

**PART II**

**CULTURAL RESOURCE OVERVIEW**

## CHAPTER 3

### BACKGROUND

This section will present very brief descriptions of the environment within the general study area. For the most part, this information will be oriented toward the human use of the study area.

#### Past Conditions

The early work of Antevs (1948, 1952, 1953a, 1953b) suggested that there were widespread climatic changes within areas of the western United States. He identified three major climatic events pertinent to the current study. These were the Anathermal, a cool, moist postglacial period ranging from about 11,000 to 8,000 years ago, the Alti-thermal, a warm, dry period from about 8,000 to 2,900 years ago, and the Medithermal, during the last 2,900 years, and characterized by approximately modern climates. These climatic events were defined on a broad scale; local variations in both temporal period and climate are to be expected.

Moratto, King, and Woolfenden (1978), in a more recent work, have suggested that the San Joaquin Valley has undergone significant changes over the millenia during which it has been occupied. They postulated the following general pattern for the Buchanan Reservoir locality, east of the study area:

- 1) Settlement began only after the amelioration of very warm/dry conditions around 2900 B.P., and was sporadic until very cool/moist climate prevailed around 1700 B.P. Between ca. 2800 and 1700 B.P., the area was sparsely inhabited by small, presumably mobile groups.
- 2) During the cool/wet period after 1700 B.P., the population became fairly sedentary and highly organized; settlements were large, and extensive trade was carried out with both coastal and trans-sierran peoples.
- 3) After 1400 B.P., there was a rapid period of social disruption coeval with the rapid warming and drying of the climate; nucleated villages broke up, the population became dispersed, political organization deteriorated, and violence increased. During this arid interval, persisting until ca. 600 B.P., the southern Sierra foothills were occupied by relatively small groups with little hint of complex political organization or status differentiation. . . . Contact was maintained with the Sierra, but trade with the coast virtually ceased.
- 4) With the return of a cool/moist climate around 600 B.P., the population increased substantially, social organization became more complex, and settlements proliferated. Status differentiation was marked, and trade across the San Joaquin Valley resumed (Moratto, King, and Woolfenden 1978:155).

It is possible that this sequence applied generally to the study area as well. As discussed in Chapter 4 (see Figure 1), there is a postulated cultural hiatus within the study area between about 7,500 - 5,300 years ago, which could relate to the Altithermal, and a second postulated cultural hiatus between about 1,400 and 600 years ago. There are problems with using this sequence directly within the study area: there are radiocarbon dates from western Merced County within the time period postulated to be a cultural hiatus (see Chapter 4).

#### Early Historic Accounts of the General Study Area

The early Spanish explorers and missionaries left numerous diaries and other writings. Some of these describe expeditions through the general study area. Brief excerpts from some of these accounts are included below to illustrate the conditions reported within the general study area by the first explorers.

Moraga Expedition of 1806 (Diary of Pedro Muñoz, September 23): This area [general area of Salt Slough] is somewhat saline and very heavily covered with green vegetation at this season. In all this region there are very numerous bands of deer and antelope. This locality of Santa Rita is a stream which contains water only in the same manner as the previously mentioned place [a good spring flowing into a stream bed which dries most of the year], but in a much scantier quantity because of the very sandy soil. There are also great tule swamps in all this region and much black willow along this stream (Cook 1960:248).

Moraga Expedition of 1806 (Diary of Pedro Muñoz, September 24): In the rainy season this river [the San Joaquin] and its adjacent land may be impassable, according to the vestiges left by immense overflows of water. On the route taken two large stream beds were encountered the waters of which supply the San Joaquin River. On all sides tremendous tule swamps present themselves, which can be very miry in wet years (Cook 1960:248).

Moraga Expedition of 1806 (Diary of Pedro Muñoz, September 25): Today the camp was moved to the above-mentioned San Joaquin River [Cook placed this in T8S, R11E -- it could have been within the study area]. It has fine meadows of good land and excellent pasture toward the south, although there are some patches of alkali and salt. We pitched camp on the banks of the river. Beaver abound and also salmon, according to what was told us by the Indians native to this country (Cook 1960:248).

Moraga Expedition of 1810 (Diary of Jose Viader, August 23): Today, after three and one-half leagues in the same direction and without being able to get near the river on account of the sloughs, flooded land, and swamps, we had to rest on an open plain without shade near a creek, or arm of the river [probably east of Patterson]. The great heat forced us to jump in for a swim... at nightfall, without hope of meeting or reaching a river, we stopped beside a pond [3 or 4 miles north or northeast of Gustine]. There was no wood or brush to cook supper or even make chocolate. Everything we crossed today is low ground, tule swamps, and ponds... (Cook 1960:259).

Moraga Expedition of 1810 (Diary of Jose Viader, August 24): ... before breakfast, thinking that we were opposite Soledad [Mission] and that the tule swamps and low, flooded territory continued as far as the vicinity of San Miguel, we decided to turn back. Taking now a westerly direction, after going four leagues we had chocolate in a patch of brush and then going on in the same direction for another six leagues arrived at the place called San Luis Gonzaga [in the San Luis Dam area] (Cook 1960:259).

These accounts, brief as they are, also described the dense vegetation, as well as the floods and resulting siltation, which over the years have rendered the prehistoric cultural resources difficult to examine.

### Climate

The previous archaeological research at Kesterson Refuge described the climate of the area as follows:

Kesterson Reservoir lies within the Lower Sonoran life zone which is characterized by a desert-steppe climate. Rainfall is seasonal, falling mainly during the months of November - April and averaging between 7-10 inches annually. Dense ground fog is a common feature of the winter and spring months. The diurnal temperature range is from 36 to 59 [degrees] F in the coldest months (December - February) and from 56 to 97 [degrees] F in the warmest months (June - August). Annual evaporation in the vicinity of the subject area is between 30 - 60 inches, and wind is predominately from the northwest except during the winter months when the air flow is reversed. In the summer this wind is known as the "Pacheco Pass Breeze" and has an ameliorating effect on the high daily temperatures experienced during this period (July - September), a factor which has helped to favor the successful production of a wide range of foodstuffs and livestock in such large quantities in the San Joaquin Valley (Department of Housing and Urban Development [HUD] 1978, History of Merced County 1966) (Eggers 1980a:2-1).

### Vegetation

The vegetation of California has changed considerably during the past 200 years. Raven (1977:128) outlines the changes by which 654 new species of plants have been introduced into the vegetation communities of the state. He cites research which has found at least 16 species of exotic plants were established in California during the Spanish period, 63 additional species during the Mexican period, and another 55 species during American pioneer settlement prior to 1860 (Raven 1977:127).

Some of the most significant changes within the general study area during the past 200 years have been in the California prairie. Except for areas of cultivation, the distribution of the California prairie is probably not greatly different from what it was 200 years ago. As Heady states:

The original valley grassland covered well-drained areas from sea level to approximately 1200 m in all the mountains surrounding the Central Valley. The valley grassland occurs in scattered patches throughout the Coast Ranges,

with the possible exception of the narrow fringe of coastal facing slopes from Santa Cruz northward (Heady 1977:495).

The introduction of alien plants into the grasslands has been accelerated through overgrazing, cultivation, and fire. These factors have resulted in the California annual grassland which is now present in those areas occupied by pristine perennial grasslands just 200 years ago (Heady 1977:501).

The reconstructed natural vegetation within Merced County is shown in Map 6. A brief description of the characteristics of the different vegetation types found within the study area is presented in the following section. This description is based on Kuchler (1977), and the vegetation types are keyed to Map 6. Additional details on these vegetation types may be obtained from Barbour and Major (1977).

36. California Prairie (Stipa spp.) [see Heady 1977].

Structure: Dense to somewhat open, medium tall bunchgrass community with many forbs. Height and seasonal aspects of this prairie can vary greatly.

Dominants: Needlegrass (Stipa cernua), speargrass (Stipa pulchra).

Many introduced species have become well established and are now likely to survive even under natural conditions. Among the most prominent are:

Avena barbara, A. fatua, Bromus mollis, B. rigidus, B. rubens, Erodium botrys, E. cicutarium, Festuca dertonensis, Medicago hispida.

Location: Mainly in the Central Valley, often extending into the adjacent foothills of the surrounding mountains; coastal areas of southern California (Kuchler 1977:930-931).

37. Tule Marsh (Scirpus-Typha) [see Heady 1977].

Structure: Tall, dense graminoid plant communities, occasionally interrupted by open water.

Dominants: Common tule (Scirpus acutus), cattail (Typha latifolia)

Location: Along Sacramento and San Joaquin Rivers, extensive in the delta region (Kuchler 1977:931).

47. San Joaquin Saltbush [see Heady 1977].

Structure: Open, broad-leaved evergreen and/or deciduous shrub community. An undergrowth of herbaceous plants may vary from medium dense to absent. The structure can vary much within short distances.

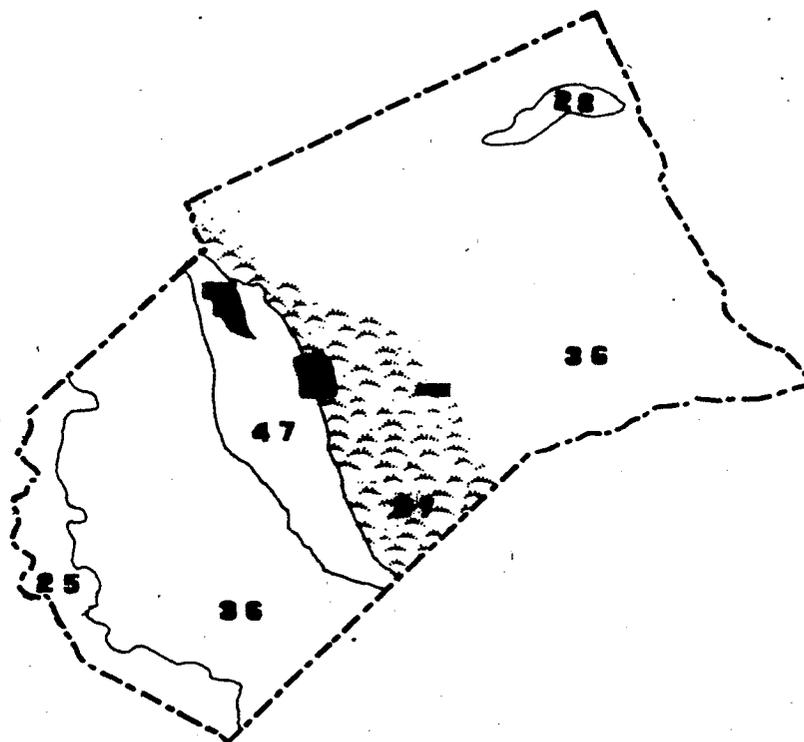
Dominants: Saltbush (Atriplex polycarpa)

Location: Mainly southern and western part of San Joaquin Valley (Kuchler 1977:935).

Map 6. Natural Vegetation of Merced County, California (after Kuchler 1977).

Scale: 1 inch equals approximately 16 miles.

The approximate locations of San Luis, Merced, and Kesterson National Wildlife Refuges are also displayed.



Key:

- 25 = Blue oak-digger pine forest
- 28 = Riparian forest
- 36 = California prairie
- 37 = Tule marsh
- 47 = San Joaquin saltbush

## Geology and Soils

Geologically the study area consists entirely of recent basin and stream channel deposits (see Map 7).

The soils within the study area are discussed in U.S. Bureau of Reclamation (1982), and this discussion will not be repeated here.

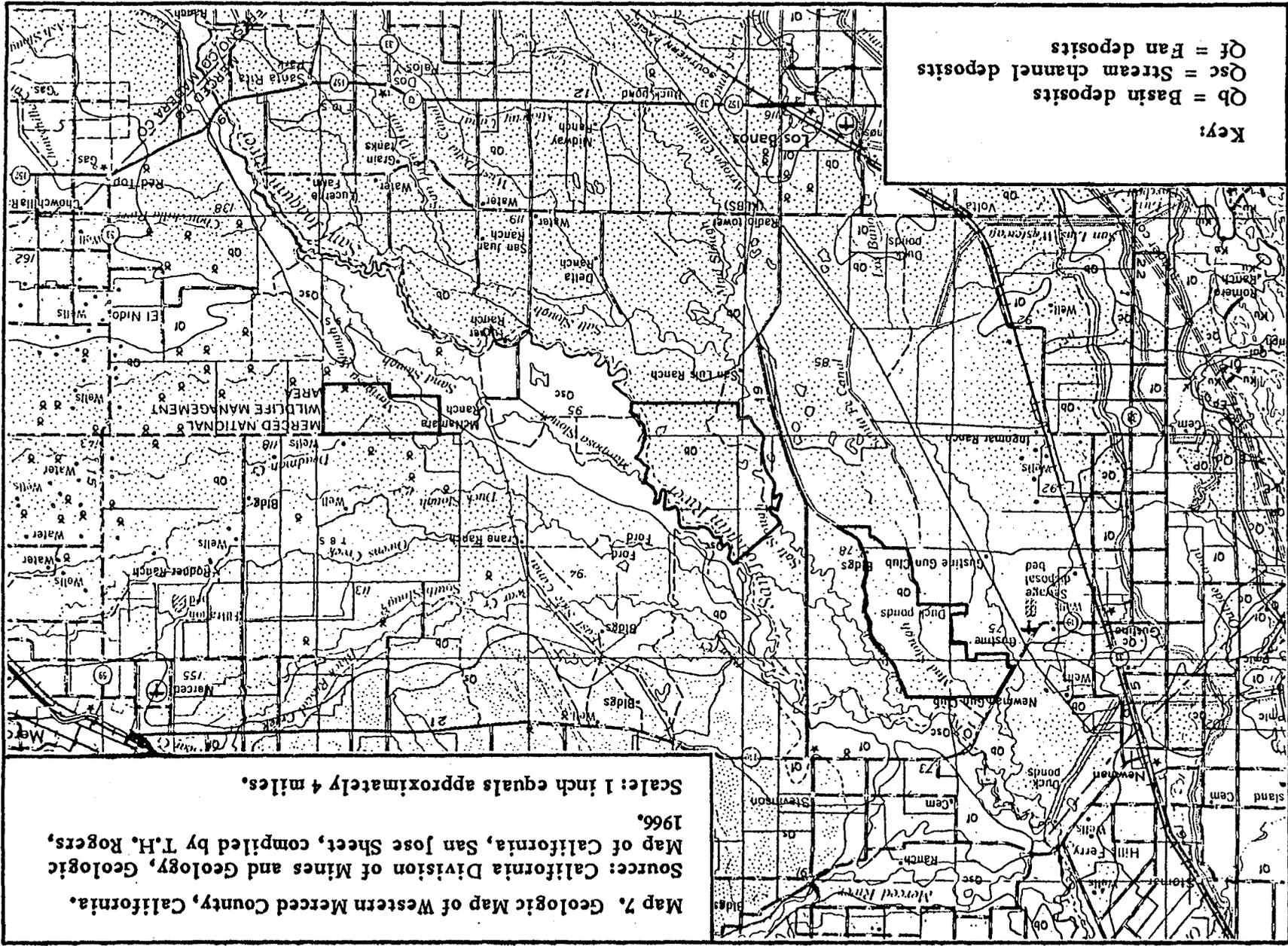
In general, the soils can be described as follows:

Soils within the [Kesterson Refuge] area are silty and show little variation in grain size and texture. They vary mainly in relative percentages of clay and in hue relative to their location with respect to the stream courses. Those from within the stream channels are a gray or dark brown in color which a definite clay content while those outside of the channels consist of friable silts and loams which range from light to dark brown. No sand deposits were observed (Eggers 1980a:2-9).

Some of the changes which have occurred over the years also were documented by Eggers. He stated:

... information obtained from long-time local residents in the vicinity of the project area indicates that the construction of check dams and reservoirs in the valley and in the Sierra Nevada foothills has had a major effect. Prior to the completion of Friant Dam in 1943, the San Joaquin and Salt Slough are reported to have been gravel bottomed and to have contained salmon as far as the Merced River. After 1943, extensive silt deposits are said to have accumulated on the river beds and the dominant fish presently are bottom feeders such as perch and carp (J. Smith; F. Freitas, Sr.; I. Kesterson, Sr.; L. Littlefield, personal communication) indicating a major reduction of carrying capacity as well as rate of flow (Eggers 1980a:2-9).

Additional discussions of the natural setting of the general study area can be found in U.S. Bureau of Reclamation (1982); Eggers (1980a); Scientific Resource Surveys (1979) and other sources. A number of other sources of information are on file with the U.S. Fish and Wildlife Service office in Los Banos.



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## CHAPTER 4

### OVERVIEW OF STUDY AREA PREHISTORY

#### Introduction

We know very little about the prehistory of western Merced County, the area in which the San Luis, Merced, and Kesterson National Wildlife Refuges are situated. The prehistory of the three Wildlife Refuges themselves is even more of a mystery — we know, for example, of only one archaeological excavation which has taken place within the study area (at site CA-MER-6). This excavation, however, did not result in a published report, or even a usable manuscript.

This dearth of information has led Moratto, in his recent summary volume on California archaeology, to comment, "South of the Stockton District, the San Joaquin Valley remains one of the least-known archaeological areas in California" (Moratto 1984:215).

There have been, however, a relatively large number of excavations and research projects conducted just to the north of the study area, particularly in the area between Stockton and Sacramento. Also, there have been a number of excavations conducted in the southern San Joaquin Valley, although not as many as in the Delta region. From the archaeological research in these adjacent areas, and from the limited research conducted in western Merced County, primarily for the San Luis Reservoir and related water projects, we may arrive at some tentative conclusions concerning western Merced County.

The following sections summarize some of what has been learned about the prehistory of western Merced County, and of the San Luis, Merced, and Kesterson Wildlife Refuges. This information has generally been extrapolated from previous research, often from adjacent areas, and much of it must be regarded as only tentatively applicable to the specific study areas.

This chapter includes the following sections: (1) a summary of the archaeological cultures which have been (tentatively) identified in the San Joaquin Valley, and which potentially could be found in western Merced County; (2) a discussion of previous archaeological research within western Merced County relevant to the study area; and (3) a discussion of previous archaeological research within the current study area.

#### Extrapolation of Regional Cultural Sequences to the Study Area

Given the current lack of detailed knowledge concerning the study area, any cultural sequences formulated and applied to these areas must rely entirely on information obtained from western Merced County and adjacent areas. There are several reasons for this:

- 1) There have been no significant archaeological excavations conducted within the study area.

- 2) There have been few archaeological excavations in western Merced County; many of the excavations conducted have never been formally described and published.
- 3) Only a few of the excavations conducted in western Merced County have generated significant information on past cultures and their succession.
- 4) Only 11 archaeological radiocarbon dates have been obtained from western Merced County — of these, for one reason or another, four dates are either considered unreliable or are modern (Breschini, Haversat, and Erlandson 1984:8-9).
- 5) The earliest radiocarbon dates obtained extend only about 1,800 - 2,500 years into the past.
- 6) Few archaeologists have taken a serious interest in actively researching the prehistory of western Merced County.

### The Formulation of Cultural Sequences

One of the primary research tools used by archaeologists today is the 'model.' A model may be defined as a tentative ideational structure used as a testing device; in practice, it is an 'ideal pattern' which is used to organize data, and to generate and test predictions derived from the data.

