines three major patterns: the Windmill, Berkeley, and Augustine.

The Windmill Pattern is known only from the eastern-Delta Camanche Reservoir area, and adjacent areas of the lower valley from the middle Cosumnes River to Stockton. This pattern is equivalent to the Early Period in this area and is characterized by extended, westerly oriented burial positions, degree of weathering and induration, and diagnostic shell ornaments and stone tool forms. Considerable debate has focused on the subsistence base of these people, including whether they processed acorns (Gerow 1974, Heizer 1974, and Schulz 1970, 1981).

The Berkeley Pattern is equivalent to the Middle Period in the lower Sacramento Valley, but earlier phases may be coeval with the Early Period in the Bay Area. The Berkeley Pattern is characterized by flexed burial positions, diagnostic ornaments, and, in the valley, by the proliferation of bone fish spears or leister points and stone pestles. This appears to correspond with increase dietary emphasis on fish and acorns.

The Augustine Pattern corresponds to the Late Period in the lower Sacramento Valley. It is marked by the appearance of small projectile points, indicating the introduction of the bow, and by changes in funerary patterns and ornament styles. These cultures, in general, appear to be ancestral to the ethnographic groups of the same area and Bennyhoff (1961) has been able to correlate areal distribution of archeological artifact styles in these late groups with historic linguistic boundaries.

The Meganos Complex (Fredrickson 1974) is an additional culture pattern to be noted. This complex has been assigned to the Middle and Late Periods in the lower San Joaquin Valley and the western Delta, and is characterized by frequent extended burials without predominant orientation and by distinct cemeteries disassociated with midden areas. Such cemeteries of the Middle Period are known particularly from the sand mounds of Jersey Island, Bradford Island, Bethel Tract, Hotchkiss Tract, and Holland Tract (Cook and Elsasser 1956). It is apparent that these mounds, which can now be excavated only with great difficulty, have consolidated since the interments were made. Sites of this complex share the fishing/acorn dietary emphasis of the Berkeley Pattern.

NATIVE PEOPLES

The native peoples of the Delta area were divided among five linguistic groups, all belonging to the Penutian language stock. The far northeastern part of the Delta Region was occupied by the Valley Nisenan, the eastern part and far western part by Plains and Bay Miwok speakers, the southern part by the Northern Valley Yokut, and the north shore of the Suisun Bay area by the Patwin. Despite sharing the same environment, there were distinct material cultural differences among the five groups (Bennyhoff 1977: 47). For example, the Plains Miwok used wooden mortars, whereas their Delta neighbors, the Yokut, used stone mortars.

The Plains and Bay Miwok are members of the Utian family of the Penutian stock languages (Shipley 1978). The boundaries and divisions of the Miwok in this area, and delineation into groups, are based largely on linguistic evidence (Bennyhoff 1977, Kroeber 1925, Levy 1978, Schenck 1926). The Miwok were intensive collectors; they occupied large, fixed, multilineage villages (tribelets) located on high ground generally adjacent to watercourses. Most villages were occupied permanently except during short periods of harvesting. Camps for fishing and hunting were also part of the settlement system.

There has been some dispute over the exact boundaries and divisions of the Northern Valley Yokut and Miwoks in the Delta. Distinguishing between groups is based largely on very limited and problematic historical and linguistic evidence (Bennyhoff 1977: 127, Schenck 1926, Kroeber 1925, Wallace 1978). Moraga recorded the location of the change from Yokut to Miwok language at the Mokelumne River when he led the first Spanish expedition into Plains Miwok territory in 1806. The approximate area of the Nochochomne-Cholbon Yokut tribelets habitat was between the San Joaquin River on the east, the Old River (western channel of the San Joaquin River) on the west, south of the confluence of the three main channels on the north, and to about the point of trifurcation of the channels in the south (Bennyhoff 1977). The native population was not evenly distributed; it was clustered in a narrow strip of land bordering the San Joaquin River and its main tributaries (Wallace 1978). Baumhoff (1963) estimated a density of more than 10 persons per square mile along the waterways, which is congruent with Schenck's (1926) estimate for the Delta marshlands. Schenck estimated that villages averaged about 200 persons each and were located 5 to 10 miles apart along the main rivers. Based on historical records, Cook (1955) estimated that the area contained four or five settlements with a combined population of 1,300 persons. In 1811, Fr. Ramon Abella noted three rancherias (settlements) with a population of 900, or 300 per rancheria (Cook 1955). Considering the approximately 200 Native Americans missionized from the area, Cook concluded that the aboriginal population was 1,500 or greater.

The Northern Valley Yokut were semisedentary, with principal settlements on low mounds or levees composed of sand, silt, and clay on or near the banks of major watercourses. Loosely centralized tribes headed by a chief (the position of which was inherited) were tied to one or more principal villages. Secondary settlements consisted of small camps or villages of several households. Settlement locations appear to be in response to subsistence resources and protection from winter and spring flooding. Security also may have been a factor but direct evidence is lacking. Settlement groups broke up seasonally to exploit other resources, such as acorns, as they became available within a well-defined territory for fishing, gathering, and hunting. Settlements contained dome-shaped houses and shelters made of brush and tule. Archeological data indicate that human interments were made at Delta settlements and cemeteries. Next to settlements, there were fishing stations, hunting camps, and lithic-tool-manufacturing sites. All lithics had to be imported.

Fish, fowl, acorns, and tule roots were the primary Northern Valley Yokut subsistence resources. In addition, other resources, such as freshwater bivalves, small mammals, seeds, and bulbs, were important. Elk, deer, and antelope, although reported abundant and easily hunted by the early explorers, probably constituted a marginal subsistence resource. (Wallace 1978.)

Because of the early disruption of Yokut-speaking people, little ethnographic information is available except for some demographic data recorded by explorers and missionaries and some linguistic description. (Bennyhoff 1977, Schenck 1926, Schulz 1981, and Kroeber 1925.)

"Patwin" refers to several tribelets of people who occupied the west side of the Sacramento Valley extending from Suisun Bay north to just above the town of Princeton on the Sacramento River (Johnson 1978). The Patwin, like the Nisenan, Miwok, and Yokut, have been classified as belonging to the Penutian language family; however, Patwin does not indicate a political unity; it was a term used by several tribelets in reference to themselves (Johnson 1978). Patwin tribelets generally occupied one primary and several satellite villages and each had a definite sense of territoriality and autonomy (Johnson 1978). Their subsistence, like that of their neighbors, was based on hunting, gathering, and fishing. Details on the lifeway of Patwin who occupied the northern shore of the Suisun Bay area are little known because they were among the earliest groups in the region to be affected by missionization and introduced diseases. Bennyhoff (1977) identified the Patwin tribelet of Tolenas in the Suisun Marsh area.

The destruction of native Delta cultures was the result of several factors, the first of which was the effect of missions in northern California (Castillo 1989). Even before explorers and settlers made extensive contact, the missions of San Jose, Santa Clara, and others were drawing Native Americans away from their native villages. A second factor was the introduction of exotic diseases by European settlers. This factor was especially devastating in 1833, when thousands were killed by an illness, possibly malaria, and numerous villages were abandoned. A third factor that disrupted native societies, was the secularization of the missions in 1834. This caused many missionized Native Americans of various cultural affinities, seeking refuge from Europeans, to retreat into areas of previous cultural homogeneity (Wallace 1978). The final collapse of independent Delta cultures occurred when, after the Gold Rush, waves of American settlers appropriated native territory for agriculture. Meanwhile, village mounds of the native peoples were abandoned, reoccupied by farmhouses, buried under artificial levees, or leveled for agriculture. However, some native groups in upland areas had stabilized by 1872 (Bennyhoff 1977: 89).

HISTORIC RESOURCES

Historical Context

Historical use of the Delta Region has centered around several major themes including early exploration, settlement, reclamation, industries, agriculture, transportation, and water management projects. Although recreation and wildlife habitat maintenance gained importance during the second half of the 20th century, they did not play a crucial role in the early history of the area.

Early Exploration

The first non-native intrusion into the Delta Region occurred in 1775, when a Spanish explorer named Carnizares entered Suisun Bay. Although the difficulties associated with travel throughout the region led the Spanish to generally avoid the area, these same difficulties made the Delta Region a haven for native peoples resisting Spanish Franciscan missionization. Under pressure from the missions with their associated military garrisons, tribal domains within the Delta apparently broke down rather rapidly. Cook (1955: 56) states that "the delta area . . . was entered relatively early by the Spaniards and by the year 1820 had been almost completely swept of its native population." During the early 1800s and subsequent breakdown of the missions, the Delta once again became a refuge for "Christianized" Native Americans. This period was short-lived, however, because settlement by Euro-Americans soon followed.