The definition of archaeological cultures, or of a cultural sequence, is in reality nothing more than model building. For example, the following section will include a discussion of the 'Positas Complex' and other cultural units which have been proposed for western Merced County or for the San Joaquin Valley as if they had an historical reality. In actual reality, there was no such thing as a 'Positas Complex.' It is an organizational tool (or model) created by anthropologists in an attempt to better organize and understand the data.

Building a model generally involves an attempt to discover the underlying forces and tendencies within a given system. Once these are isolated, whether they are real or postulated, it is possible to construct a logically precise conception. Such models or abstractions may be made internally unambiguous, and may be used as a means of organizing and exploring the data. Various models may be compared with the data, or with one another.

The models which result do not necessarily appear in actual historical reality; they are simplifications, abstractions, or 'ideal types.' The events which are being modeled are almost always more complex and less precise than are the models. The models, though, present a picture of the data which is more clear, less complex, and as a result, more easily understood. Modeling allows us to compare and test observed phenomena against various theoretical models, and in doing so be better able to understand and interpret not only a given system, but also the processes of change and development.

Modeling is essentially experimentation — through the development of assumptions, corollaries, and test hypotheses (predictions), the model may be formulated and compared against the data. If the predictions are consistently found to be accurate then the assumptions are supported (they can never be proven), and the resulting model is of value. If the predictions are found to be consistently inaccurate, or cannot be applied to

current problems, then the model is of little value, and it is quite possible that its assumptions are incorrect. The reformulation and retesting of models against data is the way in which theory is built, and in which science advances.

In the following section, several 'model' cultures are presented. While these are variously called 'traditions,' 'complexes,' 'periods' or 'horizons,' they are all simplifying organizational models of complex data which have been formulated, in greater or lesser detail, by various researchers. As such, they represent a wide spectrum of potential accuracy, as they are dependent on the information which is available to work with, and upon the care with which they were formulated.

### Cultural Sequences

Even given the limited data available, there are a number of tentative archaeological cultures which have been identified as being present, or potentially present, within either western Merced County or the San Joaquin Valley. As such, these cultures could also have been present within the three National Wildlife Refuges which constitute the current study area. Each of these hypothesized cultures is discussed below, and the hypothesized succession of these cultures is depicted graphically in Figure 1. (The order of presentation in this section is from the earliest to the most recent.)

While a number of artifact illustrations are presented in the following section as "included within" or "diagnostic of" various periods, these must be regarded as tentative, and used with caution. The archaeological sample available from most sites is small, the dating is extremely limited, and the range of variation still little known. Also, many artifact types persist for long periods of time, and can occur during several different cultural or temporal periods. As such, these illustrations are presented only as a general guide, and are sure to be revised on the basis of additional research.

#### Fluted-Point Tradition

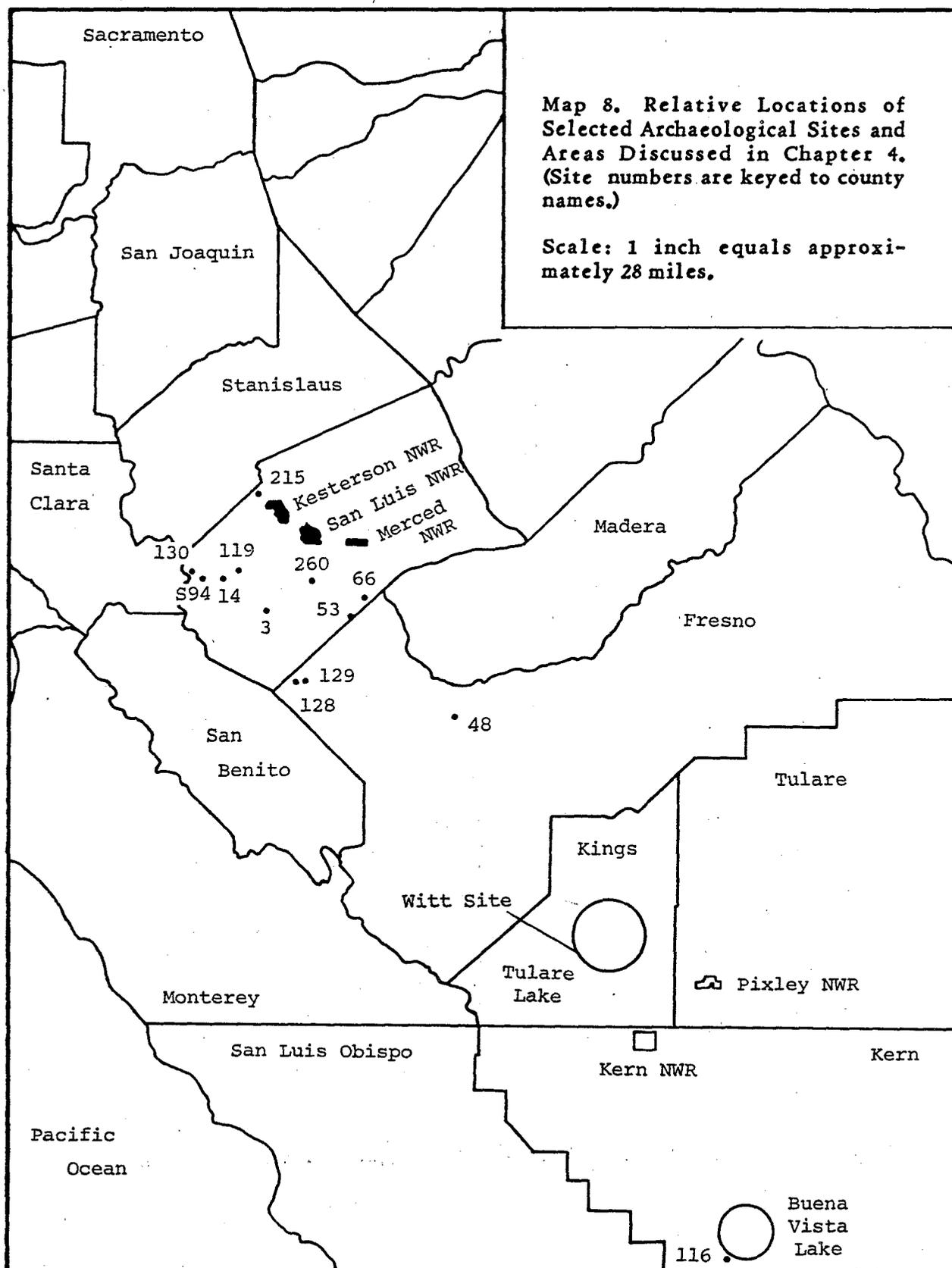
The earliest culture which has been generally accepted for this part of California is the Fluted-Point Tradition. Concerning the Fluted-Point Tradition in California, Moratto states that:

Until recently, fluted points were viewed as rare exotics in the area west of the Rockies, or as marginal vestiges of a technology properly endemic to lands east of the Continental Divide. . . . However, the abundance and wide distribution of fluted points in California and the western Great Basin seem better explained as results of a viable, in situ cultural tradition and not one marginal to more easterly "centers" of fluting technology (Moratto 1984:81).

Within the San Joaquin Valley, fluted points have been found at Tulare Lake, some 90 miles south of the study area (Riddell and Olsen 1969), near Tracy Lake, 65 miles to the north of the study area (Heizer 1938; Lillard, Heizer, and Fenenga 1939: Figure 15, c-d), and at CA-MER-215, approximately three miles northwest of Kesterson National Wildlife Refuge (Peak and Weber 1978:49). (Many of the areas discussed in this section are shown in Maps 8 and 9.) There are at present, however, no radiocarbon dates available on these materials (Moratto 1984:87), although, as discussed below, there are recently obtained uranium-thorium dates now available from Tulare Lake.

<u>YEARS AGO</u>	<u>CULTURE</u>	<u>TENTATIVE RELATIONSHIP</u>
	Historic	
500	Panoche Complex	Late Horizon Phase 2 (Central California Taxonomic System). Represented at MER-3, 27, 119, 130, 215, and 223, and FRE-128 and 129. See Figures 11-15.
1,000	Cultural Hiatus?	
	Gonzaga Complex	Late Horizon Phase 1 (Central California Taxonomic System). Represented at MER-3, 14, S94, 215, and 223, and FRE-128 and 129. See Figures 9-10.
2,000	Pacheco A	Middle Horizon (Central California Taxonomic System). Represented at MER-27, 667, S94, 215, and 223. See Figures 6-8.
3,000	Complex	
4,000	Pacheco B	Early Horizon (Central California Taxonomic System)? Represented at MER-S94 and 223. See Figure 5.
	Complex	
5,000	Positas Complex	Southern California? Represented only at MER-S94. See Figure 4.
6,000	Altithermal	
	Hiatus?	
7,000		
8,000	Western	General California and Great Basin. Represented at MER-215?, the Witt Site, Tracy Lake, and Buena Vista Lake. See Figure 3.
	Pluvial	
9,000	Lakes	
	Tradition	
10,000		
11,000	Fluted-Point	General California and Great Basin. Represented at MER-215, the Witt Site, and Tracy Lake. See Figure 2.
	Tradition	
12,000	?	

Figure 1. Postulated Cultures in the San Joaquin Valley (after Olsen and Payen 1969 and Moratto 1984).



At Tulare Lake a number of Clovis or Clovis-like fluted points have been found by D. Witt, a collector, in one small area on the south shore of the lake (Riddell and Olsen 1969). This site is now referred to as the 'Witt Site.' One recent investigation, using uranium-thorium dating, has produced five samples with ages between 10,700 and 17,700 years for bone, including two possible human bone fragments, thought to be associated with Clovis-like points obtained from this site (John Foster, personal communication 1983, 1984; G. James West, personal communication 1984). An age approaching 18,000 years has not yet been supported, however, by any other evidence, such as radiocarbon dating or typological studies, although a radiocarbon sample from this site is currently being processed through U.C. Riverside (R.E. Taylor, personal communication 1984, 1985). Some of the artifacts from the Witt site are illustrated in Figure 2.

(A similar age estimate has also been advanced for sites CA-SAC-370 and CA-SAC-379 at Rancho Murieta, in eastern Sacramento County. Again, no radiocarbon dates are yet available to confirm or deny this estimated age range.)

While there is a lack of stratigraphic control at the Witt Site, Riddell and Olsen (1969) hypothesized that the earliest culture was represented by the Clovis-like points (Figure 2). The next culture included Lake Mohave points and legged crescents, and possibly other forms of crescents (see Figure 3). A later culture included heavy stemmed and shouldered points, the Pinto Basin types, and possibly the long-stemmed blades.

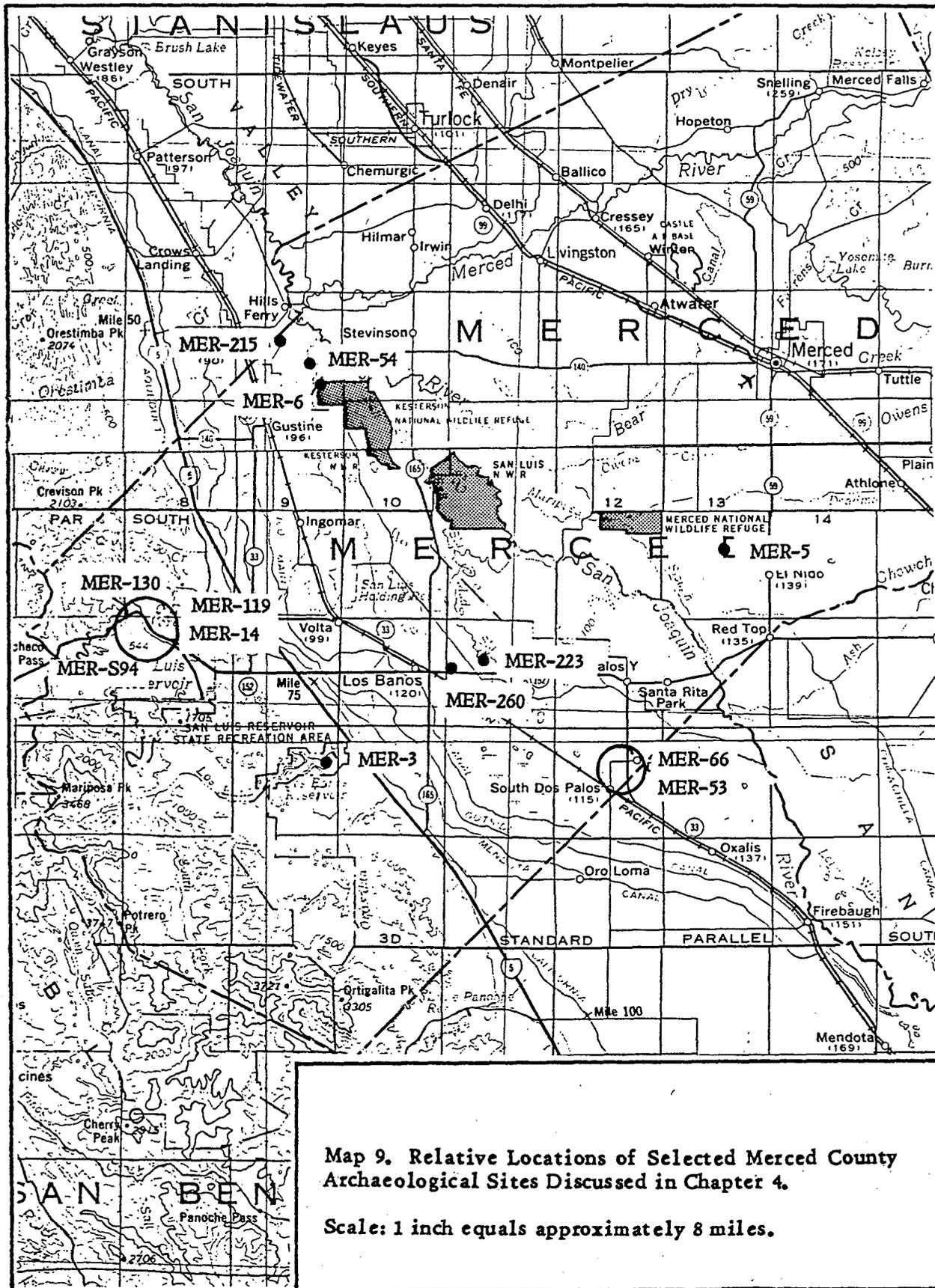
The two fluted points found at CA-MER-215, near Kesterson refuge, were situated in the upper 20 cm of the deposit; seven radiocarbon dates from the deposit ranged from modern to 1,935 years B.P. (before present), with those in the top 20 cm being modern (i.e., less than 300 years old). It is possible that there is either a buried earlier component at the site, or that these artifacts were brought in from elsewhere (Peak and Weber 1978:194).

Moratto takes a conservative view of the age of the Fluted-Point Tradition in California, placing the beginnings at "roughly 12,000 years ago" (1984:88) or "prior to 9000 B.C." (Arquelles with Moratto 1983:46). He also states:

Big-game hunting is one economic specialization linked to the fluting technology, but surely not the only one. Clovis-like points in the Far West occur in coastal, valley, pass, and lakeshore settings along with the remains of molluscs, birds, and both large and small mammals. No unequivocal big-game kill sites have been reported. These varied settings and faunal remains, coupled with a diversified toolkit, suggest a generalized hunting-gathering way of life. In California and the Great Basin the proximity of fluted points to old pluvial lakes is especially notable. It seems likely that in such areas the Fluted-Point Tradition peoples would have adapted increasingly to lake and marsh environments, gradually evolving into the Western Pluvial Lakes Tradition by circa 11,000 B.P. (Moratto 1984:88)

#### Western Pluvial Lakes Tradition

Also present at the Witt site, and potentially present in the study area, the area of Tracy Lake, and in other locations within the San Joaquin Valley, is evidence of the Western Pluvial Lakes Tradition. While the origins of this tradition are still obscure, it could represent a direct outgrowth of the Fluted-Point Tradition. Along California's coast at about this same time is a Paleo-Coastal Tradition. It is possible that the Paleo-Coastal Tradition may also have descended from the Fluted-Point Tradition, and that the Western Pluvial Lakes and the Paleo-Coastal Traditions may be "no more than environmental specializations within a broader cultural continuum" (Moratto 1984:111).



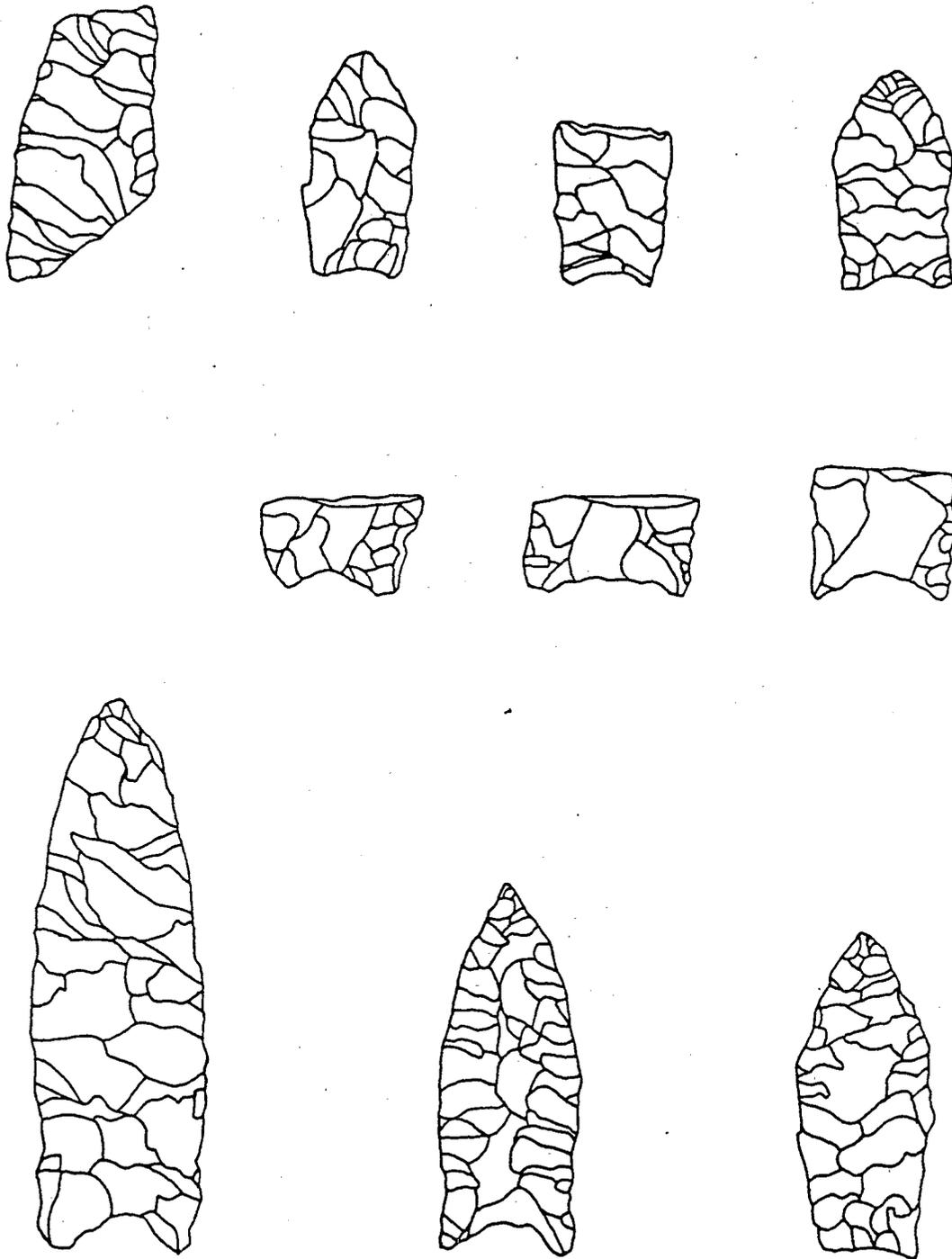


Figure 2. Clovis-like Projectile Points from Tulare Lake. Redrawn from Riddell and Olsen (1969: Figures 1 and 2). Approximately actual size.