With hope of creating stability in the interior, and to build a buffer zone for the coastal areas, California's Mexican-appointed governors awarded land grants in the Delta Region. Paso del Pescadero, which faced Old River in San Joaquin County, was granted in 1843. Other Mexican land grants extending into the area included Los Medanos in northern Contra Costa County, granted to Jose Noriega in 1835; Los Ulpinos in Solano County, granted to John Bidwell in 1844; and John Sutter's New Helvetia in present-day Sutter County granted in 1841 (Beck and Haase 1974, Hoover et al. 1990).

No permanent occupation is noted for the islands located in the Delta during this period and historical documents reveal that Euro-American settlement of the region did not begin to appear until after the Bear Flag Revolt of 1846. Following the acquisition of California by the United States and the nearly simultaneous discovery of gold in the Sierra Nevada, Euro-American settlement throughout the Delta and Suisun Marsh increased dramatically.

Settlement

Settlement in the Suisun Marsh area began with the establishment of Suisun City in 1850. Because of its topography, the settlement of the marsh varied for the remainder of the Delta. The major settlements would be clustered around the marsh's periphery. Vacaville was platted in 1851 and formally established in 1852 (Storey 1996). Establishment of the towns of Cordelia, Rio Vista, Fairfield, Rockville, and Vallejo soon followed. Although lands in the marsh were initially reclaimed for agricultural uses, intrusion of saltwater into the marsh resulted in the gradual abandonment of agriculture in the area. Today, although there is limited grazing, the marsh is largely undeveloped and the lands are devoted to duck clubs and the California Department of Fish and Game's Grizzly Island Wildlife Management Area (Storey 1996).

Settlement and land use patterns in the Contra Costa portion of the Delta were more diverse than those situated farther upriver. In addition to agricultural activities, growth of the region was supported by a brief flurry of coal-mining speculation on Rancho Los Medanos in the 1870s. Coal was discovered in the hills south of Antioch in 1855 by George Hawxhurst and William Israel (Theodoratus 1980). Their discovery prompted a series of mining towns to be established during the 1860s in the Mount Diablo foothills south of Antioch (Theodoratus 1980: 106).

Antioch was founded in 1850 by the Smith brothers, carpenters from New Hampshire (Hoover et al. 1990). By the turn of the century, Antioch had become a major shipping center for the Mount Diablo coal industry, as well as an agricultural area (Theodoratus 1980: 106).

In 1849, Jonathan D. Stevenson purchased Rancho Los Medanos and began to lay out the site for a city that he named "New York of the Pacific" after his home city. When the Mount Diablo coal mines began operations in the 1860s, Pittsburg Landing was the coal shipping point (Hoover et al. 1990). Because of the poor quality of the coal, the shipping industry was short-lived. New York of the Pacific was later renamed Pittsburg and was not of real importance until the 20th century, when it became a major manufacturing center and military base (Hoover et al. 1990: 62).

Farther upriver, the agricultural development spurred by reclamation was accompanied by a growth of towns along the major waterways. Many of the Delta towns prospered only briefly before disappearing. A few, such as Mokelumne City and Emmaton, were destroyed by floods. Many communities flourished, however, and continue to be inhabited today. The towns of Rio Vista, Hood, Isleton, Locke, Freeport, and Courtland represent settlements that were established as a result of the burgeoning agricultural industry. The town of Walnut Grove provides an excellent example of settlement in the Delta from agricultural use of reclaimed land.

The site of Walnut Grove was established around 1851 as a boat landing by John Wesley Sharpe. Sharpe remained at this landing, building a frame hotel and general store. His settlement was the first established in the Delta Region.

By 1880, Walnut Grove had a "commodious wharf," hotel, general merchandise store with a post office and Wells Fargo express inside, blacksmith and wheelwright shops, butcher shop, and seven residences. Four steamers, traveling from San Francisco to Sacramento, stopped daily (*Sacramento Bee*, December 24, 1880: 8). Although other towns were developing in the Delta (such as, Rio Vista, Isleton, Courtland, Hood, and Freeport), Walnut Grove was the largest and most visited because of its location midway between San Francisco and Sacramento.

By the mid-1880s, entrepreneur Alexander Brown had raised the Walnut Grove hotel one story, constructed a large public hall, operated a general store, and was an agent for the Southern Pacific Company (*Sacramento Union*, June 25, 1886: 3). Alexander Brown also raised crops, including barley;

vegetables, beans; and, after 1890, asparagus, on nearly 4,000 acres of rented land (Davis 1890). Brown established Walnut Grove as a center for shipping agricultural goods throughout the nation.

Walnut Grove also served as the center of social and economic life for many Chinese and Japanese seasonal agricultural workers in the rural Delta. The Chinatown is known to have been established by 1885, but may have been established as early as 1870. The first Japanese business, an *udan-ya* (noodle shop), opened in the town by 1896. By 1910, the Asian-American community included hotels; restaurants; and dry goods, drug, mercantile, and grocery stores (Ariki 1979: 2).

Although the transient farm laborer population declined somewhat during the Depression era, the permanent Asian-American population of Walnut Grove prospered in the early 1930s. Other Asian-American communities flourished in Stockton, Isleton, Courtland, Locke, and Rio Vista and served as centers for the rural farm laborers.

Reclamation

Recognizing the richness of the upper peat soil deposits, American entrepreneurs saw the area as potential farmland. However, with the exception of the higher natural levees, the majority of the lands in the Delta were subject to periodic flooding that precluded settlement.

The passage of the Swamp and Overflow Land Act of 1850 transferred ownership of the Delta from the federal government to the state and opened up the land for speculation by developers (Thompson and West 1879). By 1871, nearly all of the state's swamp and overflow lands had been sold (Owens 1991: 19). Under the Green Act of 1868, there were no limits on the amount of swampland available to individual purchasers and a few individuals secured title for 100,000 acres or more in the Delta area (Owens 1991: 19). By the 1870s, reclamation districts were established and attempts to reclaim the islands began.

During the late 1860s, Chinese laborers laid off from railroad construction provided the workforce necessary for a large-scale reclamation effort. Although many islands were reclaimed during the 1870s, the levees were built using unstable peat soil and often failed, resulting in floods and continual levee construction. With the exception of Bouldin Island, peat soil tracts and islands situated within the interior Delta Region were not successfully reclaimed until after the invention of various dredging machines in the late 1800s.

The Tide Land Reclamation Company, one of the first to operate in the Delta, partially reclaimed Union Island (West 1996). The first levee enclosure of any size was made in 1872 at Union Island, but was washed out in spring 1876. Victoria and Woodward islands were created when Union Island was divided. The canals outlining Victoria Island were cut before 1885 (West 1996). Work began on the North Victoria/Woodward Canal in mid-September 1876 by a labor force that included nearly 3,000 Chinese laborers. Seven to 8 miles of twin retaining walls were in-filled with dredge-pumped sand to create the levees for the canal. Portions of swamp varying in size from 10 to 1,000 acres were left on the natural channel side of Union Island to avoid the cost and flood risks associated with building levees around meander bends. Subsequently, these swamps were removed and/or cut into islands with further channel modifications (West 1996).

Reclamation of the Pescadero properties began in 1877 with the construction of a 750-foot dam across the head of Paradise Cut, the second tributary of San Joaquin River as it enters the Delta. Some 400 workers constructed the 7-foot-high earth barrier and prepared 2,000 acres for cultivation near Old River. At about the same time, other crews completed the levees on the Pescadero portion of Union Island. (Thompson 1957.)

The Byron and Clifton Court tracts were reclaimed prior to 1900. Initial reclamation of the Byron Tract from 1870 to 1874 began with a 4.5-foot levee along Old River. Flooding in 1875 was followed by the enlargement of the levee to the south from 1877 to 1879, but the land was not fully reclaimed until about 1900. Clifton Court Tract was reclaimed in 1898 or 1899 (Thompson 1957). Both tracts flooded on March 22, 1907. Periodic dredging was conducted to restore and maintain the levee system of these tracts and reclaim the agricultural potential of the land.

An important aspect of reclamation was the ability to dry out the soil and keep it from saturating. During levee construction, sluiceways and gates were built to allow captive water to be released from the islands at low tide. This drainage system worked well during normal water flows, but broke down during flood periods when seepage onto the islands was accelerated. (Thompson 1957: 275-276.)

Farmers in the Delta began experimenting with pumps as early as the 1870s, but were not successful until after 1900. The first pumps were powered by horses and were quickly replaced by steam-driven machines. Steam-powered centrifugal pumps were put into use near Walnut Grove by 1885 and soon began appearing on various islands around the Delta. Pumps became instrumental in draining land and were sometimes mounted on barges as levees were being constructed. Once complete, permanent pumping stations were installed on islands. By 1920, steam pumps had been completely replaced with electric units. Reclamation continued and included a system of bypasses designed to divert floodwaters around improved lands (Storey 1996). Over the last 80 years, all the levees have been modified and enlarged and none of the original levees remain intact.

Agriculture

In the early 1900s, the full potential of the Delta Region as prime agricultural land was realized. Reclamation of the Delta islands greatly expanded the amount of land available for agriculture and accelerated the trend toward tenant farming.

Reclamation after 1900 required substantial resources of financial capital, consolidated ownership of large tracts of land, and engineering experience. Lee Phillips and George Shima played an important part in bringing these resources together.

Phillips, along with other Los Angeles investors, purchased 25,000 acres of tule land in the San Joaquin Delta in 1902 and continued to acquire land thereafter. This group formed different corporations over the next 5 years to reclaim one island at a time (Paterson et al. 1978: 51). In 1912, Phillips formed California Delta Farms, Incorporated out of seven small single-island reclamation companies. In addition to the California Delta Farms properties, Phillips managed another 21,000 acres on Ridge, Upper and Lower Jones, and Palm tracts (Paterson et al. 1978: 21a, 22, 23).

Shima, a Japanese immigrant who leased farm land and grew potatoes in the Delta, bought and leased additional land in the region (Fujita 1980, Hata and Hata 1986: 57). Shima and Phillips agreed that Shima would lease and farm land reclaimed by California Delta Farms, including Webb, Holland, Orwood, Empire, McDonald, Shima, Bishop, Cohn, and Henning tracts and King, Medford, Mandeville, and Bacon islands (Maniery 1993). Phillips bought land, installed pumps, and built levees, and Shima prepared the peat for farming, built labor camps, and farmed or rented to tenant farmers (Maniery 1996).

Farming during this period was conducted either by these large-scale operations or by tenant farmers who rented land. Although the first farm labor camps were located on levee grounds, by 1900, Delta farmers devised a series of camps to facilitate cultivation of vast fields. Farmers divided each tract of land into sections ranging from 100 to 500 acres. A labor camp was located in each section, often at the levee base. Each camp possessed its own housing, cooking facilities, sheds, horses, barn, and farm

implements. Large warehouses for packing, storing, and processing crops were usually located near the top of the levees close to landings or wharves (Paterson et al. 1978: 42-43).

Many of the laborers and tenant farmers before World War II were Asian. After initial levee construction, Chinese provided the major workforce, remaining to prepare the land for cultivation and later as seasonal laborers. Other situations developed where a landowner would lease land to one Chinese person, who then brought his countrymen to farm (Chan 1986: 208-209).

During the early 20th century, Japanese immigrants began to replace the Chinese as tenant farmers and laborers, largely as a result of anti-Chinese legislation restricting property ownership and immigration rights. Although this Japanese workforce was augmented at times by East Indians (1910s) and Filipinos (1920s), it remained the dominant labor force until the removal of Japanese from the area during World War II (Maniery and Costello 1986: 38-45). During the war, the district was occupied by Filipino and Mexican laborers, who were brought in by the local farmers to take over the work in the orchards and fields (Kawamura 1987). Other labor groups included the Italians and Portuguese.

Also of note within the Delta Region are George Hack and State Senator William Johnston. Senator Johnston was a prominent farmer in the Delta Region, and his Rosebud Ranch, north of Hood, is listed on the NRHP (Boghosian 1979). Hack was in the dairy business and his house, constructed in 1879, is also a California Point of Historical Interest (Maniery 1993).

Today, as in the past, much of the land in the study area is owned by nonresident corporations, although a number of large family farms remain active. Leasing farmland is still common. One result of property consolidation has been the destruction of tenant farmsteads and labor camps. Abandoned structures were commonly burned and the land used for crops (West 1996).

Mechanization of farming has replaced the need for large numbers of laborers except during specialized short-term activities. The ethnicity of the work force also has changed through time. Today Mexicans and Mexican-Americans compose the largest ethnic labor group. The majority of the crops in the study area, such as asparagus, are of high value and a large percentage are shipped throughout the United States. Trucks, trains, and planes have replaced barges and boats for the shipment of agricultural goods. Landings and wharves, common during the historic era, have been abandoned for the most part and are marked by a few remaining piers.

Transportation

Transportation around the Suisun Marsh during the early 1800s was primarily by water, although the Pony Express route skirted the edge of the marsh in 1860 and 1861 (Storey 1996). In addition to sail and steamships that plied the waterways since the 1850s, small boats, barges, launches, and schooners also provided access to the Delta. Several steamship companies called at large and small landings throughout the region. Improved landings consisted of piers and floating docks; others were merely clearings on a bank where vessels could secure lines to trees. Small piers or brush landings, consisting of masses of brush and tree pruning, continued to be used well into the 20th century (Waugh 1985: 20).

Many landings were established to transport grains and produce grown on the islands to markets in San Francisco, Sacramento, and Stockton and were usually located at agricultural camps and canneries. Mohr's Landing was established north of Bethany (Hillman and Covello 1985). Webb Landing was established by 1885 and, by 1901, two additional landings were in operation near Webb (Punnett Brothers 1901). Days Landing, named after Sherman Day, was located in the northwest portion of Bacon Island along the Old River levee (Reid 1883). In 1894, two landings, Schultz and Central, were established in the southwest corner of Bouldin Island (Compton 1894), with an additional 14 being

constructed by 1901 (Punnett Brothers 1901). Only seven of these landings were still in existence on Bouldin Island by 1912 (Quail 1912).

Gasoline launches, used throughout the region from about 1900 to 1920, provided service to the more out-of-the-way areas of the Delta (Storey 1996). Roads were typically constructed on levees or raised berms and remained primitive until truck and car traffic increased around 1910. By the 1920s, after increased development of ferries and bridges, trucks replaced water-based transportation. For the most part, the marsh region was excluded from this development (Storey 1996).

Several ferry crossings were present in the study area during the historic era. Benson's Ferry, California Historical Landmark 149, was purchased by John A. Benson in 1850. In 1852, Benson laid out the then-principal wagon road between Sacramento and Stockton (California Department of Parks and Recreation 1990). Ferry crossings to Clifton Court and north of Bethany are noted on the 1913 U.S. Geological Survey (USGS) map. Ferry service operated between Brannan Island and Rio Vista and between Grand Island and Brannan Island from 1882 to 1919 (Thompson 1981). By 1926, bridges replaced most ferry operations (Waugh 1985); however, ferries still operate at Woodward and Bradford islands.

Between the turn of the century and World War I, an expansion of railroads throughout the Central Valley began to affect the pattern of Delta transportation (Owens 1991). The Southern Pacific Railroad Company organized the SSRR in 1903 (Maniery 1992). By 1905, SSRR began to purchase land between Sacramento and Walnut Grove on which to construct a railroad branch line to serve the agricultural communities of the Delta (State of California 1980).

SSRR was planned to provide service from Sacramento to Stockton, with a branch line extending from Walnut Grove to Antioch (Maniery 1992). When the initial plans fell through to join the branch with the main line of either the Southern Pacific or Atchison, Topeka, and Santa Fe, it became a branch line feeder of the Southern Pacific system instead (State of California 1980: 19). Although other railroads in the region were elevated on certain sections of the levees, the Branch Line railroad was unique because the majority of its length was elevated (Maniery 1992). The elevated grade afforded protection against flooding, a major concern in the reclaimed areas of the Delta.

Although the railroad's primary objective was to transport agricultural produce from the Delta to Sacramento and points beyond, it also served as a vital link between the communities in the upper Delta Region and distant markets (Maniery 1992: 3). Although steamboats and gas-driven launches remained the mainstay of the Delta transportation system during the early 20th century, the railroads provided an alternative method for shipping produce, thus saving the local farmers money and time. At least two of these railroads and branch lines, the Walnut Grove Branch Line and the Sacramento Southern Rail Line, have been determined eligible for the NRHP.

Industries

Although agriculture formed the basis of the study area's economy since the 1850s, various industries were undertaken during the 20th century, including canning, sugar refining, and brick making. These industries were attracted to the Delta Region, in part, because of the deepwater river channel, which made transportation by major shipping lines viable.