Summarizing this potential relationship, Moratto states:

The WPLT may have evolved from Fluted-Point Tradition antecedents as woodlands and deep lakes gave way increasingly to grasslands and shallow lakes after 12,000 B.P. This view is supported by (1) the repeated co-occurrence of fluted points with crescents and other WPLT traits on pluvial lakeshores and (2) the virtual absence of fluted points in the eastern Great Basin, where early cultural developments around pluvial lakes differ significantly from those of the WPLT (Bedwell 1970). It seems probable, therefore, that the Fluted-Point Tradition and the WPLT form a culture-historical continuum. The WPLT flourished from circa 11,000 B.P. until Alti-thermal climates led to the evaporation of the lakes, beginning approximately 8000 years ago (Bedwell 1970). In places where remnants of the larger lakes persisted into mid-Holocene times, the WPLT endured somewhat longer, but both the pluvial lakes and the cultural tradition vanished circa 7000 B.P. (Moratto 1984:103).

The Western Pluvial Lakes Tradition is still poorly defined in most areas. Some of the artifacts which may characterize this period are depicted in Figure 3. The traits thought to characterize this tradition are summarized by Moratto as follows:

- 1) A tendency for sites to be located on or near the shores of former pluvial lakes and marshes or along old stream channels.
- 2) Dependence on hunting various mammals, fowling, collecting, and gathering vegetal products.
- 3) An absence of ground-stone artifacts such as millingstones, hence a presumed lack of hard seeds in the diet.
- 4) A developed flaked-stone industry, marked especially by percussion-flaked foliate knives or points, Silver Lake and Lake Mojave points, lanceolate bifaces, and points similar to the long-stemmed variety from Lind Coulee [in central Washington] (T. Hester 1973).
- 5) Lastly, the WPLT toolkit, which commonly includes chipped-stone crescents, large flake and core scrapers, choppers, scraper-planes, hammerstones, several types of cores, drills, and gravers, and diverse flakes [see Moratto's Figures 3.5 and 3.6] (Moratto 1984:93).

One site from the southern San Joaquin Valley which is theorized to belong to the Western Pluvial Lakes Tradition is located at Buena Vista Lake, some 145 miles south of the study area (see Map 8).

The first major excavations at Buena Vista Lake took place in 1933-1934, during the Depression, and were sponsored by the Civil Works Administration to reduce unemployment. Two cultural periods were identified; Wedel stated tentatively that the early period appeared to be earlier and considerably less developed than the Early Delta (Early Horizon or Windmiller Pattern) period established by Lillard, Heizer, and Fenenga (cf. Lillard, Heizer, and Fenenga 1939; Heizer and Fenenga 1939). He felt that it more closely resembled the Oak Grove (Milling Stone) culture of the Santa Barbara region, as defined by D.B. Rogers (1929), but cautiously avoided making any claims of great antiquity for the sites (Wedel 1941:144-145).

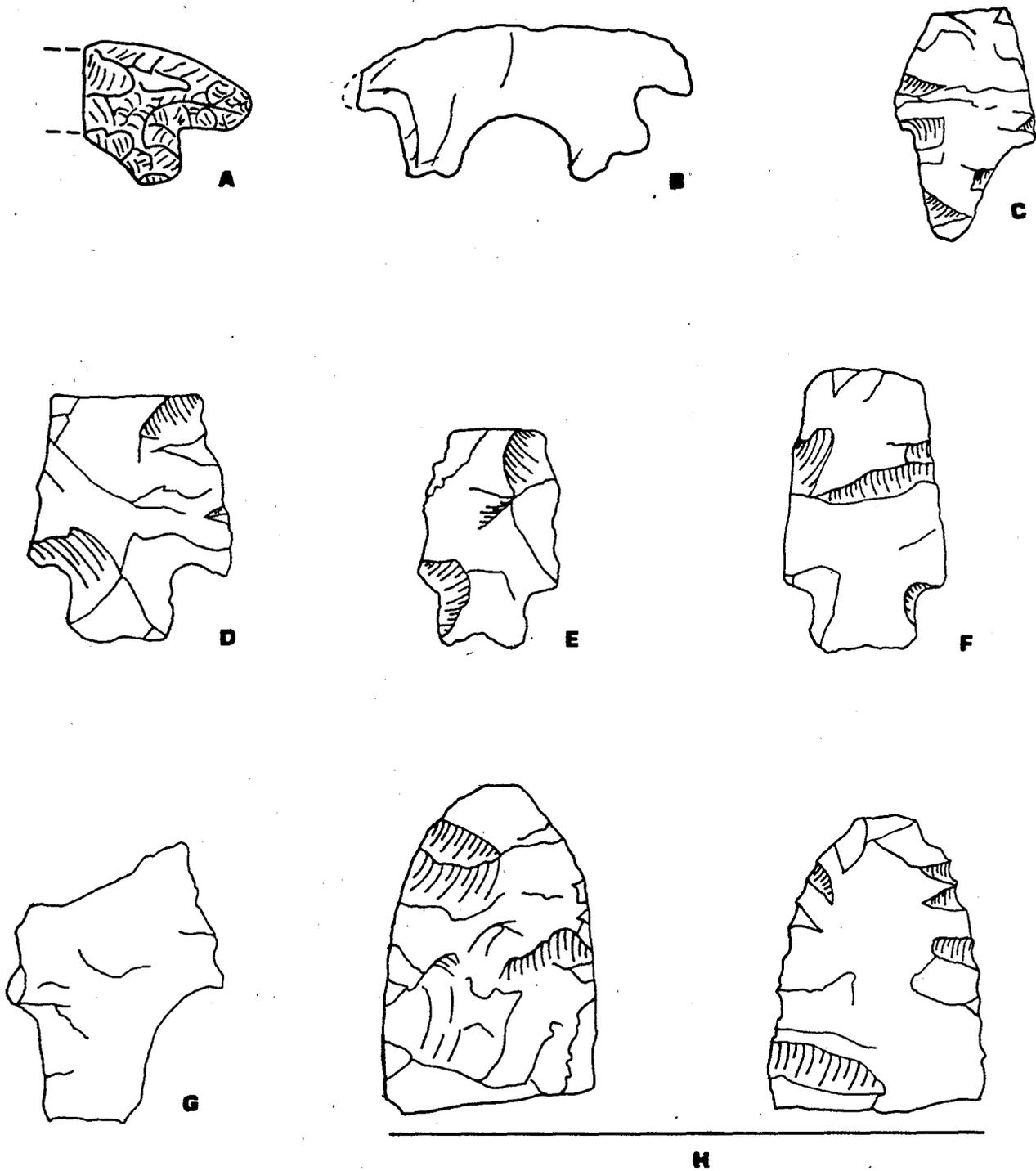


Figure 3. Artifacts Potentially Associated with the Western Pluvial Lakes Tradition. A. Zoomorphic crescent fragment from CA-MER-215 (redrawn from Peak and Weber 1978: Figure 24). B. Crescent from near Tracy Lake (redrawn from Beck 1971:154). C. Small contracting-stem point. D, F, and G. Large square-stemmed, straight-shouldered points. E. Pinto Basin type point. H. Straight-based, bifacially-flaked blades. Redrawn from Riddell and Olsen (1969: Figures 5 and 7). Approximately actual size.

During 1964 and 1965, additional excavations were conducted at Buena Vista Lake (Fredrickson and Grossman 1977). The site at that time was designated CA-KER-116. Fredrickson and Grossman report that materials similar to Wedel's early occupation were found in their upper deposit, while a lower deposit contained materials possibly related to the San Dieguito Complex (cf. Warren and True 1961; Warren 1967) of southern California. This deposit was radiocarbon dated at 7,600 +/- 200 (I-1928), 8,200 +/- 400 (LJ-1356), and 8,200 +/- 400 (LJ-1357) (Fredrickson and Grossman 1977:178). Only 14 recognizable artifacts were recovered; these are illustrated in Fredrickson and Grossman (1977:182).

Concerning the lower deposits, Fredrickson and Grossman concluded:

The deeply buried cultural component at CA-KER-116 was stratigraphically deeper and temporally older than the early complex from the same locality described by Wedel (1941), which was characterized by extended burials and handstones. Although the artifactual inventory from the deeply buried Buena Vista Lake assemblage is small, handstones and millstones were absent, while crescents and large bifacially flaked projectile points and knives, implements characteristic of the San Dieguito complex, did occur. The CA-KER-116 artifact assemblage falls within the definition of the San Dieguito complex as provided by Warren (1967:177).

Finally, the lake shore context of CA-KER-116 is compatible with that expected for San Dieguito sites. Although Warren (1967:183) stated that few data were available for reconstruction of the environment of San Dieguito sites, he also noted that the desert expression of San Dieguito was associated with high stands of Pleistocene lakes. In sum, the authors believe it is reasonable to suggest that the deeply buried cultural component at CA-KER-116 is a local, southern San Joaquin Valley representative of Warren's (1967; Warren and True 1961) hypothesized San Dieguito complex (Fredrickson and Grossman 1977:188-189).

The San Dieguito Complex is now considered by some to be a part of the Western Pluvial Lakes Tradition.

Chipped stone crescents, possibly associated with this period, have also been found at Tulare Lake, near Tracy Lake (Beck 1971), and at CA-MER-215, three miles northwest of Kesterson National Wildlife Refuge (Peak and Weber 1978).

#### 'Altithermal' Period (ca. 7,500 - 5,250 years ago)

Within the San Joaquin Valley there is virtually no evidence of archaeological cultures during the Altithermal (a hypothesized period of warmer and drier climate). While it is likely that some of the Buena Vista and Tulare Lake materials relate to this period, specific radiocarbon dates are not yet available from these sites for this time period.

It is likely that many sites from this and earlier time periods in much of the San Joaquin Valley have been deeply buried by alluviation.

#### 'Early' Period (Positas Complex)

The Positas Complex is currently represented only by the material at the base of CA-MER-S94, and is very tenuously linked to southern California on the basis of "doughnut stones" (Olsen and Payen 1969:41; see Figure 4). The Positas Complex does not appear to fit with any of the other sites known for the general area, although Olsen and

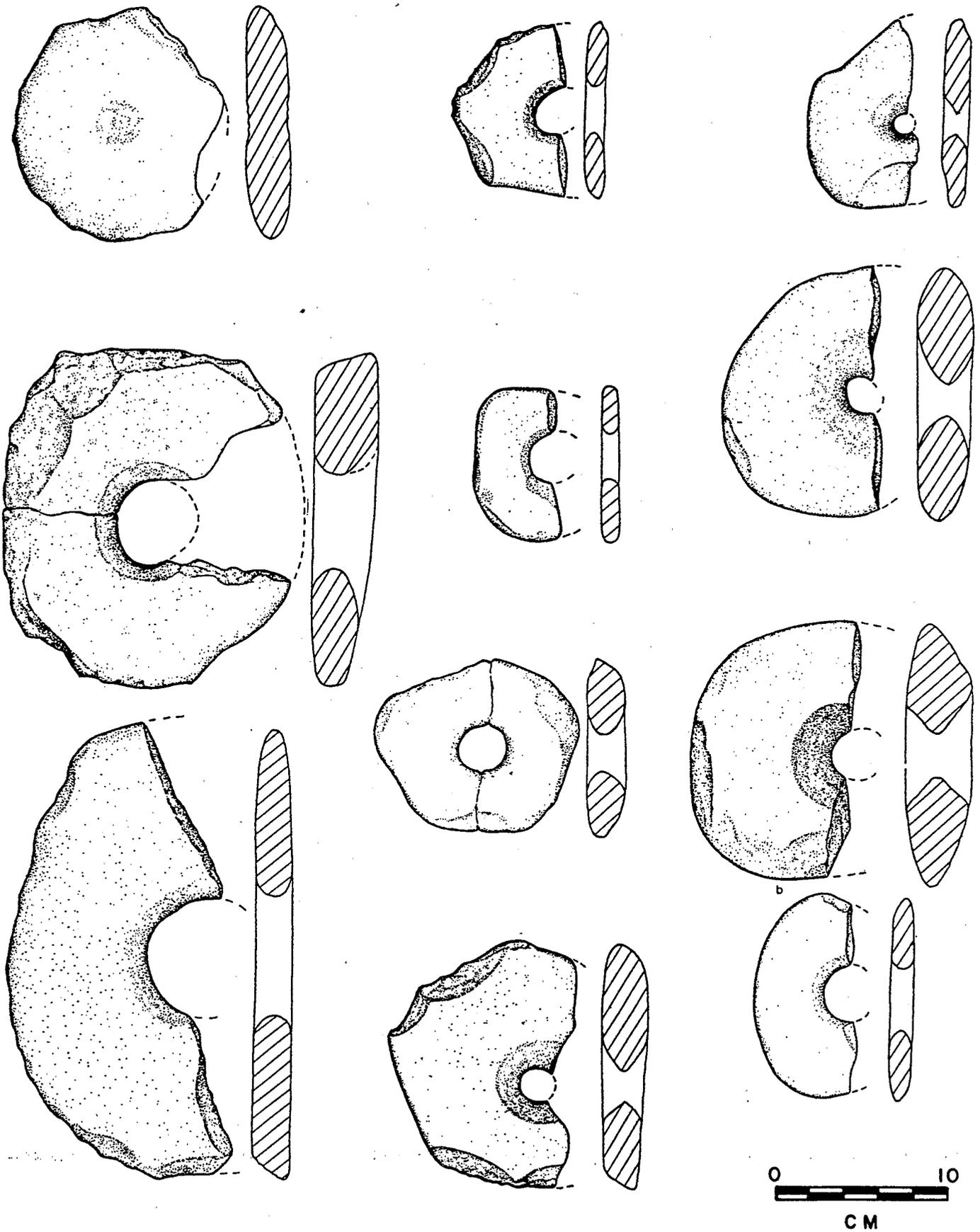


Figure 4. Perforated Flat Cobbles from CA-MER-S94. These artifacts, called "Doughnut Stones," appear to be characteristic of the Positas Complex. From Olsen and Payen (1969: Figures 23-27).

Payen do cite the rare occurrence of similar artifacts elsewhere within the San Joaquin Valley. Tentative estimates for the age of this complex are 5,250 - 4,550 years ago (Moratto 1984:191; Olsen and Payen 1969). However, radiocarbon dates of 645 +/- 90 (charcoal from a depth of 200-220 cm; I-3166) and 2,400 +/- 100 (charcoal from a depth of 220-240 cm; I-3167) (Olsen and Payen 1969:41) not only fail to support the estimated age for this complex, but disagree with each other as well. Because of these discrepancies, further definition of the age and cultural affiliations of the Positas Complex must await additional data.

Items which may be diagnostic of this period are:

... perforated, flat cobbles; a few flake scrapers; rare examples of small shaped mortars; short cylindrical pestles; and at least several milling slabs and mullers. Two or three deep projectile point fragments may belong here, but it is doubtful. Several other chipped stone objects (such as small plane scrapers) also could be associated with this complex. One Spire-Lopped Olivella bead and several perforated pebble pendants also occurred in the deep levels and could belong to the complex (Olsen and Payen 1969:41).

While the "doughnut stones" (Figure 4) appear to be the most characteristic artifact attributed to this period, some doughnut stones were found in the upper (Pacheco Complex) portions of this site.

#### Middle Period (Pacheco Complex)

The "Middle" period is represented by the Pacheco A and B Complexes, located as the B and C components at CA-MER-S94. The Pacheco A Complex also appears to be present at CA-MER-215. The earlier Pacheco B complex "is represented by only a few distinctive items which suggest a relationship to the Central California Early period (Olsen and Payen 1969:41). Olsen and Payen state that the Pacheco A period "marks an incursion of coastal people to the west edge of the valley" (1969:41). This is based partially on the discovery of flexed burials at a time when extended burials were prevalent in the Central Valley.

Potentially diagnostic elements of the Pacheco B Complex, which is still little understood, but tentatively dated at approximately 4,550 - 3,550 years ago (Moratto 1984:192), include the following traits (some of these are illustrated in Figure 5):

... Thick, Rectangular Olivella beads, the rare occurrence of rectangular Haliotis or freshwater mussel shell beads, several large points and a few examples of heavy food-processing tools. Possibly, the graver-like tools and the large leaf-shaped biface point fragments belong here, also (Olsen and Payen 1969:41).

Potentially diagnostic elements of the Pacheco A Complex, which tentatively is dated from 3,550 - 1,650 years ago (Moratto 1984:192), are listed below (some of these artifacts are illustrated in Figures 6, 7, and 8):

... Spire-ground; Modified Saddle (Type 3b2); Saucer (Type 3c); and Split-drilled (Type 3b1) (all of Olivella); and Macoma clam disc beads. One Haliotis disc bead and a few centrally perforated Haliotis cracherodii shell ornaments are known, as well as several rare stone bead types. These bead and ornament forms are clearly related to the Middle period in central California.

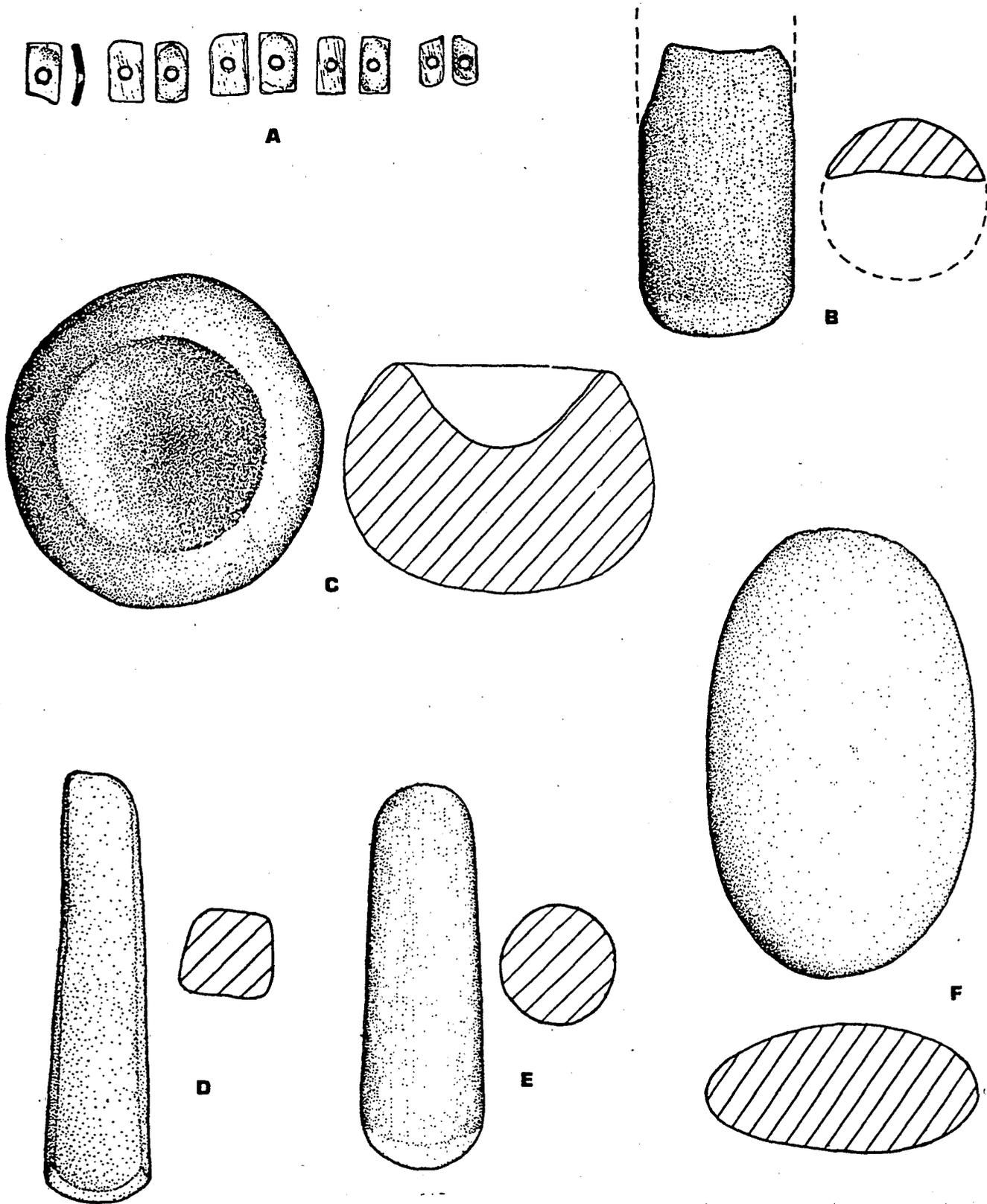


Figure 5. Archaeological Materials in the Pacheco B Complex at CA-MER-S94. A. Thick rectangle *Olivella* type 2b bead, said to be diagnostic of the period (actual size). B. Shaped round end pestle fragment (1/2 actual size). C. Small globular cobble mortar (1/2 actual size). D. Cobble round end pestle (1/2 actual size). E. Shaped pestle with round end (1/2 actual size). F. Unshaped uniface cobble muller (mano) (1/2 actual size). From Olsen and Payen (1969: Figures 8, 28, 29, and 32).

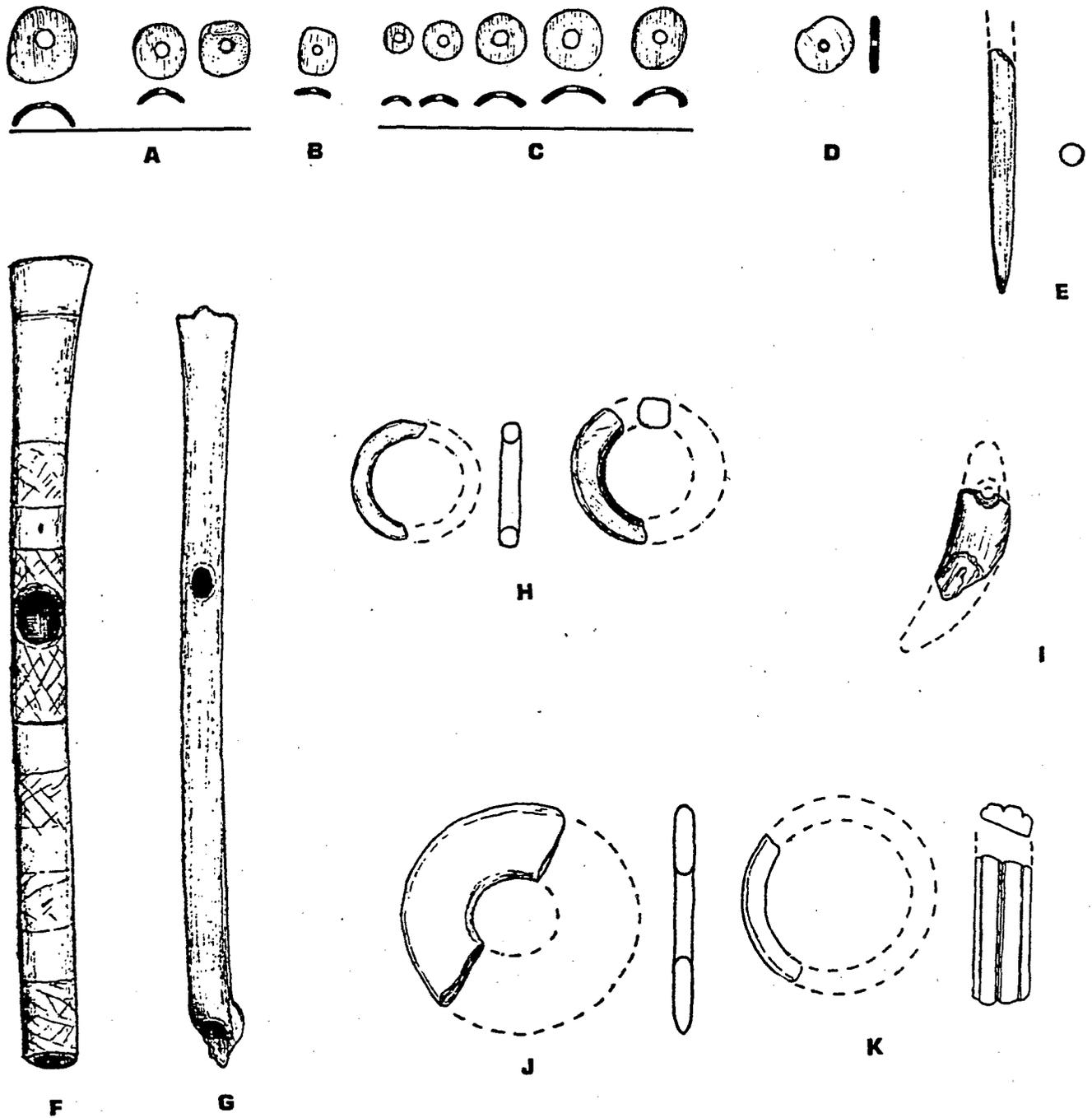


Figure 6. Archaeological materials in the Pacheco A Complex at CA-MER-S94 (all actual size). A. Split-drilled *Olivella* type 3b1 and 3b1 variant. B. Modified saddle *Olivella* type 3b2. C. Large disc *Olivella*, type 3c. D. *Macoma* disc. E. Slate pin tip fragment. F-G. Incised and plain bird bone whistles. H. Slate "ring" fragments. I. Perforated canine tooth. J. Slate "ring" fragment. K. Jade "ring" fragment. From Olsen and Payen (1969: Figures 8, 9, and 12).

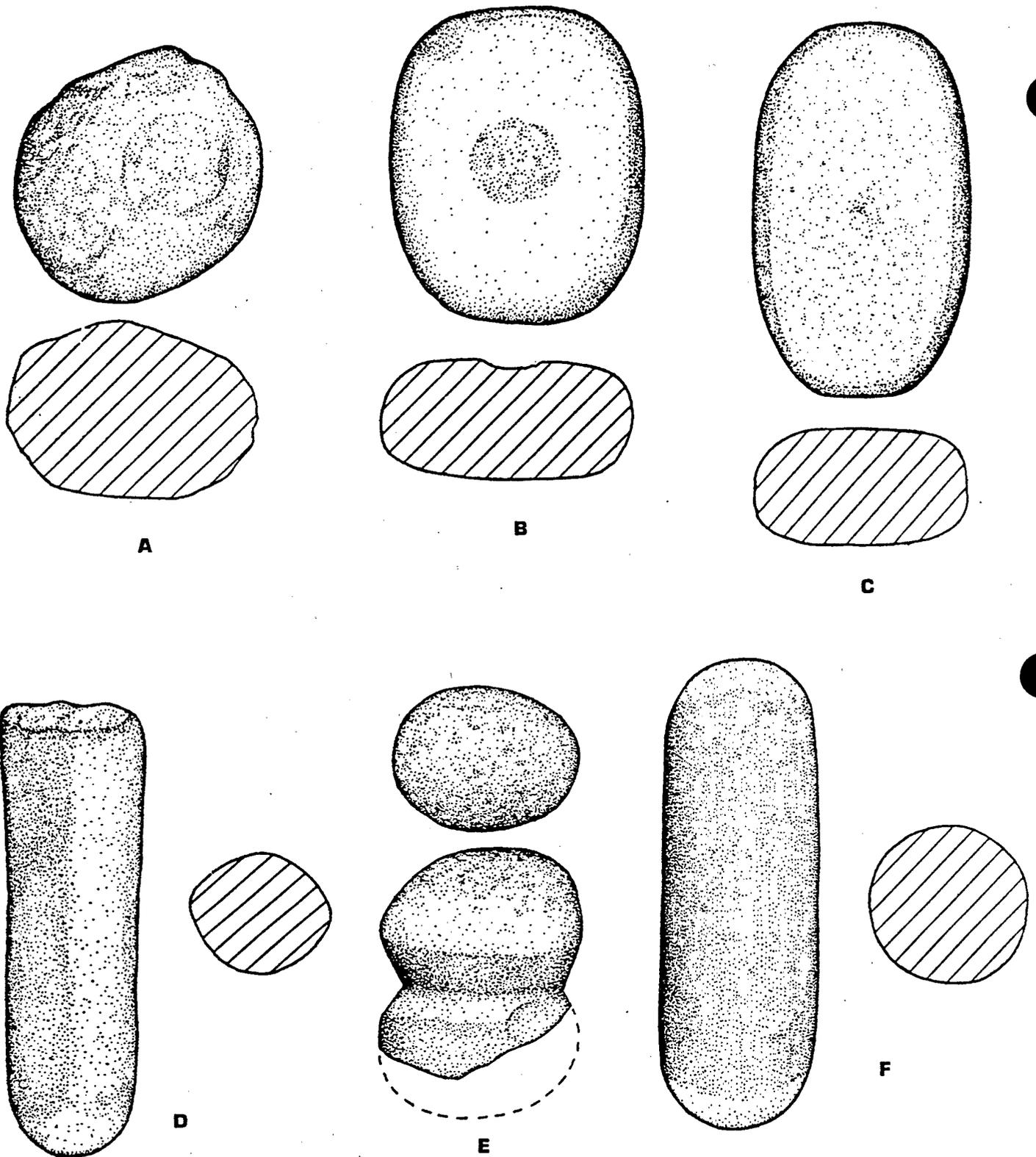


Figure 7. Archaeological materials in the Pacheco A Complex at CA-MER-S94 (all 1/2 actual size). A. Shaped oval miller. B. Shaped rectangular pitted miller. C. Shaped rectangular miller. D. Partly shaped flat end pestle. E. Girdled cobble. F. Shaped pestle with round end. From Olsen and Payen (1969: Figures 28, 30, and 31).

Distinctive bone artifacts include perforated canine teeth, bird bone whistles, a few crude bone awls, scapulae grass cutters with ground edges and a few other types of less diagnostic value. Large spatulate bone tools and various perforated "pin" forms do not occur, though they are distinctive in the Delta.

Polished stone objects include rings of slate and jade slate, pins and flat pebble pendants. These lack variety and are often poorly made.

Especially distinctive is the heavy stone tool complex. A variety of mortar and pestle forms occur. Milling slabs and mullers are frequent. Some of the latter are of well made rectangular forms. All forms of grinding tools are especially abundant.

The projectile point complex includes large to medium silicate and obsidian points, frequently stemmed or side-notched. Almost all are percussion flaked and weigh from 3 to 10 gm. Some of the points, on the basis of form and material, certainly are derived from the coast, presumably the Monterey Bay area.

A limited number of other elements indicate contact to the west. These include fragments of *Mytilus* and clamshell in the midden, a *Mytilus* shell fishhook and possibly a fragmentary jade ring (Olsen and Payen 1969:40-41).

Subsequent excavations at CA-MER-27 located a lower component which contained additional evidence of the Pacheco A Complex as well as a protohistoric period upper component (Nissley 1975:11). The presence at this site of milling stones (manos and metates) is somewhat surprising, and suggests lines for future investigation within this general area. It is possible that the Pacheco A Complex is older than previously thought (Olsen and Payen suggest a date of 3,550 to 1,650 years ago).

#### Late Prehistoric Period (Gonzaga Complex)

The late prehistoric occupation has been termed the Gonzaga Complex. This is represented at CA-MER-3B, CA-MER-14, CA-MER-S94, CA-MER-215, CA-FRE-128, CA-FRE-129, and other sites. Olsen and Payen state that this occupation relates closely with the Late Period Phase I of the Delta region (as defined by the Central California Taxonomic System), but conclude that "this period in the Los Banos region is aberrant and must be considered as a distinct cultural entity even though it forms a basic portion of the sequence" (1969:40). The dates tentatively assigned to this period are 1,650 - 950 years ago (Moratto 1984:192).

The only excavated components of this period are cemeteries, and as such the diagnostic elements are confined to grave goods. The diagnostic elements cited by Olsen and Payen are as follows (see also Figures 9 and 10):

The frequent *Olivella* bead forms include: Whole Spire-ground (Types 1a, 1b); Thin Centrally-perforated Rectangular (Type 2a1); Split-punched (Type 3a2); Oval; and several variant forms of the Thin Rectangular bead. Freshwater mussel shell disc beads and whole limpet shells (*Megathura crenulata*) also occurred. *Haliotis* shell ornaments (all *Haliotis rufescens*) of frequent occurrence include simple circular, oval and tear-drop shapes. Less frequent are forms with a flat end and round top or split "fishtail" end and round top. All types are frequently decorated with the distinctive X- or V-shaped incising on the edges. Specimens with bead applique' set in asphaltum are

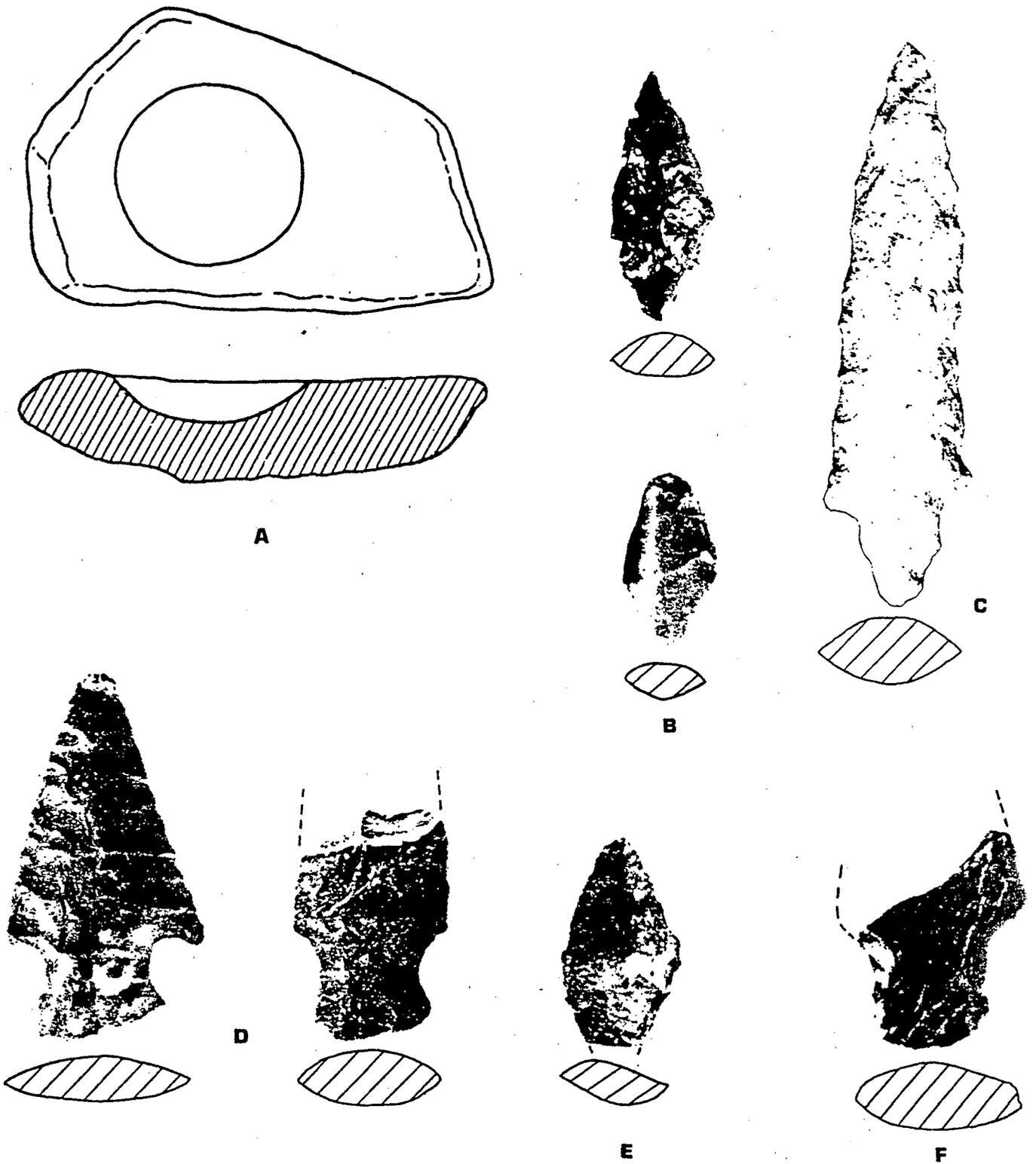


Figure 8. Archaeological Materials in the Pacheco A Complex at CA-MER-S94. A. Slab mortar (1/4 actual size). B, E. Type 3 projectile points (all projectile points actual size). C. Type 5 projectile point. D, F. Type 6 projectile points. From Olsen and Payen (1969: Figures 15, 16, and 35).