One of the most important of these early industries was canning. The first cannery in the Delta Region was established in Yolo County to pack salmon. Although no physical remains are left at this site, it is listed in NRHP and the California Inventory of Historical Resources.

Except for the aforementioned example, it was the asparagus boom that was largely responsible for initiation of the canning industry in the Delta. Both Bouldin and Andrus islands had asparagus canneries in operation by the turn of the century and, over the subsequent years, numerous canneries were established between Isleton and Locke.

By the mid-1930s, improved transportation routes and methods resulted in a shift of cannery operations to major urban centers. With this shift, the canneries had access to a greater variety of crops, permitting a longer packing season and a larger labor pool. Industrial canneries continued to relocate and, by 1940, most of the Delta canneries had ceased operations.

Interest in sugar refining was widespread in California in the 1870s and several pioneer companies attempted to establish refineries (Schulz and Farris 1994: 109). A number of Andrus Island farmers joined together and formed the California Sugar Manufacturing Company, constructing a factory on the eastern edge of Isleton (Schulz and Farris 1994). Although the Isleton refinery operated for only a few years, there were others in the region that did prove successful. One such firm, California and Hawaii Sugar Company, later known as C & H Sugar, began refining at a plant in Crockett on March 6, 1906. This company continues to operate at the mouth of the Delta and now produces more refined sugar in 3 weeks than was turned out in its entire first year of operation.

The beginnings of brick manufacturing in the Delta Region are unclear. As noted by Schulz and Farris (1994: 52), brick manufacturing in the mid-1900s was often little more than a cottage industry. Temporary kilns, often set up only long enough to fire sufficient bricks for a building or two, could be quickly dismantled and may be the source for reports of brick construction at Mokelumne City and Walnut Grove (Schulz and Farris 1994). However, more permanent and productive brick factories were in operation in the Delta Region by the 1880s.

Between 1878 and 1895, two factories operated in the upper Delta Region, one at Freeport and one near Benson's Ferry. With kilns situated on the riverbanks and clay being obtained from nearby pits, common, ornamental and pressed bricks were produced and shipped to San Francisco from the Freeport plant. Output was 2,000,000 bricks in 1878, and 4,500,000 the following year (Schulz and Farris 1994: 60). With slightly lower yearly outputs, the factory near Benson's Ferry was in operation by 1880. Apparently a fire ended brick making operations at this location in 1885; the Freeport plant lasted until 1895 (Schulz and Farris 1994).

Military Use

Military use of the upper reaches of the Delta has been limited, primarily focusing on the storage and transportation of supplies at Rough and Ready Island in Stockton. Between 1933 and 1940, the U.S. government dredged a deepwater channel along the north side of Rough and Ready Island during creation of the Port of Stockton. In 1944, owners sold most of the island to the U.S. Navy for development of Naval Supply Annex Stockton (NSAS) during World War II. The development of NSAS converted a portion of the island farmland into a military installation, complete with transportation and utilities infrastructure (Dames and Moore 1996: 11). There were few changes to the installation between 1945 and 1960. In 1965, NSAS was decommissioned and a Naval Communication Station was established (Dames and Moore 1996: 11).

World War II military bases were also located at Pittsburg and Antioch. Camp Stoneman, in Pittsburg served as a U.S. Army debarkation base while naval repairs were performed at the Antioch shipyards. Located immediately outside of the town of Concord, at the edge of the study area was the Concord Naval Weapons Station and Ammunition Dump (Manieri pers. comm.).

CURRENT RESOURCE CONDITIONS

ARCHEOLOGY

Before being leveled for agriculture, many of the prehistoric sites in the Delta were low mounds, ranging in height from 6 inches to more than 7 feet above the surrounding land surface (Schenck and Dawson 1929). Mounds are generally assumed to be natural rises that were enlarged by the gradual accumulation of midden, although there is some historical evidence that they may have been intentionally modified by the inhabitants (Belcher 1843: 130). Some of the mounds extend below the current ground level and some are buried entirely, with no surface evidence. These later sites have been found exclusively during excavations unrelated to archeological investigations. Sites are generally located adjacent to watercourses. Late prehistoric sites are found along and upslope of the 1850 tidal influence line and on sand mounds within 10 feet of present day sea level. The composition of the cultural deposits varies greatly from black loam to yellow, silty clay. Intermediate deposits contain varying amounts of fine sand, generally yellow or tan, and may be representative of sublevels of mound deposits. Hardpans are common in sites in the higher elevation areas and in some sand mounds, most likely the result of long-term weathering. No prehistoric cultural deposits, other than isolates, have been reported in peat (>50% organics) or peaty mucks (25 to 50% organics).

In situ prehistoric remains contained within Delta deposits are restricted to the upper two-thirds of the Holocene (<6000 years). Unlike the San Francisco Bay, where sites extending from 3 to 18 feet below sea level have been found (Bickel 1978), no prehistoric Delta sites, with the exception of one questionable report (California Department of Transportation 1989), have been found to extend below contour elevation of less than 5 feet below mean sea level (msl) (based on USGS 7.5-minute quadrangle map elevations).

Some Delta sites are reported to extend below present ground level and others are completely buried by alluvium. No attempt has been made to measure or date this alluviation, but the rate is undoubtedly highly variable and, as Schenck and Dawson (1929: 330) note, a single event may be accountable. The few radiocarbon dates available for cultural deposits indicate that all are less than 4500 years B.P. (Schulz 1981). These relatively late sites were easily recognized and, therefore, were noted by early researchers. Manifestations of earlier cultures, after thousands of years of weathering, burial, and erosion, may be far more subtle and not so readily evident as those from the later period sites. This does not preclude that earlier sites and sites with deposits significantly below sea level could be found, but it does indicate that the likelihood of finding such sites would be low. Such a finding would be important because it might clarify the role that sea level and subsidence has had in the development of the Delta during the Holocene and may reveal an unknown cultural pattern.

Recorded Prehistoric Sites and Relationship to Landforms

To assess cultural resource distribution in the study area, information was obtained from the SHPO and the Information Centers of the California Historical Resources File System (Information Centers) at Sonoma State University, Sacramento State University, and Stanislaus State University. A delimited file containing locational and site attribute data was clipped to restrict geographic coverage to correspond to the study area. These data were downloaded into Reclamation's geographical information system (GIS) with ARC/Info 7.0.3 as the primary software. Programming was accomplished through ARCMacro Language.

Site locations were plotted on USGS 7.5-minute quadrangle overlays using Universal Transverse Mercator coordinates and compared to hard copy locations obtained at the Information Centers to check

for accuracy. Where locational errors were discovered, they were corrected. Plots were made on soils/landform data and Atwater's 1850's line of tidal influence and Quaternary sand deposits. Site density was determined for each individual soil/landform unit. Further sorts were based upon site attributes.

A total of 192 archeological sites are recorded within the Delta Region. These sites are not evenly spread across the study area. Certain soils or landforms contain a relatively greater number of sites than do others. As an example, channel deposits, floodplains, and basins compose approximately 40% of the total acreage within the study area, but approximately 80% of the prehistoric sites are located within these landforms. In contrast, those landforms identified as mucks, organic soils, and collectively fans, basins, and terraces compose 25% of the study area landmass and contain less than 4% of the prehistoric sites (Table S-1).

One landform deserves special mention. Peat and muds of tidal wetlands represent approximately 25% of the study area but contain 10% of prehistoric sites. It is generally believed that such peat lands were undesirable for prehistoric occupation (West 1994). Pleistocene fossil sand dunes and other sand mounds protrude through these peat soils and these microenvironmental localities served as the basis for habitation. Such areas served as one foundation for the well-known mounds found in the Sacramento-San Joaquin valleys. With the exception of six Delta quadrangles, the current level of GIS data does not record the presence of these sand features. In quadrangles where the sand mounds have been mapped, the correlation with site location is unambiguous.

Elevation is another important environmental variable that affects site location. Approximately 90% of the sites in the study area are located beneath an elevation of 15 feet msl. The majority of sites are positioned in a band between sea level and 10 feet. Relatively few sites are recorded with elevations higher than 25 feet.

Relatively little systematic inventory of the Delta has been accomplished despite large-scale impacts from widespread agricultural development. Recent inventory reports describe systematic methods where only a small percentage of the study area was examined; however, it is believed that most of the habitation sites present in the Delta have been recorded. Prominent prehistoric mounds attracted the interest of early archeologists and many sites were documented. Approximately 80% of the known prehistoric sites were recorded prior to 1960.