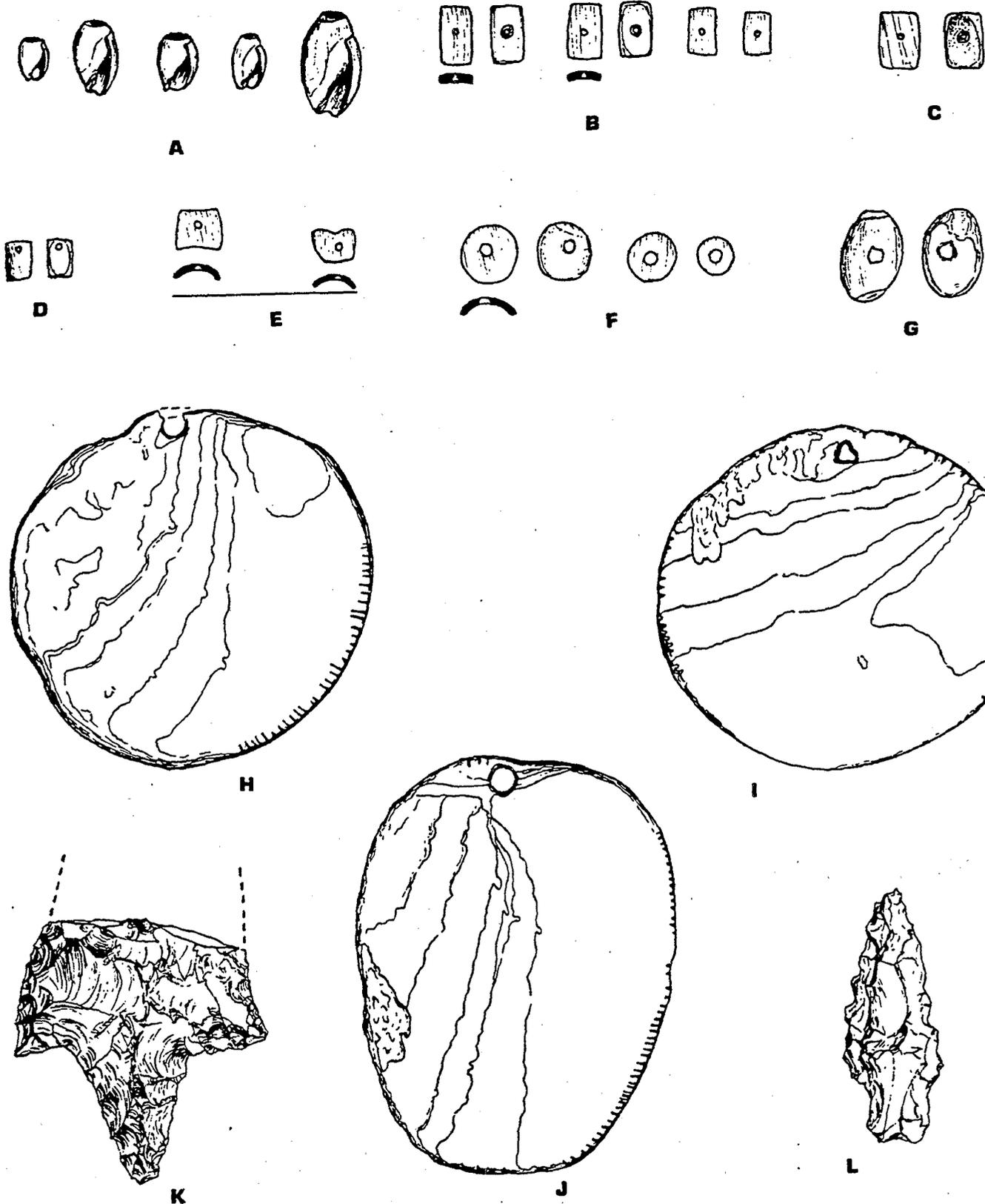
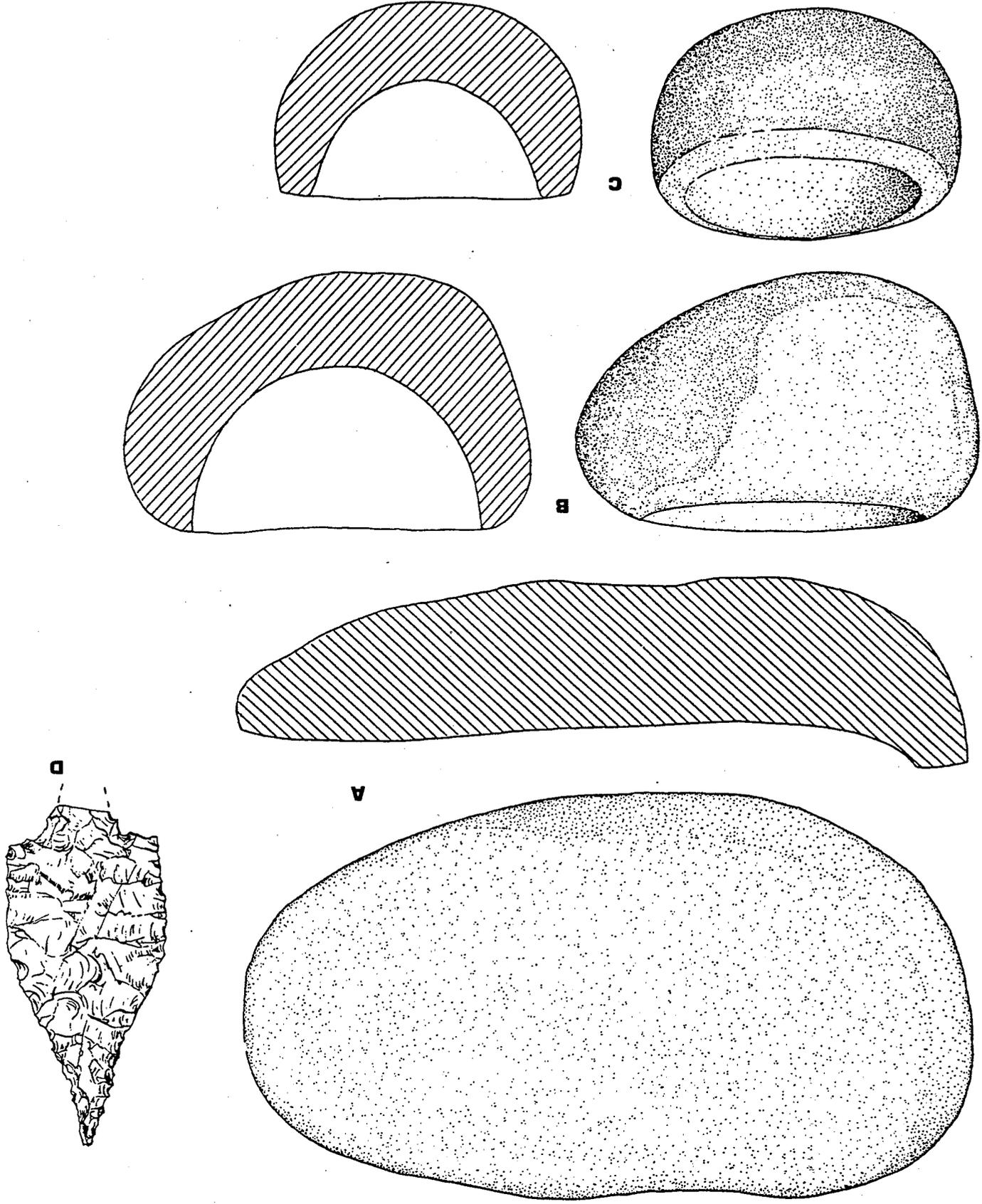


Figure 9. Archaeological Materials in the Gonzaga Complex at CA-MER-3 (all actual size). A. Large and small spire-lopped *Olivella* beads, type 1a and 1b. B. Thin rectangular *Olivella* bead, type 2a1. C. Large thin rectangular *Olivella* bead, type 2a1. D. Thin rectangular, end perforated *Olivella* bead, type 2a2. E. Variant of thin rectangular *Olivella* bead, type 2a1. F. Oval *Olivella* bead. G. Split and punched *Olivella* bead, type 3a2. H-J. *Haliotis rufescens* ornament, type K2bII. K-L. Type 2 projectile points. From Pritchard (1970: Figures 22, 23, and 30).

Figure 10. Archaeological Materials in the Gonzaga Complex at CA-MBR-3. A. Convex metate (1/4 actual size). B. Large shaped mortar. C. Large beveled rim mortar. D. Type 2 projectile point. From Pritchard (1970: Figures 30, 36, and 40).



known, some of the discs have the convex surface smeared with asphaltum and may have served as ear-spool facings.

Projectile points are rare. One large squared stem and a large tapered stem point are definite occurrences along with fragments of large incipient serrated obsidian points from one component.

Bone items include a few awls, pins, incised mammal bone tubes, bird bone whistles and several scapulae grass cutters. Most of the latter have notched rather than ground edges. Polished stone objects include large spool-shaped ear ornaments and small cylindrical "plugs".

The heavy stone tools include large bowl mortars; shaped pestles; rare slab mortars; and the slab milling stone and muller. The latter are rarely shaped. The relative frequency of the mortar versus the milling stone is not known from our excavated samples. It is clear, however, that the use of the milling stone and muller is more important here than in the later period, but less frequently than the preceding Pacheco complex (Olsen and Payen 1969:40).

The Gonzaga component is generally associated with the Late Horizon Phase 1 of the Central California Taxonomic System. Unlike the sites in the Sacramento Delta, however, where flexure was the dominant burial posture during this period, the earliest inhabitants at CA-MER-3 used an extended, supine burial posture, with semiflexure as a variant (Pritchard 1970:45).

While none of the radiocarbon dates from Merced County fall within this temporal range, a single obsidian hydration date was obtained from the 180-200 cm level of CA-MER-S94. The obsidian exhibited a hydration reading of 2.5 microns, which was tentatively interpreted as being ca. 1,475 years old (Olsen and Payen 1969:42). Without knowledge of the source of the obsidian, however, this estimated age cannot necessarily be considered accurate.

### Cultural Hiatus?

Based on research into prehistoric environments and culture change, some researchers have suggested a possible hiatus between approximately 1,400 and 600 years ago (cf. Moratto, King, and Woolfenden 1978:155) or between approximately 950 and 450 years ago (Moratto 1984:193). While there is as yet little information from western Merced County on this possible hiatus, Peak and Weber (1978:277-278) have reported at least two radiocarbon dates from within this time period. These dates, which were obtained from CA-MER-215, located within three miles of Kesterson National Wildlife Refuge, are 700 +/- 80 (A.D. 1250; UCLA-2135F) and 620 +/- 60 (A.D. 1330; UCLA-2135A). A third date within this postulated hiatus has been reported by Olsen and Payen (1969:41) from CA-MER-S94 of 645 +/- 90 (A.D. 1305; I-3166).

### Protohistoric Period (Panoche Complex)

The protohistoric period along the west side of the San Joaquin Valley is known as the "Panoche Complex," and is found at CA-FRE-128, CA-FRE-129, CA-MER-3, CA-MER-27, CA-MER-119, CA-MER-130, and CA-MER-215 (Olsen and Payen 1969:39, 198; Pritchard 1983:92; Nissley 1975; Jensen 1976; Peak and Weber 1978), and at other sites. This complex, which dates from about 450 to 150 years ago, exhibits relationships to the south, as well as to the Sacramento-San Joaquin Delta region. It has been classified as Late Period Phase II in the Central California Taxonomic System. Two radiocarbon dates obtained from this complex provided ages of "less than 185 B.P." for sites CA-FRE-129 (I-3163) and CA-MER-3

(I-3164) (Olsen and Payen 1969:40). Two additional dates (UCLA-2135C and UCLA-2135D) from CA-MER-215 are modern (i.e., less than 300 years old) (Peak and Weber 1978:277). Pritchard summarizes the Panoche Complex as "very probably represent[ing] the final occupation of the region by the Kahwatchwah Yokuts" (1983:92).

Diagnostic elements, as described by Olsen and Payen, include the following (see also Figures 11, 12, and 13):

... rare clamshell disc beads; Tivela tubular clam beads; steatite disc beads; Haliotis epidermis disc beads; side-ground Olivella beads; spire-ground Olivella beads; small, thin Olivella discs (Type 3d); small, thick Olivella discs (Type 3e) (some incised); small, rough Olivella disc beads; and lipped Olivella beads. Haliotis ornaments are rare, but include simple circular, rectangular or "tabbed" end forms. Projectile points are usually of the small side-notched, concave-based tradition, termed "Panoche side-notched", along with rare desert side-notched or serrated obsidian points, small triangular, concave-based and, rarely, large stemmed points. Especially distinctive is the abundance of well chipped flake scrapers. Bone objects include awls and scapulae grass cutters, incised bird bone tubes or whistles, short bone beads, and long awl or dagger-like pieces. Ground or polished stone objects include both small and large steatite ear spools, simple conical pipes, ground actinolite or slate pins and a variety of mortar and pestle forms. Presumably, bedrock mortars were also in use during this period. Use of the milling slab and muller is weakly attested; usually, the latter are unifacial cobbles. Steatite vessels are known, but rare, and vessel sherd arrowshaft straighteners are also known. One site also produced a number of sherds of a crude brownware pottery.

The structures include large (ca. 75 ft. diameter) circular assembly or ceremonial houses, smaller circular dwellings, usually 30 to 50 ft. in diameter, and one instance of a small semi-subterranean sweathouse [see Figures 14 and 15] (Olsen and Payen 1969:39).

During the Panoche Complex period (Late Horizon Phase 2 of the Central California Taxonomic System), at least two different burial patterns were used. These included the cremation pattern found at CA-MER-3, and the primary flexed burial pattern found at CA-MER-130 (Olsen and Payen 1983:20).

Based on the evidence from the several Panoche Complex sites discussed above, particularly the Menjoulet site (CA-MER-3), it should be noted that:

In general, the evidence . . . leaves little doubt that Kroeber lacked the necessary demographic data to clearly establish that the west side of the San Joaquin Valley, in ethnographic times, was "unimportant" and had "few residents" (1925:476). The Menjoulet site was undoubtedly a major village that was occupied on a year-round basis and was inhabited by a substantial number of people . . . . The evidence of the large structure at the site suggests that not only were several large family groups living here, probably similar in kinship structure to the exogamous moieties of the Valley Yokuts, but that the site was probably a tribelet center (Pritchard 1970:45).

One general consensus, then, which may be gathered from the archaeology of western Merced County is that there was indeed a sizeable population living there in relatively late times. Estimates of the actual numbers of inhabitants are difficult to make, as the population undoubtedly fluctuated through time, but there was probably a

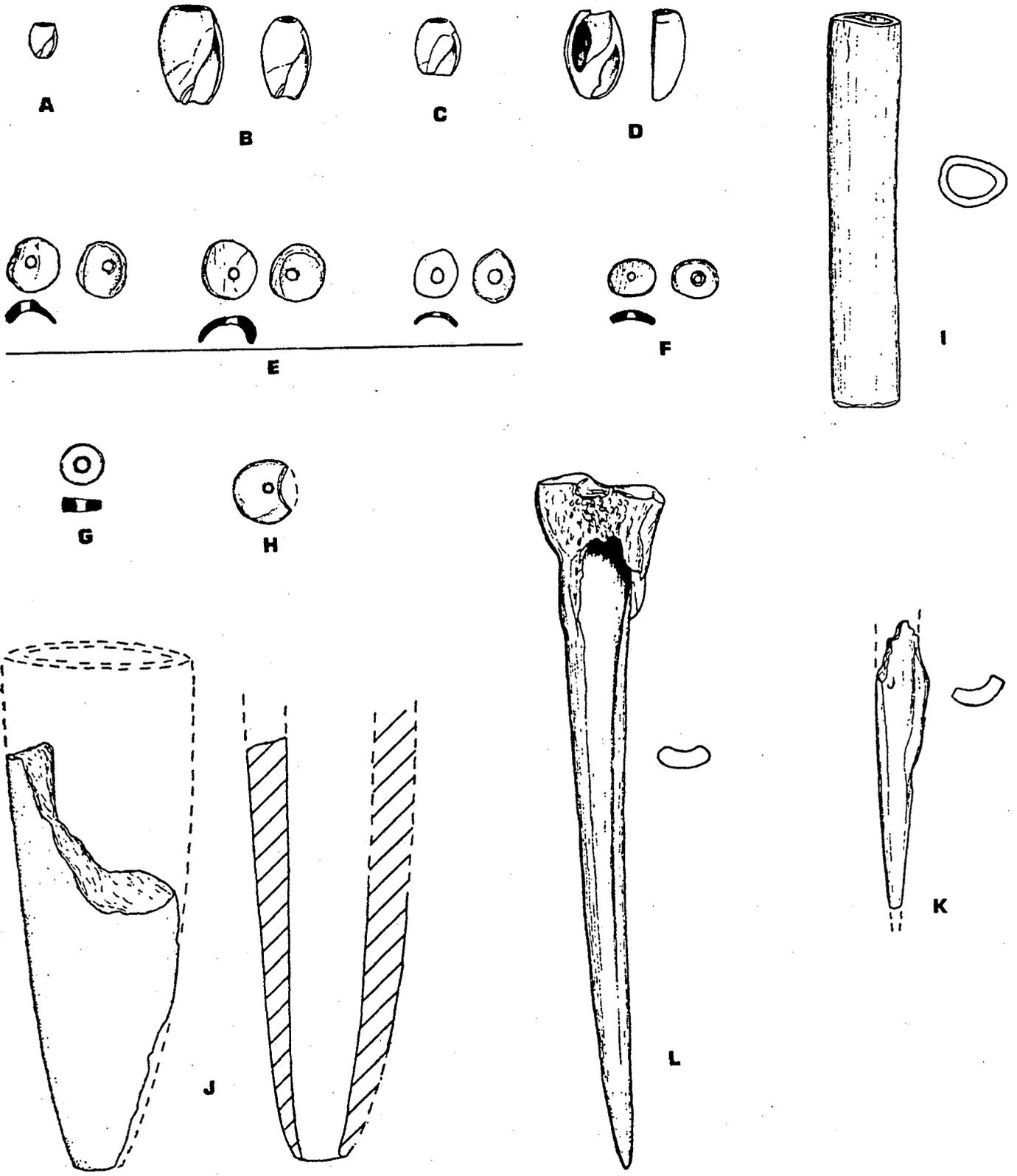
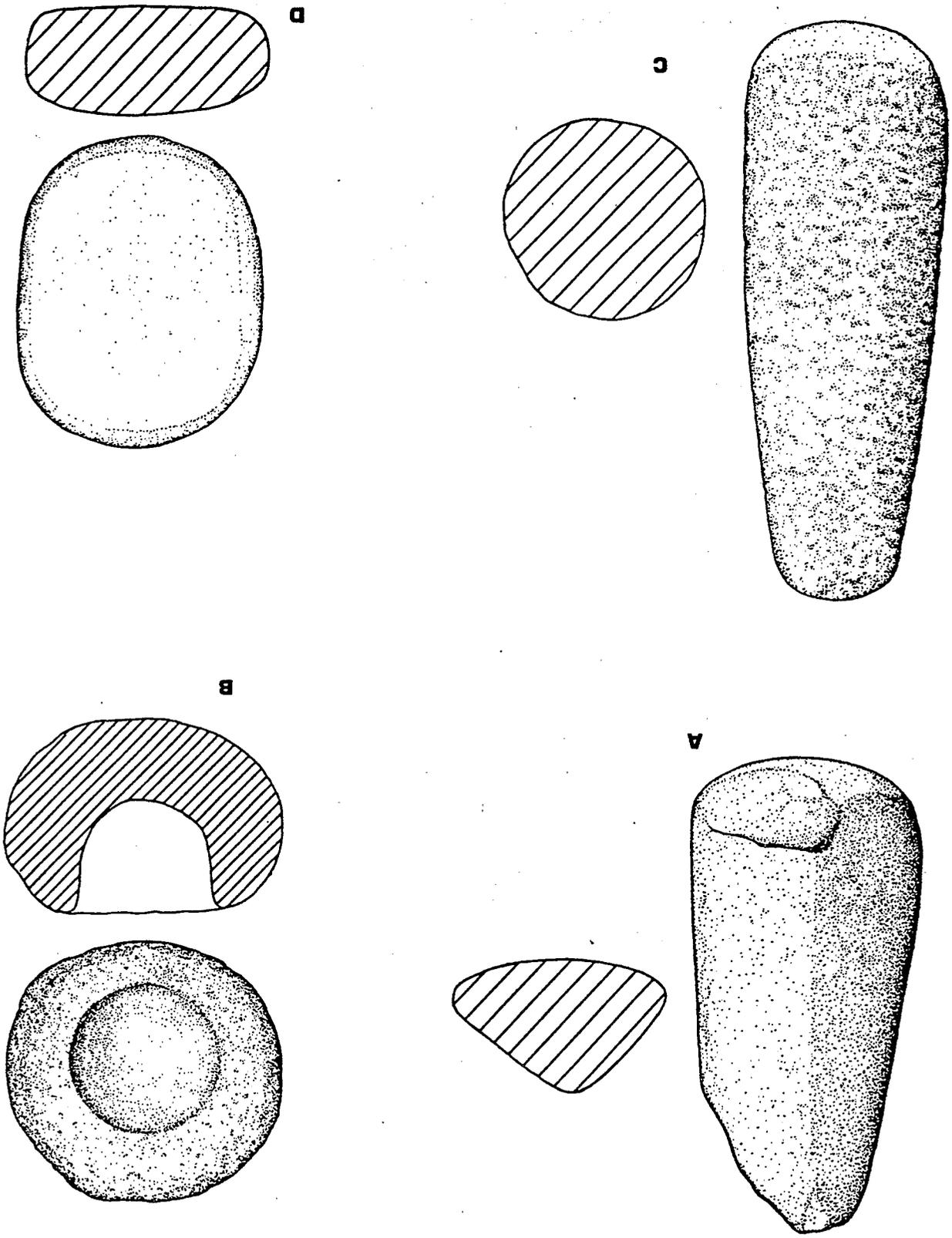


Figure 11. Archaeological Materials in the Panoche Complex at CA-MER-130 (all actual size). A-F. *Olivella* beads. A. Type A1a. B. Types A1c, A1b. C. Type B2b. D. Type A5 or O1. E. Type E1. F. Type C8. G. Steatite disk bead. H. *Haliotis* disk bead. I. Mammal bone tube. J. Conical steatite pipe fragment. K. Awl tip fragment. L. Metapodial awl. From Olsen and Payen (1983: Figures 4, 5, 6, and 14).



Figure 12. Projectile Points in the Panoche Complex at CA-MER-130 (actual size). a-ee. Panoche side-notched projectile points. All type 1 except f, m, u, v, and y. ff-nn. Triangular projectile points. All type 2 except ff, jj, and kk. From Olsen and Payen (1983: Figure 7).

Figure 13. Archaeological Materials in the Panoche Complex at CA-MER-130. A. Cobble pestle (1/2 actual size). B. Small bowl mortar (1/4 actual size). C. Conical dressed pestle (1/2 actual size). D. Rectangular bifacial mano (1/2 actual size). From Olsen and Payen (1983: Figures 15, 16, 18, and 20).



thousand or more individuals spread throughout this area in late prehistoric and ethnographic times.

#### Other Claimed 'Early' Sites

There are at least three other archaeological sites within the San Joaquin Valley for which considerable antiquity has been claimed.

The first, known as the Farmington Complex, is found as close as Stanislaus County. Characterized by flake and core tools, its age has been subject to discussion for 30 years. A recent assessment of this complex suggests an age of 12,000 - 7,000 years ago, and postulated that the complex may represent nonhunting activities which did not require flaked-stone points (Moratto 1984:63).

At Rancho Murieta, in eastern Sacramento County, an age of 12,000 - 18,000 years has been suggested. Moratto, however, feels that this deposit may also relate to the Farmington Complex (1984:64).

Finally, the Tranquillity site in western Fresno County (CA-FRE-48), less than 40 miles to the south of the study area, has been considered an ancient site because of the claimed association of highly mineralized human skeletons and bones of extinct bison, horse, and camel (Angel 1966; Hewes 1943, 1946). Artifacts with the remains appeared, however, to relate to the "Middle Horizon." As the discoveries were made in the 1930s and 1940s, accurate dating was difficult. Early studies, such as fluorine analyses and other chemical tests, suggested that the bones were of considerable age, but a recent radiocarbon date of 2,550 +/- 60 years (Berger et al. 1971:47-48) casts serious doubt on the claimed antiquity of this site. This date is, however, compatible with the artifacts which were recovered.

#### Previous Archaeological Research in Western Merced County

Much of the archaeology performed in western Merced County has been conducted by the California Department of Parks and Recreation in conjunction with various reservoir and canal projects. A number of archaeological reconnaissance, excavation, or research projects have been conducted in the San Luis Reservoir and for several other related water resources projects. Published reports or completed manuscripts included within this series are those of Pritchard (1966, 1970, 1983); Olsen and Payen (1968, 1969, 1983); Nissley (1975); and Jensen (1976). Also within this same area archaeological excavations have been conducted by Riddell and Olsen at CA-MER-14, and although the manuscript is often cited in the literature, it has not yet been completed and is unavailable. An analysis of the fish scales, however, has recently been published (Follett 1983). It is primarily these reports which have provided the information which has been used in defining the above temporal or cultural sequence for Merced County.

Additional published reports or completed manuscripts from other portions of western Merced County (outside of the study area) are scarce. One of the largest published reports outside of the greater San Luis Reservoir area is for the Wolfson Mound, CA-MER-215, a large village site approximately three miles northwest of Kesterson National Wildlife Refuge (Peak and Weber 1978; Peak 1979).

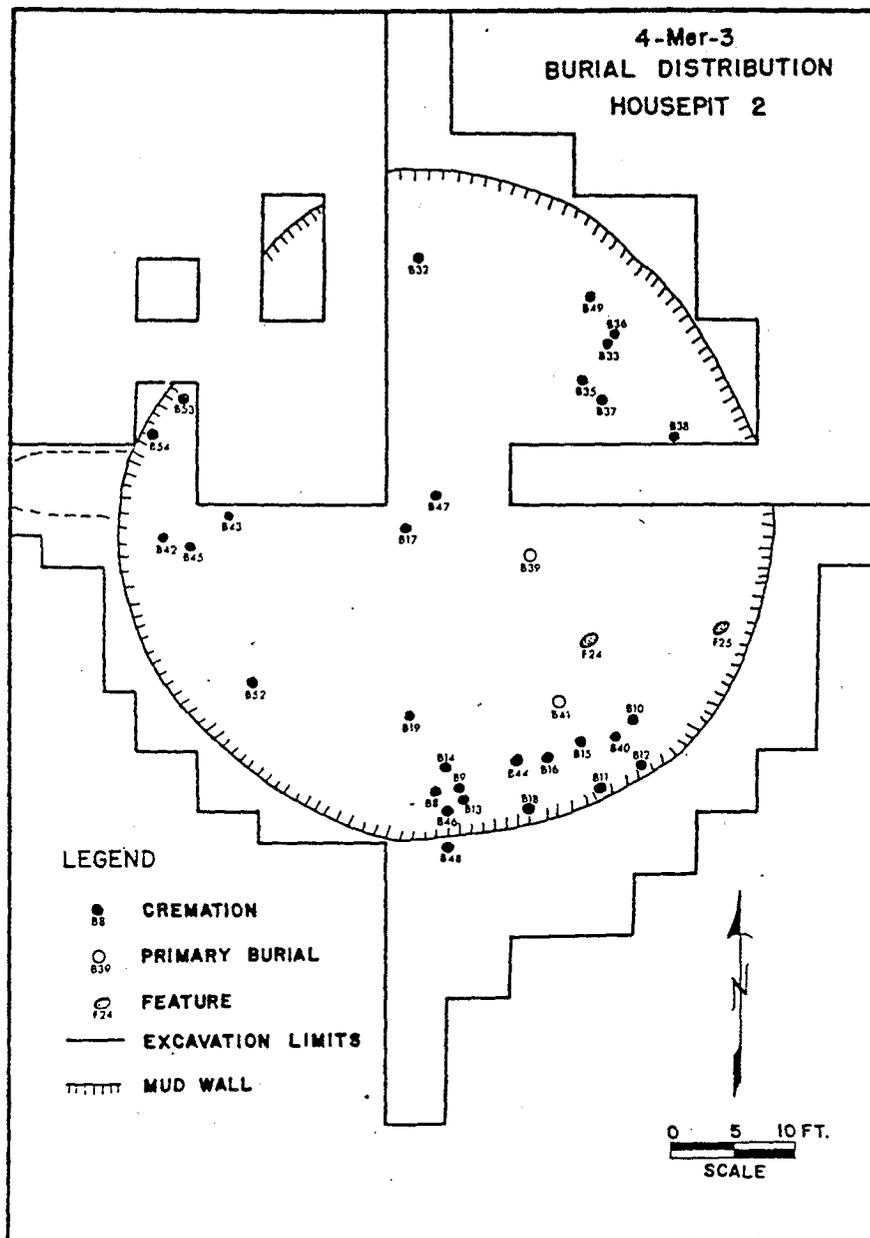


Figure 14. Distribution of Burials at Housepit 2 at CA-MER-3. From Pritchard (1970: Figure 4).

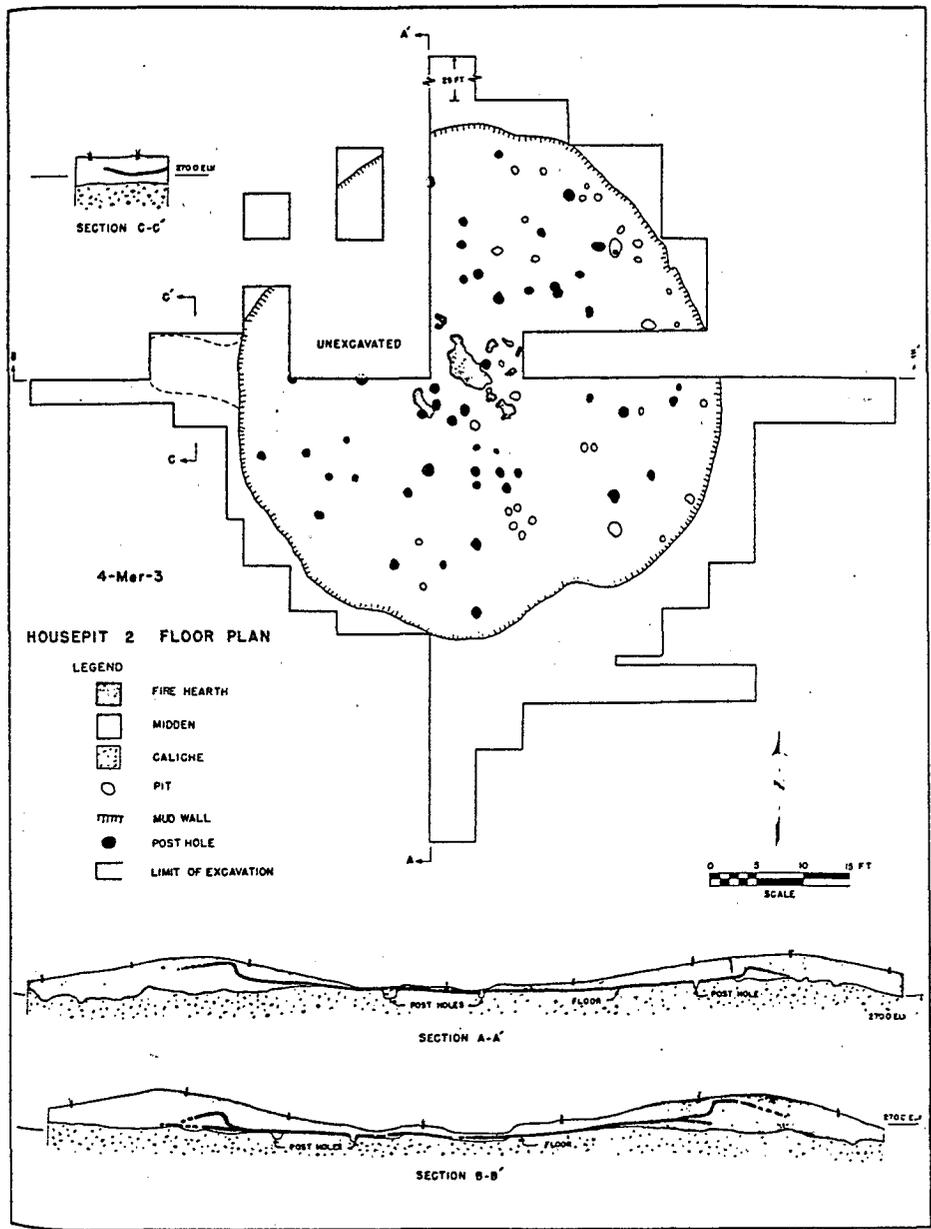


Figure 15. Floor Plan of Housepit 2 at CA-MER-3. From Pritchard (1970: Figure 5).

Among other contributions, the excavation at CA-MER-215 produced 7 of the 11 known archaeological radiocarbon dates for Merced County (Breschini, Haversat, and Erlandson 1984). Also, two fluted points and a crescent were found within the deposit, although no other evidence of an early site was recognized. The temporal or cultural affiliations of the site appear to be with the Pacheco A, Gonzaga, and Panoche Complexes (as described above); the presence of the three earlier artifacts could not be accounted for. Also of interest is the presence of seven retouched glass tools which Peak and Weber feel could date to approximately 1839-1850, possibly representing a brief post-secularization occupation of the site (Peak and Weber 1978:194).

During 1978, Scientific Resource Surveys, Inc., of Santa Ana, conducted archaeological monitoring and salvage excavations just east of Los Banos, at sites CA-MER-220, CA-MER-221, and CA-MER-223. It was found that CA-MER-220 was probably a seasonally used site, with evidence of fishing, seed grinding, manufacture and maintenance of stone tools, and cooking activities. CA-MER-221 was a shallow cultural deposit, but contained 55 housepits and a ceremonial structure. CA-MER-223 contained large quantities of ground stone, quantities of clay and fired rock, and six burials. It was suspected that two or three cultural layers (including the Pacheco A and B, Gonzaga, and Panoche Complexes) were present, but no studies were performed whereby this suspicion could be verified (Scientific Resource Surveys 1979:115-122).

Wildesen has conducted salvage excavations at CA-MER-66, a small site in Dos Palos (Wildesen 1969). No dating was done, and few artifacts were recovered. It was generally thought that the site was associated with the "middle" period in central California. Of note are three charmstones, two of which appear unique in western Merced County, and one of which resembles the specimen collected by ESCA-Tech at CA-MER-239 (see Figure 16, b).

Other excavations from western Merced County for which we have located some information are summarized below. For the most part, the work at these sites is represented only by partial manuscripts and/or field notes, references in other reports or in the archaeological site record files, or personal communications from other researchers working within the area. (If this area follows the pattern for many other areas of California, it is likely that many additional excavations have been carried out which have not been recorded or reported. These could include minor excavations by early students at Berkeley, excavations by collectors, or work by amateur archaeologists, etc.)

Excavations in this category are very briefly summarized below:

--CA-MER-5. This extensive site is located four miles east of the Merced Refuge (see Map 9). One shovel test pit was excavated in 1956 by Grover Krantz, and a number of artifacts were collected by Albert B. Elsasser and Ralph Milliken (Albert B. Elsasser, personal communication 1985). These included beads, projectile points, a scraper, a core, steatite bowl fragments, flakes, and a quartz crystal. The artifacts are now curated at the Lowie Museum of Anthropology of the University of California, Berkeley. Other than the determination that this is an extensive site, no additional archaeological work appears to have been conducted.

--CA-MER-53, is located in the Dos Palos area, south of the study area. In 1950, Don McGeein, a student at the University of California, Davis, exposed several burials which had been encountered during leveling and subsoiling. The burial positions included ventral extension (with lower legs flexed back toward pelvis), loose flexion, and tight flexion. All burials had been charred. Artifacts generally suggested a late prehistoric age (McGeein 1950).

In the near vicinity of the study area, some fragmentary information is available on one additional site. This site, CA-MER-54, which is located 1.1 miles west of the Kesterson Refuge, was reportedly tested in the spring of 1972 by California State University Stanislaus. No formal report has ever been prepared for this site, but two student papers are said to exist (L.K. Napton, personal communication 1984). We have, however, been unable to obtain copies of these papers, and have been unable to locate any additional information on this site.

Archaeological research and excavation projects have also been conducted in eastern Merced County. These include work by Napton, Clewlow, Ostrander, and others. Because of the limited nature of most of this work, and the requirements of the current project, we have not included summaries of eastern Merced County archaeology within this report.

Finally, because of the presence of three charmstones in the project area, one in the Merced Refuge collection (see Plate 24), one surface collected during the Eggers (1980a) reconnaissance at Kesterson Refuge (see Figure 16, b), and one surface collected during the current project from CA-MER-6, on the Kesterson Refuge (see Plate 30), a very brief discussion on charmstones is included below.

Based on previous archaeology, charmstones are relatively rare in western Merced County. No charmstones were located in the excavations at CA-MER-215 (Peak and Weber 1978), the Little Panoche Reservoir area (Olsen and Payen 1968), CA-MER-130 (Olsen and Payen 1983), east of Los Banos (Scientific Resource Surveys 1979), or CA-MER-119 (Pritchard 1983). In the work at the other major published sites in the area, charmstones are reported from only CA-MER-3 (Pritchard 1970), CA-MER-S94 (Olsen and Payen 1969), CA-MER-66 (Wildesen 1969:268), and CA-MER-260 (Schulz 1982). Some of the specimens illustrated in these works are shown in Figure 16. Finally, three additional charmstones were reportedly found in 1974 during grading at the San Luis Ranch, on the west bank of Salt Slough, just south of the San Luis Refuge (Joe Pope, personal communication 1984).

To date, the three charmstones from the project area do not readily fit within the typologies established for any specific area. There are resemblances with "middle" period sites in the Delta and Bay regions, and with Borax Lake and Buena Vista Lake specimens, suggesting a possible antiquity. The specimens from the project area may all be generally matched with specimens illustrated in Gifford and Schenck (1926) for the southern San Joaquin Valley. The resemblances between these specimens and the central California "Early Horizon" are tenuous; the majority of those specimens are perforated, while to date none of the ones from western Merced County are perforated. Additional discussion of the charmstones from the project area is found in Chapter 7.

#### Previous Archaeological Research within the Study Area

There has been virtually no archaeological work conducted within the study area before the recent cultural resource management projects sponsored by the Fish and Wildlife Service and the Bureau of Reclamation.