Geographic Reconstruction

As noted, the geography of the Delta is quite different today than it was prior to 1850, before extensive dredging and building of levees for reclamation of farmland. In some cases, these activities placed prehistoric archeological sites beyond their proper environmental context. Based on the reconstruction of the lands subject to tidal influence (Atwater 1982) and a landforms/soils map, it is possible to view more clearly late prehistoric archeological sites in their original environment. The data are compatible to those observed in the Cosumnes River area (Pierce 1988).

Reconstructed watercourses, areas presently and formerly subject to tidal influence, and other features of surface geology (Atwater 1982) were used as a basis for generating predictive models of prehistoric settlement patterns in the south-Delta Region (West 1994). The reconstruction of environmental features in the south Delta suggests a relationship between specific natural features (such as streams, major water channels, margins of tidal wetlands); sediment type; and elevation and the presence of archeological sites. Further mapping of extinct watercourses can help to explain the location of other sites and can be used to define areas of sensitivity for archeological sites that may now be buried. Although the relationship between cultural chronology and site distribution has not been addressed in this study or the

previous south-Delta study, such analysis is warranted in future studies. Finally, age-dating the sediments on which sites are found may be useful in predicting the location of same-period sites.

NATIVE PEOPLES

No reservations or rancherias are located within the legal Delta. A review of the primary ethnographic literature for the Delta Region found no traditional properties or sacred sites. Information about the presence of traditional cultural properties was requested from the Native American Heritage Commission. This included 14 individuals from whom information on the Delta also was requested. No known information was provided on traditional cultural properties or sacred sites.

HISTORIC RESOURCES

Historic use of the Delta for over 150 years has left a wide variety of historical property types in the region. Perhaps the most obvious of these are the hundreds of houses, factories, and commercial buildings that are present within the project. Farms with associated barns, sheds, milkhouses, outhouses, and fences line the main rivers, particularly between Rio Vista and Sacramento; many date to the 19th century. Buildings from labor camps, such as boarding houses, cooking houses, bathhouses, barns, sheds, and offices, can be found on most islands, although only Bacon Island retains a full complement of labor camps. All towns within the area have historical commercial and residential districts, portions of which have been surveyed and documented.

Landforms (Landform Code)	Area (x1000)	% Area	Prehistoric Site Codes ^a								Total Sites	% Sites	
			01	02	04	07	16	15	15,09	09			
Channel Deposits (11)	82.1	10.3	11					7	23	14	12	67	34.9
Mucks: Delta/Marsh (12)	62.0	7.8								2		2	1.0
Floodplains (14)	59.1	7.4	4					5	3	8	8	28	14.6
Peat and Muds (15)	185.9	23.4	1					1	3	9	4	18	9.4
Organic Soils (16)	105.2	13.2	1					1	1		1	4	2.1
Basins & Basin Rims (22)	151.8	19.1	3	3				2	17	17	13	55	28.6
Interfan Basins (31)	8.2	1.0										0	0.0
Fans Basins Terraces(32)	36.9	4.6							1			1	0.5
Eolian Deposits (33)	14.6	1.8						1			1	2	1.0
Valley Fill (34)	38.3	4.8			1			2	1	2		6	3.1
Alluvial Fans (35)	9.2	1.1										0	0.0
Low Terraces (41)	25.5	3.2						2	1	1		4	2.1
Dissected Terraces (51)	4.4	0.5							1			1	0.5
Steep Uplands (62)	7.0	0.8					2		1			4	2.1
Mountain Slopes (63)	4.5	0.5										0	0.0
Total	794.7	N/A	21	3	1	2	21	52	53	39	192	N/A	N/A
Percentage of Site Types			10.9	1.5	0.5	1.0	10.9	27.1	27.6	20.3	N/A	N/A	N/A

NOTES:

N/A = Not applicable

a Prehistoric Site Types: 01 = Unknown; 02=Lithic Scatter; 04 = BRM/Milling Feature; 07 = Architectural Feature; 15 = Habitation Debris; 16 = Other; 15 and 09 = Habitation Debris with Burials; 09 = Burials.

Table S-1. Distribution of Prehistoric Site Types by Landform Type in the Delta Region

Less visible are the scores of historical archaeological resources within the study area. In the late 19th and early 20th centuries, most Delta islands were ringed with labor camps. Work on a few islands has identified archaeological remnants of camps, including structural foundations and buried trash deposits; only a few of the known camps have been formally recorded and assigned trinomial numbers. Subsurface refuse deposits, tunnels, and other features have been uncovered in the back lots and streets of Sacramento and Walnut Grove and most likely exist in other towns as well. Remnants of houses, foundations, refuse deposits, military installations, and industrial activities (cannery foundations) also are represented by archaeological remains and occur ubiquitously across the landscape. The majority of these have not been formally recorded.

Archaeological resources are not limited to the land. Several shipwrecks have been documented archaeologically off the City of Sacramento waterfront, and numerous others are suspected to occur within the deepwater channels. Remnants of historical wharves and landings are visible in the sloughs and channels of the Delta. Other underwater resources could exist.

The following discussion is based on data obtained from a limited number of historical sites. A comprehensive list of all historical resources located within the Delta Region was not feasible because of incomplete data. Historical archaeological sites that were not entered into the state trinomial system were not considered. It is acknowledged that the historical resources described below are incomplete. The historical resources that were considered for this study are listed by county in Table 1 in the technical report.

Alameda County

Historic resource themes found in Alameda County include architecture, agriculture, exploration/settlement, and economic/industrial. Recognized and/or documented historical listings within the project are few and include one historical archaeological site for the Delta Region. This site, CA-ALA-455, contains at least one structure in addition to other features.

Contra Costa County

Historic resource themes found in Contra Costa County include architecture, agriculture, economic/industrial, exploration/settlement, government, and military. Two historical districts, Pittsburg and Black Diamond, in addition to 85 individual properties, have been either listed or determined eligible for NRHP. The individual properties include building, mines, landing sites, ranches, railroads, and one cemetery. There are two properties that have been listed as California Historical Landmarks, and a total of 18 historical archaeological sites that have been entered into the state trinomial system.

Sacramento County

Historic resource themes found in Sacramento County include architecture, agriculture, economic/industrial, exploration/settlement, and government. NRHP lists five historical districts containing over 231 structures in addition to six individual properties. There are three historical bridges and two railroad systems that have been determined eligible for NRHP as well. The California Points of Historical Interest lists two structures. Four historical archaeological sites have been entered into the state trinomial system, although others have been identified but not yet assigned numbers. Portions of Sacramento have been surveyed for historical and architectural resources for inclusion in the Office of Historic Preservation's Survey of Surveys. It is probable that the current listing contains only a small portion of the actual number of historical resources located in Sacramento County.

San Joaquin County

Historic resource themes found in San Joaquin County include architecture, agriculture, economic/industrial, exploration/settlement, government, and military. NRHP lists one historical district, Bacon Island Rural Historical District, and 29 individual properties in the communities of Tracy and Stockton, portions of which are within the study area. The California Historical Landmarks listing includes four resources within the Delta Region, and the California Points of Historical Interest lists one structure. A total of 35 historical resources have been included in the state trinomial system. Portions of the cities of Stockton and Tracy have been surveyed for historical and architectural resources for inclusion in the Office of Historic Preservation's Survey of Surveys. It is likely that the current listing contains only a small portion of the actual number of historical resources located in the Delta Region.

Solano County

Historic resource themes found in Solano County include architecture, agriculture, economic/industrial, exploration/settlement, government, military, and social/education. NRHP lists one historical property and 18 historical archaeological sites that have been entered into the state trinomial system. The California Points of Historical Interest lists one structure. In addition, the nearby communities of Cordelia, Rio Vista, and Suisun City contain 21 NRHP properties, primarily buildings, some of which may be in the study area.

Yolo County

Historic resource themes found in Yolo County include architecture, agriculture, economic/industrial, exploration/settlement, government, and social/education. NRHP lists 37 historical properties in the Delta Region, and one archaeological site is in the state trinomial system. Portions of the city of West Sacramento have been surveyed for historical and architectural resources for inclusion in the Office of Historic Preservation's Survey of Surveys.

Bay Region

HISTORIC PERSPECTIVE

ARCHEOLOGY

The earliest known occupation of the San Francisco Bay Area took place by approximately 8000 B.C., based on radiocarbon dates from a few locations in the south Bay Area. Several radiocarbon dates from sites throughout the Bay Area indicate that populations of hunter-gatherers were sparse by approximately 5000 B.C., with settlements in the hill country and along the bay and ocean shores. This Archaic Period is characterized, like the Sur Pattern identified in the Monterey area, by generalized hunting and gathering subsistence. There are midden deposits with a wide variety of faunal remains, including shell, but shell mounds are not typical of this period.