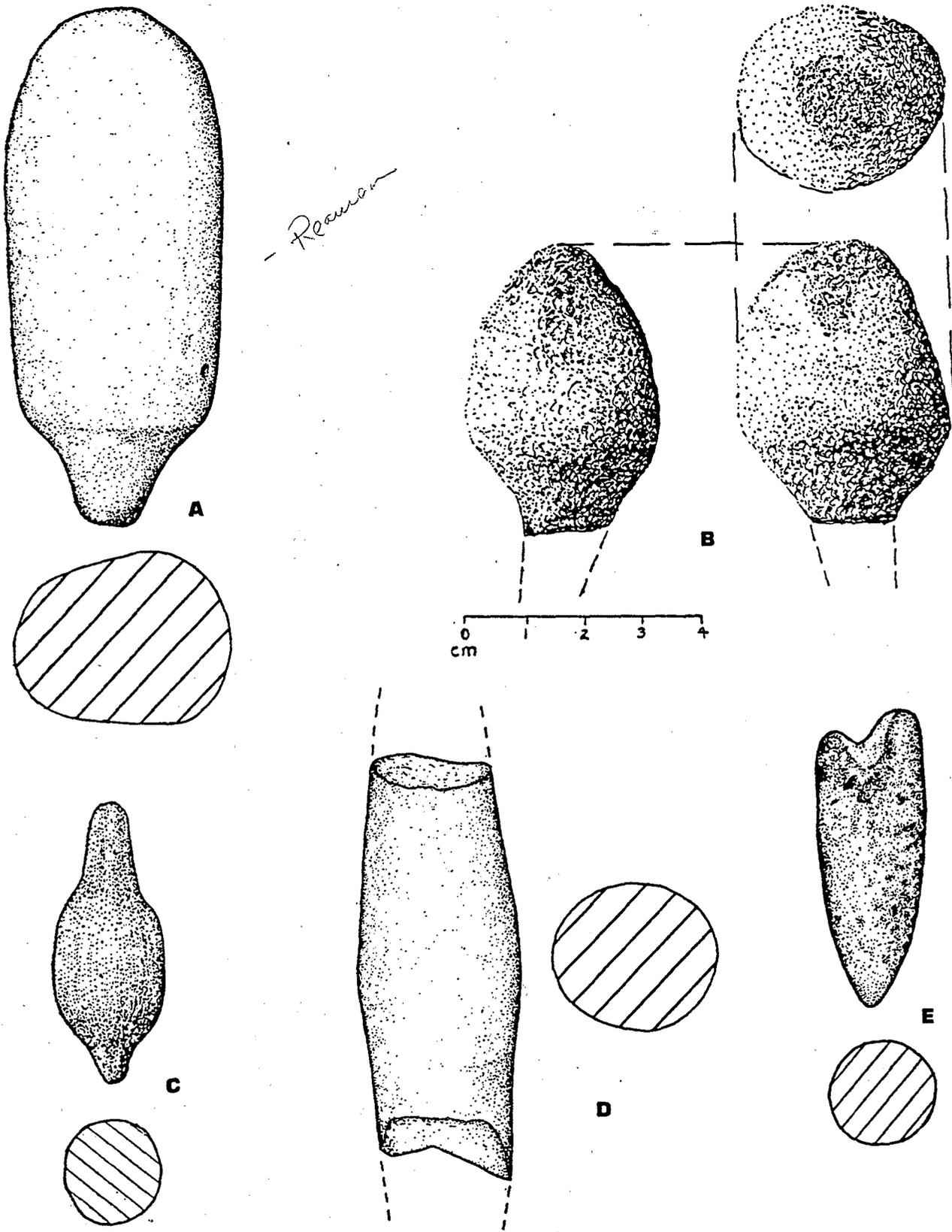


Figure 16. Charmstones from Western Merced County. A, D. CA-MER-3 (Pritchard 1970: Figure 29). B. CA-MER-239, on Kesterson Refuge (Eggers 1980a: Figure 5.5). C. CA-MER-260 (Schulz 1982: Figure 15). E. CA-MER-S94 (Olsen and Payen 1969: Figure 13).

Scale: A, D, and E, actual size. B, scale indicated. C, approximately 1/3 size.

## Early Archaeological Research

A major archaeological reconnaissance was conducted during the late 1930s in the mid-San Joaquin Valley. During this reconnaissance, Hewes (1941) located 107 archaeological sites, including sites in and around the study area. However, the only archaeological excavation which we have been able to document for the study area was conducted at CA-MER-6, an extensive village site located along the western boundary of Kesterson Refuge. Based on the archaeological site record, prepared by Grover S. Krantz in 1956, Charles Miles did much test pitting at this site in about 1940, and found at least four burials. The burials were reportedly reinterred. The site record also mentions that hundreds of housepits were noted, and that unnumbered points and mortars were recovered. Apparently a muller or mano also was recovered. No report could be located for this work, and the collection from the site could not be found. Grover Krantz could not provide any additional information on the site or the work apparently done by Miles (Grover Krantz, personal communication 1984). The materials were not located at the Lowie Museum in Berkeley, at the Department of Parks and Recreation Archaeology Laboratory in Sacramento (Chris Swiden, personal communication 1984), or at California State University, Stanislaus (L.K. Napton, personal communication 1984). Napton feels that the collection was probably broken up and sold when Miles died.

Charles Miles was well known for his column "Indian Relics" which appeared for many years in Hobbies magazine, and for his "coffee-table" book, Indian and Eskimo Artifacts of North America (Miles 1963). It is possible that this kind of excavation was the source of many of the artifacts described by Miles, but the locations he provided were too general to be of any use in linking his materials to specific sites.

Other than the one excavation reportedly conducted by Charles Miles, there appears to have been no formal archaeological excavation of any kind conducted within the study area, although burials and artifacts have repeatedly been encountered.

## Recent Archaeological Research

We have been able to locate two previous archaeological reports for the San Luis Refuge, and three for the Kesterson Refuge. As these are referenced throughout this report, they are described only briefly below:

At San Luis Refuge, Joe Pope conducted site recording and limited archaeological reconnaissance between 1972 and 1976. This work was reported, along with some background studies, in 1976. The 1976 report includes site records for 21 sites, along with additional notes on impacts, contents, etc. It is a useful work. The second work at San Luis was a small negative survey report (Pope 1988).

At Kesterson, there has been one previous major archaeological survey report. This was sponsored by the U.S. Bureau of Reclamation and conducted by ESCA-Tech (Eggers 1980a). Shortly after this project, subsurface backhoe testing was conducted to determine the presence/absence of cultural materials at a specific location (Eggers 1980b). Finally, the U.S. Bureau of Reclamation prepared a Class II survey for the San Luis Drain project. This was written by Charles Slaymaker and Janice Offerman under the direction of G. James West. This project included information from the current study area, primarily in the form of useful background studies.

## CHAPTER 5

### OVERVIEW OF STUDY AREA ETHNOGRAPHY, ETHNOHISTORY, AND HISTORY

#### Introduction

The following chapter presents overviews of study area ethnography, ethnohistory, and history. The section dealing with ethnography contains a description of the Yokuts as they were in late prehistoric times. The section on ethnohistory contains a history of the Yokuts peoples since prehistoric times. Finally, the section on study area history presents a chronological and thematic overview of both the general region and the San Luis, Merced, and Kesterson National Wildlife Refuges.

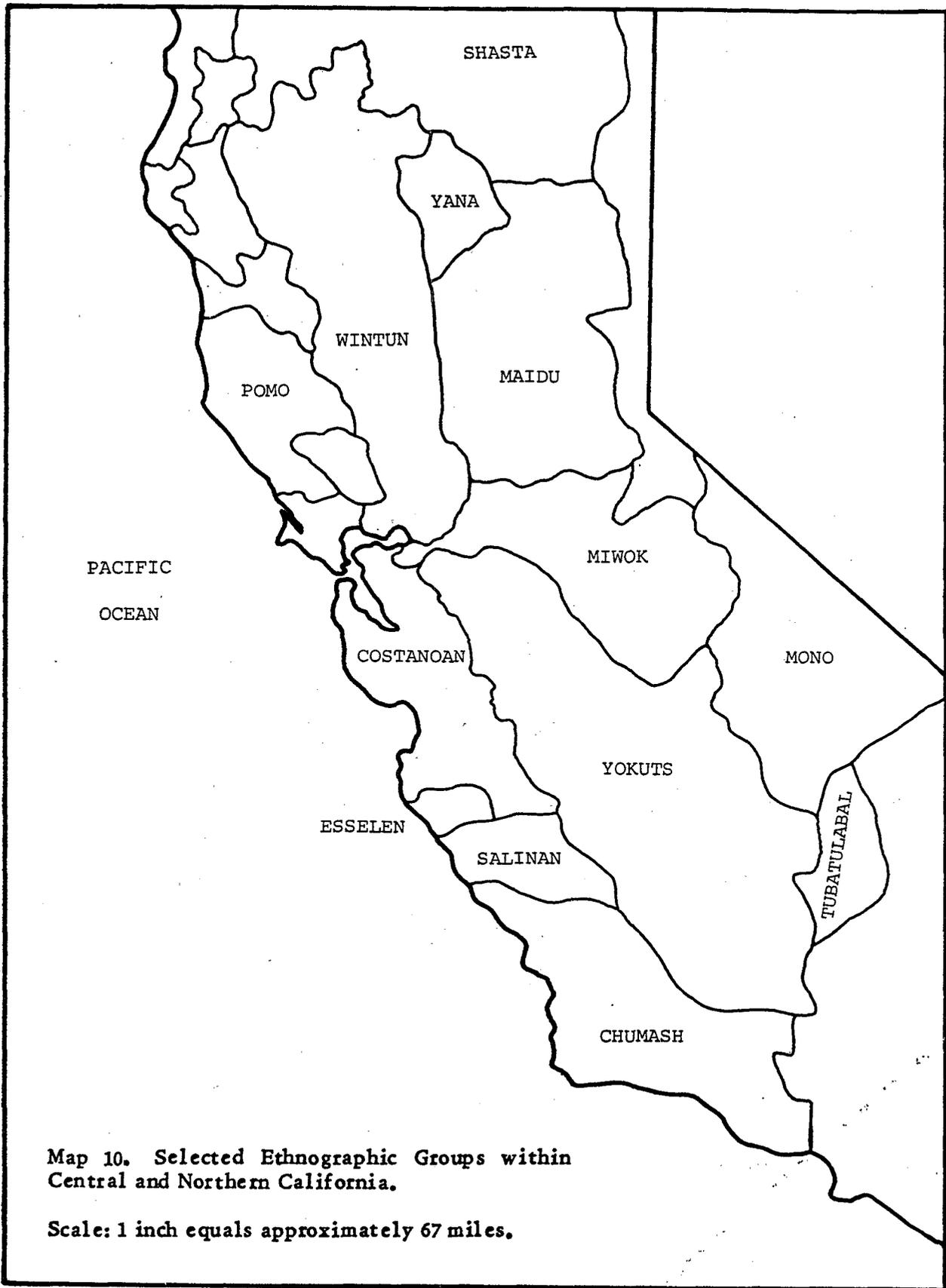
#### Overview of Study Area Ethnography

Long before the tall ships of the Europeans brought explorers to the coast of what is now California the land was home to as many as 300,000 ethnically similar but linguistically and culturally diverse peoples. These people were grouped into more than 500 politically separate, autonomous units, each with its own language or dialect, each occupying its own territory, and each practicing its own customs.

In the vast area of the great Central Valley now known as the San Joaquin lived the Yokuts (see Map 10), who, according to Kroeber:

... once held the whole floor of the San Joaquin Valley, plus much of the adjoining foothill belt on both sides. Numbering some eighteen to twenty thousand souls [a more recent population analysis raises the figure to 25,000-30,000], they were clustered into nearly fifty [the accepted number of tribes now stands at 60 plus] independent local tribes -- mostly friendly to one another (1949:xviii.)

The people in the San Joaquin Valley referred to themselves as 'Yokoch' (meaning "People"), and as they developed culturally they differentiated among themselves, evolving into regional subgroups. By the time of first European contact, though they still shared enough similarities to be identified by the Spanish a single culture type, "Tulareños," ("People of the tulares"), each group also had its own tribal name, such as: Chukchansi, Dumna, Gashowu, Choynimni, Yawdanchi and Palewyami in the southern Sierra foothills; Hometwoli, Yawelmani, Tulamni, Wowol, Telamni, Nutunutu, and Tachi in the southern San Joaquin Valley; and Pitkachi, Hoyima, Hewchi, Chawchila, Lakisamne, and Kahwatcheswah (or Nopchinchí) in the northern San Joaquin Valley. Of these northern Valley groups, it was the Kahwatcheswah who occupied the study area (Latta 1977:144-146).



## Nature of the Yokuts Groups

It was Stephen Powers, California's pioneering ethnographer, who first recognized the linguistic similarity of the San Joaquin Valley's native peoples, and called them "Yokuts," an English rendering of the general term for "Indian person" in the Valley dialects. Several writers have assumed that all peoples speaking Yokuts dialects used this term; however, among some of the Yokuts groups occupying the Sierran foothills, the word for person is "may." In all cases, though, these words contrast with the native terms for non-Indians, and contrast with the terms for smaller-sized units such as "people of such and such a village." In many of the Spanish and early English documents the Yokuts are called Noche (from the Valley dialects where the word means "friends") or "Tulareños," referring to the vast tule marshes which formerly nearly filled the San Joaquin Valley.

According to Kroeber (1925:474) the Yokuts were "unique among the California natives in one respect. They are divided into true tribes. Each has a name, a dialect, and a territory." It was this first feature, the tribal name, which set the Yokuts apart. That is, whereas the Yokuts used names which encompassed several villages or village communities, in the rest of California only the local village or village-community was named. Furthermore, the name employed by non-Yokuts groups to designate the local social unit was generally the name of the village leader or a word which referred to the specific geographical location of the village itself. Among the Yokuts, the group name transcended any one person, place, or thing.

Each Yokuts tribe held its own well defined territory, and sometimes defended its borders against incursions by other groups, Yokuts and non-Yokuts alike. However, among neighboring groups there was reported to be:

... constant visiting and return visiting, as nature according to season most bountifully provided fish, fowl, game, seeds, acorns or roots once here and then there. In their three hundred miles of range, the Yokuts were the most extensive as they were perhaps the most populous of the many diverse nationalities of aboriginal California. Each Yokuts tribe spoke its own slightly divergent dialect or sub-dialect; but all the way from Stockton to Bakersfield there prevailed at least partial intelligibility. Customs and institutions evinced a similar basic uniformity, varied by local peculiarities of detail, over the total stretch of the San Joaquin Valley. They were a tall, well built people of open outlook, were the Yokuts: frank, upstanding, casual and unceremonious, optimistic and friendly, fond of laughter, not given to cares of property or too much worry about tomorrow; and they lived in direct simple relation to their land and world, to its animals, spirits, and gods, and to one another (Kroeber 1949:xvii).

Because of the large geographical extent of Yokuts speakers, most researchers have found it advisable, even necessary, to break them down into several smaller units based on geographical and linguistic criteria. The most usual classificatory scheme divides Yokuts populations into a Valley division of dialects and a Foothills division, although some investigators (including the present ones) prefer to use a Northern Valley, Southern Valley, and Foothills typology. Either way, the cleavages and bunchings so created are heuristic constructs, the former based primarily on linguistic criteria and the latter on cultural-geographical criteria. As Silverstein (1978:446) has noted, though, some Northern Valley-type dialects were spoken by groups who were culturally and geographically Foothills people (for example the groups centered around Friant, east of Fresno), while several Valley cultural-geographical groups (such as those groups who lived in the Valley south of Tulare Lake) spoke dialects of the Foothill division.

For purposes of the present study we have attempted to limit the discussion to those Yokuts groups from the study area (centered on the Kesterson, San Luis, and Merced National Wildlife Refuges and their immediate environs). However, since the ethnographic data base is fragmentary concerning most of the central and northern San Joaquin Valley, it has been necessary to draw on information from a much wider area. As Wallace (1978c:462) has noted, "no large section of California is so little known ethnographically." As early as 1850, and probably long before that time:

... there were no Indians occupying the entire West Side plains, from Carquinez Strait on the north to Paleta in Kern County. . . . Concerning these West Side tribes there is, of course, practically nothing known. Few hints as to their names have been left (Latta 1977:125).

Beginning as early as 1790:

... they had been stripped from that entire territory . . . and taken to the Spanish Missions on the coast. . . . The Yokuts who were brave enough to remain . . . were exterminated in 1833 by an epidemic that swept that entire area" (Latta 1977:xix).

Kroeber even doubted that any sizeable Yokuts groups lived on the west side on a permanent basis at any time during the protohistoric and historic periods. He stated:

Along the west side of the San Joaquin . . . this territory seems to have belonged to the Yokuts, though in default of precise information it has sometimes been attributed to the Costanoan people or to the Miwok. This very doubt indicates an unimportant occupation; and while the area was almost certainly visited by the Yokuts, and probably claimed by one or more of their northerly tribes, the number of residents must also have been very few (1925:476).

However, Kroeber's assertion must be called into question for several reasons. First, Pedro Fages, on an exploratory trip into the northern San Joaquin Valley in 1772, noted that despite the rather bare appearance of the east-facing slopes of the Diablo Range the region abounded in seeds and that numerous Indian villages were to be found near the streams originating in the Diablo Range and flowing eastward into the San Joaquin Valley (Priestley 1972:72). Secondly, Latta notes that despite the non-existence of living west side dwellers in recent years "all along the eastern slope of the Coast Range . . . there were many evidences of Indian occupation" including abandoned village sites along most of the creeks from Crow in the north to Los Banos in the south (Latta 1977:xix-xx). In fact, near the confluence of Los Banos Creek and the San Joaquin River Latta found the remains of a rather sizeable village, including one house pit more than 30 meters across. Similarly, Hewes (1941:125), during an archaeological reconnaissance of the same area, noted the existence of many occupation sites within the Coast Range, most of which were concentrated along the numerous semipermanent streams which flow into the San Joaquin Valley. In general, archaeological reconnaissance projects carried out since the 1940s have discovered many habitation sites along the levees lining the San Joaquin River and its tributaries, both within and adjacent to the study area.

Given the foregoing, we believe that the study area and its immediate environs did, contrary to Kroeber's opinion, support a Yokuts population, and that this population was numerous and permanent.

## Ethnographic Background

Perhaps no other area in California is so little known ethnographically as the northern San Joaquin Valley, especially the area in which the three wildlife refuges are located. So rapid was the disappearance of the Yokuts from this region that for most groups we have little beyond a name, and, as Kroeber writes, we are not sure whether it is the name of a tribe or a town, or just a location (1925:485).

As early as 1790, only 20 years after the initial settlement of the Monterey Bay, there were already few Yokuts living in the vicinity of the study area and along the San Joaquin Valley's western plains. In that short time most had been removed, often violently, to the Spanish missions along Monterey Bay or to the Santa Clara Valley. The Yokuts groups living along the banks of the San Joaquin River north of Mendota were also affected by this removal process, but not until the early 1800s.

The Coast Ranges were almost immediately stripped of Yokuts to supply converts to Christianity and laborers to the Hispanic towns and ranchos, but the depopulation of the Valley Yokuts was related to several causal factors. Chief among these, prior to 1833, were the military raids of the Hispanos. As early as 1806 the Spaniards were raiding the villages in the Central Valley. Before 1820 the official purpose of these raids was to capture converted Indians who had fled the mission establishments; after 1820 the purpose was to punish the Indians for stealing horses. In either case, the outcome of the raids was the same: villages were attacked while the people slept, most of the adults were killed, and the survivors, mainly children, were kidnapped and taken to the coastal settlements where they provided a source of free labor.