By approximately 2500 B.C., the Berkeley Pattern appears in the east Bay Area (Contra Costa County). It has been hypothesized that the Berkeley Pattern "...represents Utian (Miwok-Costanoan) cultural developments and geographic spread throughout the Bay and northern Central Coast regions. Old Berkeley Pattern components share many traits with those of the Windmiller Pattern, suggesting a common origin." (Moratto 1984). No evidence exists to support a claim of social or cultural

replacement, and it has been concluded that there was continuous occupation of the area by Costanoan people (ethnographically known) for more than 2,000 years (Moratto 1984).

NATIVE PEOPLES

The Costanoans are a linguistically defined group composed of several autonomous tribelets speaking eight different, but related, languages. The Costanoan languages, together with Miwok, compose the Utian language family of the Penutian stock (Levy 1978). The territory of the Costanoan people extended along the coast from San Francisco Bay in the north to just beyond Carmel in the south and approximately 60 miles inland. This territory encompasses a lengthy coastline and several inland valleys (Breschini et al. 1983). The primary sources for ethnographic information about the Costanoans are the Culture Element Distribution lists compiled by Harrington (1942). Other sources include notes of explorers, missionaries, and seafarers who came in contact with the Costanoans (Levy 1978).

The Costanoans were hunter-gatherers, relying heavily on acorns and coastal resources. However, a wide range of other foods also was exploited. These sources included various seeds (growth was promoted by controlled burning), buckeye, berries, roots, land and sea mammals, waterfowl, reptiles, and insects.

The Costanoans were politically organized according to tribelets, each tribelet having a designated territory. Marriages were polygamous, households were generally composed of patrilineally extended families, and clans and moieties were the basis for group identification.

In religion, prayers and offerings (for example, to the Sun) were practiced, as were shamanism and witchcraft. Dreams were interpreted and used as guides for future activities (Levy 1978). Tule balsams for watercraft, bows and arrows, cordage, sea otter blankets, and twined basketry were made (Levy 1978), as was the usual range of lithic and bone tools.

In 1770, the time of the establishment of the first mission in Costanoan territory, the population numbered an estimated 10,000, but it declined to less than 2,000 by 1832 because of introduced disease and a decreased birth rate (Levy 1978). Missionization of the Costanoans virtually destroyed their culture.

HISTORY

The Bay Region is characterized by urban and suburban development since the mid-1800s. The area has been a major shipping, manufacturing, military, and commercial center for all of northern California since the 1860s. Historic/architectural resources are related to the settlement of the region and include economic/industrial facilities, residential properties, commercial establishments, military installations, and government facilities.

CURRENT RESOURCE CONDITIONS

ARCHEOLOGY

Considerable industrial and residential development in this region has taken a toll on archeological resources. Prehistoric sites have been destroyed by urban development and by the spread of industrial construction. Archeological sites remain in areas that have not been fully developed. Sites also are found capped under asphalt and below buildings.

NATIVE PEOPLES

There are no formal reservations or rancherias present in the Bay Region. Numerous Native Americans live in the area. Mount Diablo is a well-known landmark that holds mythic importance to the Costanoans (Kroeber 1925: 472) as part of one of their creation myths.

HISTORIC RESOURCES

Numerous historic properties are recognized as historically significant under state and federal programs. Table 2 (in the technical report) lists archeological and historical properties, as reported by the CVPIA Technical Appendix. Although development along waterfront areas is intense, significant numbers of historic properties exist, as illustrated by the table. Historic preservation programs, societies, and organizations are active in the Bay Region.

Sacramento River Region

HISTORICAL PERSPECTIVE

ARCHEOLOGY

The northern high Sierra Nevada foothills appear to have been first used by Great Basin people around 6000 B.C. By approximately 2000 B.C., people possibly from the Great Basin were seasonally hunting and gathering in the higher elevations and apparently also extended well into the Sacramento Valley. Their material culture has been termed Martis, after the Martis Valley, where they were first recognized.

Four additional prehistoric phases or complexes comprise the archeological sequence for this area. Patterns of human occupation are based on settlement patterns, projectile point forms, stone vessel and mortar types, burial practices, and ornamental forms. The Mesilla Complex (approximately 1000 B.C. to A.D. 1), Bidwell Complex (A.D. 1 to 800), Sweetwater Complex (A.D. 800 to 1500) and finally the Oroville Complex (A.D. 1500 to 1833) represent the chronology for this area. The epidemic of 1833 marks the end of the Oroville Complex.

A tentative reconstruction of a prehistoric sequence has emerged for the west side of the northern Sacramento Valley. This sequence is marked by several cultural introductions that may have coincided with population movements into the region. Specifically, the earliest occupants of this portion of northern California are believed to have been Hokan speakers whose material culture closely resembled the assemblages of the Borax Lake and Mendocino complexes dating to a similar time period (4500 B.C. to A.D. 200). Large, wide-stemmed projectile points, manos, and milling stones are frequently encountered artifact types.

By approximately A.D. 200, Penutian-speaking people entered the region and initially disrupted, and eventually displaced, the Hokan occupants in many areas. As the Penutian expansion progressed, considerable pressure was exerted on the neighboring Yana, who eventually withdrew a substantial distance from the eastern edge of the northern Sacramento Valley. The archeological expressions of this late prehistoric time period in Yana territory are represented in the Mill Creek and Dye Creek complexes (Dondero et al. 1982), which is contemporary with the Shasta Complex materials of the Redding area. Sundahl (1982) further distinguishes Tehama Pattern peoples (Yana Indians) from Augustine Pattern peoples (Shasta Complex, ancestors of the ethnographic and historic Wintu Indians).

NATIVE PEOPLES

Seven Native American groups occupied the general area of the Sacramento River Region. These seven groups are divided into two language stocks. The Wintuan and Maidu linguistic families are derived from the Penutian language stock. The Maidu, Konkow, and Nisenan speak variations of the Maidu Family, whereas the Wintun, Nomlaki, and Patwin are separated into the Wintuan Family. The Yana, found in the north east portion of this region, speak a language derived from Hokan stock (Shipley 1978).

The Maidu (also known as northeastern Maidu), Konkow (also known as northwestern Maidu), and Nisenan (also known as southern Maidu) inhabited an area of California from Lassen Peak to the Cosumnes River, and from the Sacramento River to Honey Lake. The division of these three groups is based on language differences and geographic location.

The subsistence strategy of the Maidu, Konkow, and Nisenan was based on seasonally mobile hunting and gathering. Acorns, the primary staple, were gathered in the valley along with seeds, buckeye, salmon, insects, and a wide variety of other plants and animals. During warmer months, people moved to mountainous areas to hunt and collect food resources found in higher elevations, such as pine nuts. Because their territory was largely a mountainous one, these groups relied more heavily on hunting than did the other people.

Politically, the Maidu, Konkow, and Nisenan were organized around the tribelet. Each tribelet was composed of several villages, and when needed for group decisions or group activities, the headman of one of the villages in a tribelet was selected to be the leader. Headmen were not powerful, but acted as advisors and, among the Maidu and Konkow, were chosen through the auspices of a shaman for qualities such as wealth, maturity, ability, and generosity. Among the Nisenan, the headman position was hereditary.

The histories of the Maidu closely parallel one another following Euro-American contact in 1808. After the first contact, extensive exposure to whites occurred between 1828 and 1836, with intensive fur trapping in the region by Hudson's Bay Company. In 1833, a malaria epidemic killed up to 75% of the Maidu population. Sutter's Fort, established in Nisenan territory in 1839, became the focal point of settlers and miners' incursions into Maidu and Konkow areas (especially after the 1848 discovery of gold). The population reduction from the epidemic left the Maidu, Konkow, and Nisenan unable to resist the overwhelming flood of miners and settlers. Many of the few survivors became wage laborers on mines and ranches, and their language and culture diminished.

The western side of the Sacramento River Region, north of Suisun Bay, was inhabited by Wintuan-speaking people. Linguistic analysis has divided these speakers into the Patwin (a southern group), Nomlaki (central group), and Wintu (northern group). The central and northern groups are closely related to one another and are combined for this discussion.

Wintu and Nomlaki subsistence was based on three main staples: deer, acorns, and salmon. All three were abundant within the western Sacramento Valley, particularly along the Sacramento River and its primary tributaries. These staples were supplemented with an immense array of less abundant resources, some seasonally available and some procurable year-round.

The availability of salmon has been used as an important variable in assessing prehistoric population levels (Baumhoff 1963). The exploitation of salmon is considered a major determinant of site distribution within portions of the Redding area (Raven et al. 1984). Other important riverine resources included trout, lamprey, whitefish, suckers, mussels, and clams. Fish poisons were used in securing various aquatic resources (La Pena 1978), many of which were then dried and stored for winter use (Du Bois 1935).

Deer constituted a major dietary staple, a food source that was both abundant and available essentially year-round. Deer were often hunted individually with bow and arrow, but also communally by being driven into snares, into ambushades, or over cliffs (Du Bois 1935). Other animals that were hunted include bear, rabbit, quail and other birds, rodents, and certain reptiles (Goldschmidt 1978, Du Bois 1935).

Acorns constituted a food resource that was seasonally abundant as well as storable. Prepared during late prehistoric time periods with a hopper mortar and pestle into a meal for soup or a flour for bread, acorns were available for immediate consumption or for winter storage. Black and valley oak acorns were preferred for breads. Buckeye, which, like acorns, had to be leached, was an important vegetal resource, and other vegetal foods, including herbs, nuts, berries, fruits, seeds, and roots, were consumed in large quantities in early spring and summer (Goldschmidt 1978, Du Bois 1935).

Although the nuclear family was the basic, face-to-face interaction group of the Nomlaki and the Wintu, the social life of both groups was centered on the village, or tribelet, as originally described by Kroeber (1932a). Village authority was vested in a headman whose succession was inherited patrilineally, subject to approval by other male elders.

The Nomlaki and Wintu were greatly affected by the 1833 malaria epidemic and they never overcame the devastating effects of this epidemic. Following the arrival of miners and settlers, the Nomlaki and Wintu suffered further reductions in population. Eventually, survivors were moved to reservations and camps. By the 1930s, there were three Nomlaki rancherias of six households each, with the men serving primarily as casual or migratory laborers (Goldschmidt 1978).

The Patwin ranged from Suisun Bay north along the Sacramento River to beyond the Sutter Buttes. Their western boundary was formed by the Pomo, Wappo and other groups. Tribelet settlements tended to be located on high ground, along the Sacramento River or along tributary streams. The ethnographically recorded villages of Aguasto and Suisun, were located near the marshy environment associated with San Pablo and Suisun bays.

Several of the major settlement areas, particularly those near the rich Sacramento River and San Francisco Bay resources contained as many as 1,000 or more persons (Powers 1976). However, temporary settlements and camps tended to vary considerably in size, depending primarily on the nature of the foraging or processing tasks being undertaken. Generally, the Patwin settlement system involved occupation of a number of habitat types and construction of a variety of residential structures, ranging from small camps containing only temporary brush shelters, to large, permanently occupied villages containing numerous more substantial circular pit houses.

Typically, a tribelet chief would reside in a major village where ceremonial events also were typically held. The status of such individuals was inherited patrilineally among the Patwin, although village elders had considerable power in determining who actually succeeded to particular positions. The chief's main responsibilities involved administration of ceremonial and economic activities. A Patwin chief had more authority than his counterparts among many of the other central California groups (McKern 1922, Kroeber 1925, 1932b, and P. Johnson 1978).

Many items that could not be obtained locally were procured through an active and extensive trade network. Clamshell disk beads served as currency in the region, and the Patwin routinely imported pine nuts, seeds, bear hides, beads, and sinew-backed bows from the central Wintun and shell beads, magnesite, salt, clams, and obsidian from the Pomo. In exchange, they exported salmon, river otter pelts, cordage, shell beads, bird feather headbands, and sinew-backed bows to the Pomo (Davis 1974). In some instances, they acted as middlemen for particular items in the east-west or north-south movement of various commodities.

The growth of missions in California had significant long-term impacts on the Patwin. The southern Patwin provided several Spanish missions with neophytes. Once at the missions, introduced diseases, such as measles and smallpox, were instrumental in reducing the Indian population (Cook 1943, P. Johnson 1978, Bennyhoff 1977, and McCarthy 1984). The onslaught of Euro-Americans during the late 1840s, coupled with the Gold Rush beginning in 1849, decided the fate of the Patwin culture. By 1871 to 1872, when Stephen Powers surveyed the state while gathering ethnographic information, the Patwin culture no longer existed.

The Yana were linguistically composed of four subdivisions: northern, central, southern Yana, and Yahi. The Yana language is classified within the Yana Family (Yana and Yahi are the only members) of the Hokan stock. The Yana were hunter-gatherers who relied heavily on the acorn crop, their primary food source. Other important food resources included deer, bear, antelope, elk, salmon, rabbits, quail, insects, rodents, river mussels, various roots, tubers, bulbs, seeds, buckeyes, pine nuts, and berries.

The principal political organization was that of the tribelet, a large village with several allied smaller villages. Each tribelet had a chief or headman who inherited his position. The chief's power was confined to prestige, advice, and suggestion. He did not have the power to impose his will on the other members of the tribelet.

Like most Native American groups in California, the Yana manufactured a wide range of implements from bone, antler, wood, and stone. Obsidian, the preferred material for projectile points, was an item of trade by groups to the north. Baskets were made, but they were apparently of relatively poor quality.

The first European contact of the Yana may have occurred as early as 1821, when a mission-military expedition entered their territory. Overall, mining and settlement had little effect on the Yana. However, in 1846, Captain Fremont attacked and killed several Yana. The ensuing years brought several massacres, which resulted in the nearly total elimination of the Yana-Yahi people. The story of Ishi, who was brought to live at the University of California in 1911, is told by Theodora Kroeber (1961). Ishi, the last Yana, died in San Francisco in 1916.

HISTORY

Settlement of the Sacramento River Region is characterized by agricultural development on the valley floor and by mining in the Sierra Foothills. Agricultural activities are based on the establishment and development of commercial crops, accessibility to markets, new farming techniques, and irrigation. Agriculture has been important in the region since the late 1800s after failed miners searched for alternative income.

Mining activities in the region are related to the discovery of gold at Sutter's Mill along the south fork of the American River. The discovery of gold near the Indian village of Koloma in 1848 led to a massive invasion of miners. Thousands of men raced to the American River. Initially armed with pans and picks, they later used powerful hydraulic hoses to search for gold. Major gold mining activity took place along various rivers flowing from the Sierra.

The economy of the Sacramento River Region has been based on mining, agriculture, and government services since the late 1800s. Historic resources are related to the settlement of the region and include mining features, homesteads, economic/industrial facilities, residential properties, commercial establishments, and government facilities.

CURRENT RESOURCE CONDITIONS

ARCHEOLOGY

The massive agricultural development of the valley floor has significantly damaged many archeological sites. Prehistoric mounds have been leveled, sites have been repeatedly disced and plowed in agricultural fields. As a result, artifacts have been broken and features destroyed. Some intact archeological deposits may occur in buried contexts or beneath the plow zone.

Urban development also has destroyed many sites, particularly along the lower American River in the vicinity of Sacramento. Urban and industrial development either destroys or covers sites. Environmental laws established since the 1960s have provided for studies prior to development.

The foothill regions of the Sacramento River Region contain undeveloped areas where archeological and historic sites are found. Acorn processing sites are commonly found in the oak woodlands. According to a site density model prepared for the American River Water Resources Investigation (West, Welch, and Hansen 1995), the foothills and granite-based upland areas contain a projected 3.5 and 2.8 sites per square mile. Habitation sites and bedrock mortar or other milling sites are the most common types found in these areas.

NATIVE PEOPLES

There are 19 reservations or rancherias in the counties that comprise the Sacramento River Region. Some of these reservations may fall outside the boundaries of the study area. There are also an unknown number of Public Domain allotments within the region.

Many natural or geologic features are traditionally considered sensitive or sacred. As examples of the sacred natural landscape, the Konkow and the Maidu considered the Sutter Buttes to be the location from which spirits of the dead left for various places in the afterworld (Kroeber 1925: 439). Butte Mountain is the site of the first Hesi ceremony performed by ancestors of the Nisenan. The Nomlaki considered Lassen Butte as the home of a mythical figure (Curtin 1898). The Marysville Buttes and Mount Shasta are places of mythical importance to the Patwin (Kroeber 1932a) and Wintu, respectively. The Yana held locations as places of special cultural importance (Sapir 1910, Kroeber 1925).

HISTORIC RESOURCES

Many sites are recognized as historically significant under the various state and federal programs. Table 3 (in the technical report) provides a list of archeological and historic properties reported by the CVPIA Technical Appendix for each county that comprises the Sacramento River Region.

San Joaquin River Region

HISTORICAL PERSPECTIVE

ARCHEOLOGY

On the margins of Tulare Lake, fluted and stemmed spear points have been found on the same surface as the fossils of Pleistocene mammoths, horses, camels, and bison. While undated, the fluted spear points suggest, based on comparisons with similar points from datable contexts, an age of about 11,000 years ago. The stemmed points suggest that early hunters occupied the valley floor some 8,000 to 10,000 years ago.

Prehistoric occupation of the Sierra Nevada foothills east of the San Joaquin River Region dates back more than 9,600 years. The vast majority of discovered sites, however, are less than 500 years old, probably representing a relatively recent proliferation of settlements by the Yokut (Moratto 1984). The high Sierra Nevada mountain area is typified by seasonal camps characterized by lithic scatters and few bedrock mortars. The valley/foothill transition zone more often includes sites with midden deposits, structural remains, and numerous bedrock mortars.

The earliest known foothill archeological cultures have not been described in detail, but the presence of stemmed spear points and thin slab milling stones indicates a hunting and gathering subsistence pattern.

The next described component of the prehistoric sequence, called the Chowchilla Phase, dates from 800 B.C. to A.D. 550 and is characterized by fish spears, large projectile points, milling stones, various shell beads and ornaments, and atlatl darts. Extended and semi-extended burials with large quantities of grave goods are also associated with the Chowchilla Phase.

The Raymond Phase (A.D. 300 to 1500) and the Madera Phase (A.D. 1500 to 1850) are distinguished by milling stones, core tools, projectile point types, and various shell ornaments. The later Madera Phase is noted for bedrock mortars and imported ceramics, as well as cremations in addition to flexed burials.

The sequence for the western side of the lower San Joaquin River Region begins with the aforementioned Windmill Pattern. This pattern is primarily linked to the valley floor along the Cosumnes River, although Moratto contends that "Windmill groups may have occupied the Sierra Nevada foothills during the summer" (1984: 206).

The State of California excavated several sites before the federal government filled the San Luis Reservoir (Olsen and Payen 1969, 1983, Pritchard 1970). This work produced separate chronological descriptions. The Positas Complex is an early, poorly defined complex tentatively ranging in age from 5,250 to 4,550 years ago (Moratto 1984), although Olsen and Payen reported two widely ranging radiocarbon dates of 645 ± 90 and $2,400 \pm 100$. This complex includes cylindrical pestles, milling slabs, mullers, "doughnut stones", and other chipped stone tools (Olsen and Payen 1969).

The Pacheco A Complex (approximately 3,550 to 1,650 years ago) represents the Middle Period. Olsen and Payen felt this complex represents "an incursion of coastal people to the west edge of the valley" (1969: 41) due, in part, to the presence of flexed burials at a time when extended burials are found in the Central Valley. Certain shell bead types, some rare stone beads, abalone ornaments, distinctive bone artifacts, and polished stone objects are linked to this complex. Other artifact forms include mortar and

pestle, rectangular milling slabs, mullers, and stemmed or side-notched projectile points (Olsen and Payen 1969).

Late prehistoric archeology was present in many of the sites excavated by Olsen and Payen. The Gonzaga Complex (1,650 to 950 years ago) is defined largely by materials removed from cemeteries. Burials from the San Luis area for this time period are predominantly extended with some semi-flexed inhumations. Artifacts include a variety of bead types, bone tools, ear plugs, large bowl mortars, slab milling stones, and mullers. Projectile points are rare.

The Panache Complex (450 to 150 years ago) is the final late period cultural manifestation (Olsen and Payen 1969, 1983, Pritchard 1983, Peak and Weber 1978). This complex holds relationships with the south as well as the Sacramento-San Joaquin Delta (Haversat and Breschini 1985). Characteristic artifacts include bead forms; small, side-notched, concave-based projectile points; and abundance of well-flaked scrapers, bone tools, ear spools, various ground stone forms, a crude brownware pottery, and bedrock mortars. The Gonzaga and Panache complexes fall within the same era as the Augustine Pattern.

NATIVE PEOPLES

The Yokut and Miwok peoples once found in the San Joaquin Valley Region are described in the Delta ethnographic section. One other group merits mention for this region. The Monache, or Western Mono, represent six separate, but linguistically affiliated groups.

The Monache are generally distinguished from the Foothill Yokuts by language and location, rather than by cultural traits. The Monache language is classified within the Numic family, or Uto-Aztecan stock, found in California only with the Monache and Eastern Mono. The primary sources of ethnographic information on the Monache are Gayton (1948) and Gifford (1932). These and other sources are summarized in Spier (1978).

In general, the Monache lived on the west slopes of the Sierra Nevada, between 3,000 and 7,000 feet elevation. They ranged over a much wider area into the eastern slopes of the Sierra Nevada. Monache groups were seasonally mobile hunter-gatherers. Acorns, their dietary staple, were collected in large quantities and stored for the winter in elevated granaries in the villages. A wide range of other plant and animal resources also were used and are similar to those described for other groups. The North Fork Monache crossed to the east side of the Sierra Nevada to collect pinyon pine nuts and yucca roots. These were traded to the other Monache groups, as well as to Yokuts (Spier 1978). The Monache produced twined basketry (including cradles), steatite cooking vessels, and ceramic vessels (coil method, fired) besides the usual array of lithic and bone implements.

The Monache believed in supernatural totemic spirits that might be used by people with the right knowledge. One with such knowledge might become a shaman. Shamans were thought to have the power to cure or harm others.

HISTORY

The San Joaquin River Region is characterized by both agricultural settlement and mining. Agricultural activities encompass the entire floor of the valley. Agricultural development spread as failed miners sought other forms of income in the 1800s. Mining activities in the eastern portion or the portion of this region that lies in the Mother Lode are related to the Gold Rush of the mid-1800s and the subsequent commercial extraction of ore. The economy of the east side of the region has been based on mining, agriculture, and commercial services since the late 1800s. Historic resources are related to the settlement

of the east side of the region and include mining features, homesteads, economic/industrial facilities, residential properties, commercial establishments, and government facilities.

CURRENT RESOURCE CONDITIONS

ARCHEOLOGY

This region is similar to the Sacramento River Region because vast agricultural development has destroyed many prehistoric sites. Remnants of prehistoric sites still occur in agricultural lands, but they have been highly disturbed. Many sites are found in relatively undisturbed areas along the San Joaquin River and its associated sloughs. Buried sites are possible in this area due to the high rate of sedimentation. Finding such resources is problematical.

NATIVE PEOPLES

Eight reservations or rancherias are located in the counties that comprise the San Joaquin River Region, although some of these reservations may fall outside the boundaries of the region. There are also an unknown number of Public Domain allotments within the region. The Monache have several places of mythological importance. For example, Table Mountain near Friant was thought to be visited by mythical beings (Gifford 1923).

HISTORIC RESOURCES

Many sites are recognized as historically significant under various state and federal programs. Table 4 (in the technical report) provides a list of archeological and historical properties reported by the CVPIA Technical Appendix for each county that comprises the Sacramento River Region.

SWP and CVP Service Areas Outside the Central Valley

HISTORICAL PERSPECTIVE

ARCHEOLOGY

This region has a long and complex cultural history, with distinct regional patterns that extend back more than 10,000 years. The first generally agreed upon evidence for the presence of prehistoric peoples in this region is represented by paleo-Indians. This era, marked by large stemmed points and crescent-shaped artifacts, have been termed the San Dieguito and the Lake Mojave complexes, depending on the location.

Approximately 8,000 years ago, many California cultures shifted the main focus of their subsistence strategies from hunting to seed gathering, as evidenced by the increase in food-grinding implements found in archeological sites dating to this period. This cultural pattern is best represented in southern California, where it has been called the Milling Stone Horizon (Wallace 1954). Recent studies suggest that this culture pattern is more widespread than originally described and is in fact found throughout the

study area. Radiocarbon dates associated with this time period vary between 8000 and 2000 B.P., but cluster in the 6000 to 4000 B.P. range (Basgall and True 1985).

Cultural patterns as reflected in the archeological record, particularly specialized subsistence practices, became better defined within the last 3,000 years. The archeological record becomes more complex as specialized adaptations to locally available resources were developed and populations expanded. Many sites dated to this time period contained mortars and pestles or are associated with bedrock mortars, implying that the occupants exploited acorns intensively. Also at this time, the range of subsistence resources that were used increased and exchange systems expanded significantly from the previous period. Along the coast and in the Central Valley, archeological evidence of social stratification and craft specialization is indicated by well-made artifacts such as charm stones and beads, which were often found with burials (Jones & Stokes Associates 1997).

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