The groups who survived these raids were decimated in 1833 by an epidemic (etiology unknown) of unparalleled ferocity which swept through the Central Valley, leaving in its wake entire villages of dead. Few groups managed to recover from this catastrophic event; those that did were eliminated shortly after as hordes of Anglo-American gold-seekers poured through the San Joaquin Valley, sweeping aside the few remaining natives (Wallace 1978c:469). The few individuals who survived this were driven out or killed a few years later as hundreds and then thousands of settlers moved into the valley. So thorough was the obliteration of the Valley Yokuts in the region from Mendota to Carquinez Straits that by the time Stephen Powers began his survey of California Indian groups in the early 1870s he was unable to locate a single Yokuts in this vast area. By the 1870s, the Westside Yokuts were scattered, living in obscurity and poverty, often intermingled with other Yokuts groups in the Sierran foothills, or on the fringes of Hispanic and later Anglo-American society.

Consequently, when the first intensive studies of California Indian populations began it was already too late to gather much, if any, useful information from the surviving Northern Valley Yokuts. Most were long gone; those who were left had been living for years as strangers in what was by then a strange land. As a result, most of what has been learned about these Yokuts, and perhaps what little remains to be learned, must be "extracted piecemeal from the writings of explorers, military men, missionaries, and other early travelers" (Wallace 1978c:462). Unfortunately, such individuals often were not interested in native customs and had little inclination to study or record them.

For these reasons, when discussing particular Yokuts groups, such as those within the study area, it is often necessary to infer the presence or absence of a trait on the basis of its presence among surrounding groups, rather than on the basis of actual reports. To make matters worst, the ethnographic record contains many gaps, inconsistencies, and outright contradictions. Much of the information was obtained by anthropologists during the early years of the twentieth century, more than 125 years

after the arrival of the first Europeans in the region, and more than 50 years after the last Northern Valley Yokuts groups ceased to exist as functioning socio-cultural units. Many of the Indians who were interviewed by anthropologists were trying to remember things which they had been told 50 or more years earlier; much of it was probably then second or third hand.

Another factor which complicated ethnohistoric research on the Northern Valley Yokuts is that most investigators at the time were much more interested in the "aboriginal" period almost to the exclusion of any other information. As a result, the ethnographic record contains little information on the swift acculturative changes brought about by the arrival of European cultures, except to note that the Indians were dying or dead.

To reconstruct the life and times of the Yokuts people who once inhabited the study area it is necessary to rely on incomplete historic data and analogy with longer surviving groups from other areas. But any reconstructions based on these techniques must by necessity be incomplete and hypothetical, full of assumptions and extrapolations. For example, the only Yokuts groups to retain any vestiges of their distinctive life-styles are the Sierran Foothill groups and the 100-plus Tachi Yokuts of the southern San Joaquin Valley. However, extrapolating from these Southern Valley Yokuts or from the Foothill Yokuts groups would lead to erroneous conclusions in most areas of non-technological culture, because, as Kroeber noted, the practices of the Northern Valley Yokuts must have been different from those of the Tachi Yokuts at many points (1925:492).

In a somewhat similar fashion, analogies with neighboring non-Yokuts groups must also be drawn carefully. Many of the coastal groups, such as Costanoan and Salinan, and the lower Sacramento Valley groups, such as the Plains Miwok, were either almost completely annihilated or so acculturated by the time they were first researched in detail that the data for them is also fragmentary and conflicting.

Because of these problems the information which follows in this section must be used with extreme caution, and cross-checked wherever possible. With these caveats in mind we may now turn to a discussion, or more accurately a hypothetical reconstruction, of the nature of Northern Valley Yokuts society and culture.

#### Data Sources

Primary data sources are few for the Northern Valley Yokuts in and around the study area, and are limited by and large to:

- 1) The few diaries left by various Spanish explorers (military and ecclesiastical), whose reports are woefully lacking in ethnographic information, being mainly lists of village names, occasionally native leaders names, and guesses at population figures.
- 2) The pitifully few fragments salvaged by such students of California native peoples as Merriam, Kroeber, Gayton, Harrington, and Latta.
- 3) The few archaeological reports dealing with protohistoric and early historic sites from the study area (such as those by Olsen, Payen, Pritchard, and Riddell, as discussed in Chapter 4).

All other works dealing with the Northern Valley Yokuts draw heavily on information supplied by either Southern Valley Yokuts (especially Tachi) or by Sierran Foothill groups. As noted above, this is not a particularly accurate method by which to

reconstruct Northern Valley Yokuts lifestyles and culture. Furthermore, of those cultural resource management documents which deal with areas once inhabited by the Northern Valley Yokuts, most are based solely on the works of Wallace (1978b, 1978c), Latta (1949, 1977), Cook (1955b, 1960, 1962), and Kroeber (1925), and rarely include new information or new insights into Northern Valley Yokuts cultural patterns or culture history.

### Native Peoples of the General Study Area

During the protohistoric and historic periods the sole native inhabitants of the study area and its immediate environs were various Yokuts tribes. However, because of the fragmentary and frequently conflicting nature of the ethnographic data for the central and northern San Joaquin Valley it is almost impossible to say precisely which of the several Yokuts groups known to have been in the general area actually lived within the Kesterson, San Luis, and Merced Wildlife Refuges.

Furthermore, by the time the Spaniards began visiting the region on a regular basis, considerable shifting and mixing of populations had occurred. For example, before 1807 the principal village of the Nopchinchí Yokuts, Nupchenche, was located either near the confluence of the San Joaquin and Fresno Rivers (Wallace 1978c:466), or on the eastern side of the San Joaquin River somewhere between Bear Creek and the Merced River (Bancroft 1966:II:52). By 1815, however, the population had shifted their principal residence, still known as Nupchenche, to a new location some miles to the north, near the confluence of Santa Rita Slough and the San Joaquin River.

Identification problems are compounded further by the Spanish practice of naming groups in a helter-skelter fashion. Sometimes they would refer to one group by a variety of terms: the group leader's name, or a locational name, or the word by which an adjacent group knew them, or the name of the village the group was currently occupying. Also, both the Ibero-Americans and Anglo-Americans frequently lumped all Valley and foothill Indians into one named group. Thus, in the historic and ethnographic records one frequently encounters a multiplicity of names for the same people. For example, the native peoples of the study area have been known at one time or another as Noches, Tulareños, Horse Eater Indians, Horse Thief Indians, Yokuts, Nopchinchí, and Kahwathwah. The first two terms are from Spanish documents and are general terms used by the Spaniards to refer to all native peoples who inhabited the tule areas of the San Joaquin Valley. The next two names occur in both Spanish and early Anglo records. They also are generic terms and include Yokuts and the non-Yokuts who joined with them on raids for horses. The term Nopchinchí occurs in Hispanic documents as the name of a somewhat populous village located along the San Joaquin River just south of the study area. However, in much of the ethnographic literature the name is used as a tribal designation (first by Cook 1955b; then by Wallace 1978c), encompassing all Yokuts who lived along the western side of the San Joaquin River south of the mouth of the Merced River. However, almost as frequently these same people are lumped under the term Kahwathwah (Latta 1977; Riddell et al. 1967), although Wallace feels that this term is not a tribal name but probably "an appellation for a local group said to have occupied the San Joaquin below the Pitkachi and around the towns of Firebaugh and Mendota" (Wallace 1978c:466; personal communication 1984).

Given the foregoing, is it possible to say precisely which Northern Valley Yokuts groups used and/or occupied the study area and its environs? At this late date, probably not. We simply do not have the requisite data necessary to make hard and fast determinations, nor do we have the information necessary to draw precise territorial

boundaries. However, on the basis of Yokuts generic concepts of territoriality we may make some approximate determinations of group locations.

It is known that among the Yokuts, there was "an almost universal sensible . . . practice of fixing boundaries between tribes at the summits of divides between drainage basins" with each group's land including both sides of a stream's drainage area (Latta 1977:74). Away from the hills, in the open flat lands of the Central Valley, the general practice was for groups to hold and use land on both sides of a waterway. However, it is not known how far out from the river a group's claims of territoriality extended. There are references in the ethnographic literature to groups exploiting jointly, though not necessarily simultaneously, the same resource procurement zones. For example, it is highly likely that the vast open prairie lands lying between the riparian corridors of the various waterways were used jointly by groups from the rivers as well as from the surrounding foothills. Seeds, rabbits, antelope and other food resources are found scattered through the prairies, but they are not localized to any great extent. Furthermore, due to the lack of permanent water (away from the major east-to-west flowing rivers, such as the Merced and Chowchilla), it was not practical for either riverine or hill dwelling groups to establish and maintain permanent villages in these areas. However, at some point between the sole occupancy-and-use areas along the rivers and the joint use areas of the plains a group's territory ended. But exactly how or where the valley dwellers drew their tribal boundaries in these open areas is not known. Nor is it known how or where the lines between adjacent river-dwelling groups were drawn, though it is known that they did establish territorial boundaries and that territoriality was very important. For example, almost all recorded cases of inter-tribal conflict may be attributed to instances of one group infringing on the territory of another, generally for resource procurement reasons. But the criteria by which these boundaries were established and where these boundaries occurred in the San Joaquin Valley are unknown at present. As Kroeber noted, "regrettable as the fact is, we can scarcely hope ever to have wholly accurate or full information concerning these tribes" (1925:485).

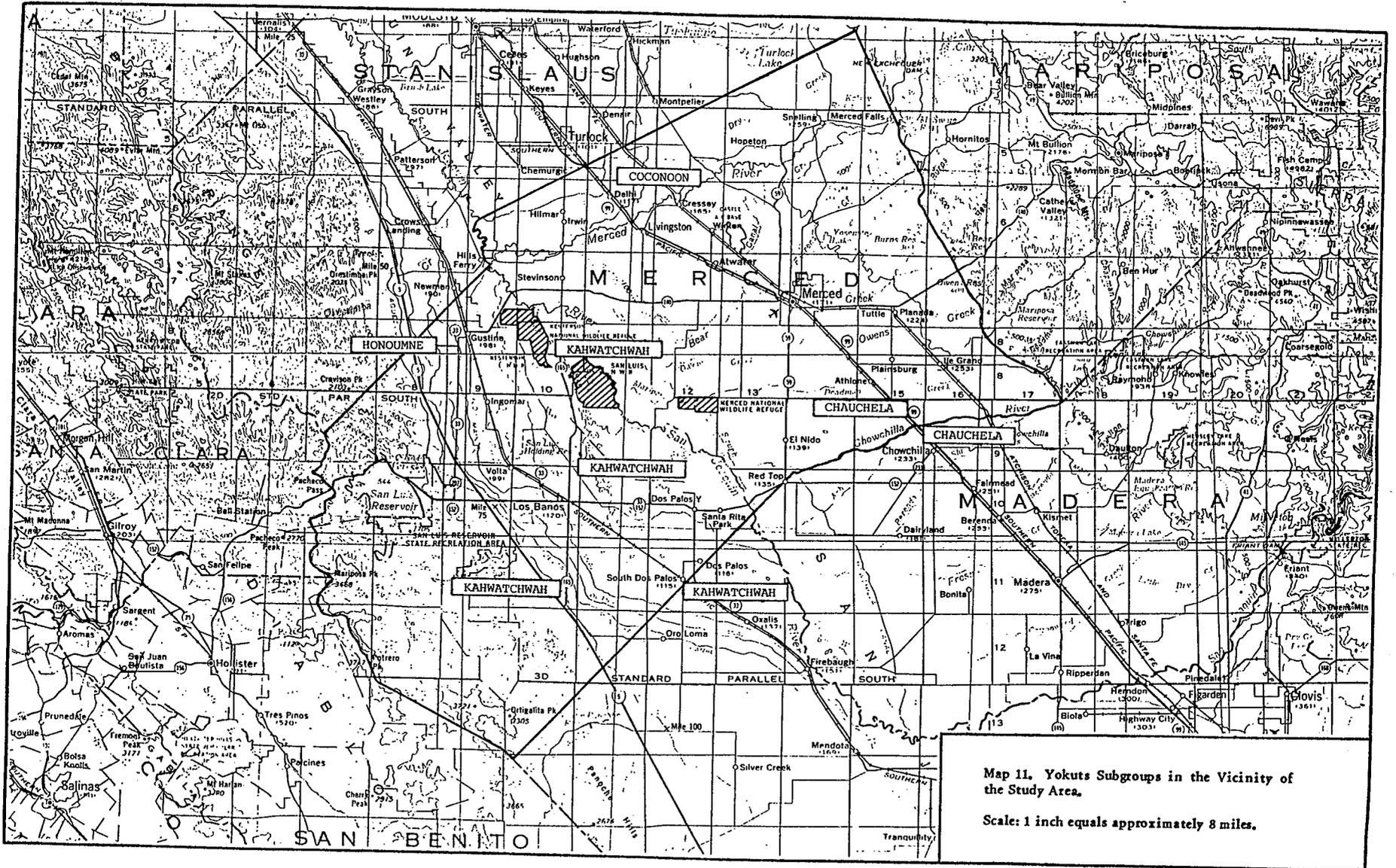
#### Native Groups in the Kesterson, San Luis, and Merced Wildlife Refuges

Depending on which ethnographic sources one consults and whether one chooses to lump or split groups, there were anywhere from one to four Northern Valley Yokuts groups in the study area. These were:

- the Honoumne Yokuts (Latta 1977);
- the Nopchinchi Yokuts (Wallace 1978c) or Kahwathwah Yokuts (Latta 1977);
- the Coconoon Yokuts (Wallace 1978c; Kroeber 1925) or Ausumne Yokuts (Latta 1977); and
- the Chauchela Yokuts (Wallace 1978c; Latta 1977; Kroeber 1925).

However, given the nature of Yokuts land tenure and territoriality, we doubt that the range of either the Chauchela or the Coconoon/Ausumne extended as far west as the San Joaquin River. What is more likely is that some areas lying east of the San Joaquin River and its attendant riparian corridor, were used as resource procurement zones by various peoples, including the Kahwathwah/Nopchinchi, Chauchela, and Coconoon/Ausumne.

Each of these groups is discussed in more detail in the following sections.



**Map 11. Yokuts Subgroups in the Vicinity of the Study Area.**  
 Scale: 1 inch equals approximately 8 miles.

## Honoumne Yokuts

Extracting from the frustratingly sparse information in Latta's Handbook of Yokuts Indians (1977), it seems that the Honoumne occupied the entire Garzas Creek Basin from the crest of the Diablo Range eastward to the San Joaquin River, and perhaps beyond, though if they were on the eastern banks of the San Joaquin River it was probably only for resource procurement purposes. One of their villages, Hah-kah-wal, was located adjacent to Salt Slough, due east of the present town of Gustine (Latta 1977:147). This would place the village along the eastern margin of Kesterson National Wildlife Refuge.

## Nopchinchi/Kahwatchwah Yokuts

In 1925, Kroeber wrote of the San Joaquin Valley's western side that "perhaps" there were some Yokuts who once lived there: "There are some names extant; but whether of tribes or towns, or where these were located, is doubtful. . . . There are known in this region the Nupchinche or Noptinte, not located" (1925:485). Twenty-nine years later Latta was able to expand our knowledge of this area somewhat. He feels that the Kahwatchwah Yokuts lived along the western side of the valley from a few miles below Firebaugh northwestward to a few miles north of present-day Los Banos (Latta 1949:14-15).

Six years later Cook (1955b), in his seminal work on the aboriginal population of the San Joaquin Valley, published a map which showed both sides of the San Joaquin River, from south of Mendota north to the confluence of the San Joaquin and Merced Rivers, as being occupied by the Nupchenches (Cook 1955b:76).

In 1978, Wallace reiterated Cook's placement, but kept the Nopchinchi along the western side of the San Joaquin River (cf. Wallace 1978c:462, Fig. 1). As for Latta's Kahwatchwah, they were, in Wallace's words, "open to doubt . . . [probably being] an appellation for a local group said to have occupied the San Joaquin . . . around the towns of Firebaugh and Mendota" (Wallace 1978c:466). Interestingly enough, Wallace indicates that his source for this statement is Latta (1949). However, Latta presented data which clearly placed the Kahwatchwah all along the western plain of the San Joaquin River from north of Los Banos ["north where San Luis Creek runs into San Joaquin River" (Latta 1949:15)] south to about five miles south of Firebaugh.

Why Wallace chose to disregard Latta's data concerning the Kahwatchwah is not clear. Neither is his choice of the term Nopchinchi as the tribal designation for these westside dwellers. It may be because of its primacy in the ethnographic literature. Cook used it in 1955 as a Yokuts tribal designation (though why he chose to do so is not stated), and 53 years earlier Kroeber (1925:485) used it, though as pointed out above, he could not say whether the word referred to a tribe or a village.

According to the diary of Pedro Muñoz, recorder for the Gabriel Moraga expedition of 1806 into the San Joaquin Valley, Nupchenche was a village located adjacent to the eastern side of the San Joaquin River somewhere between the mouth of Santa Rita Slough and one of the mouths of the several distributaries of the Chowchilla River. In the record of Jose Dolores Pico's 1815 expedition into the San Joaquin Valley mention is also made of a village "called Nopchenches" located some four leagues (8-10 miles) up the San Joaquin from the village of Cheneches, located, according to Cook (1960:289), "probably near the mouth of Mariposa Cr., north of Los Banos."

Thus, we have a source for the word. However, it is known that among the Yokuts tribal names were generally distinct from any of the village names of any given tribe, although this was not a hard and fast rule (cf. Kroeber 1925:475). It may be that those Yokuts living along the San Joaquin River between Mendota and the mouth of the Merced

River called themselves Nopchinchí Yokuts, as the Paleuyami Yokuts who lived at Altau sometimes called themselves Altinín as well as Paleuyami. However, there is no evidence in the ethnographic and ethnohistoric records presently available to support such a contention for the "nopchinchí." As there were several other villages located within a few miles (1 to 10) of the village of Nupchenche, all with their own names (such as Chineguis, Cheneches, Cutucho, etc.), one could just as easily place all these people in the Cheneches Yokuts tribe.

In fact, since all Yokuts tribes of which we have knowledge were composed of several settlements, each with its own name, with at least one village, generally the largest, being the tribal "capital," that is, the prime residence of the tribal leader (cf. Latta 1977; Priestley 1972; see also the section on socio-political organization later in this chapter), then it would be more logical to name the tribe in this region after the village of Cutucho rather than the village of Nupchenche, since at the time of the Moraga-Muñoz visit the former had a population of 400 while Nupchenche had a population of about 250 (Cook 1955b:51). Perhaps a more satisfactory answer would be to take the word of one of the descendants of the people who occupied the study area and refer to the tribal group as "Kahwatchwah," which is what we have opted to do.

All of Latta's information concerning the Kahwatchwah was obtained from an elderly Dumna Yokuts (from the region of Friant and Millerton Lake, east of Fresno), Pahmit by name. According to Pahmit, one of the last of the West Side Yokuts, a Kahwatchwah by the name of Sophano, lived with him and his family during the middle decades of the nineteenth century. Sophano told Pahmit he was born in a Kahwatchwah village on Los Banos Creek near the San Joaquin River. Exactly when this was, Sophano was not sure, but he remembered when he was a child the Spaniards raided his home village, killed most of the people (both males and females), and took him and the other children to Mission San Juan Bautista. Sophano remained at the mission for about 20 years. Then a priest came and told the Indians they were to leave. Presumably this was in response to the implementation of the secularization decree first issued in the early 1820s but not implemented until the start of the next decade. Thus, it would appear that Sophano was born sometime around 1800. According to him, or rather, according to what the Dumna, Pahmit, remembers Sophano saying, his tribe's name was Kahwatchwah.

They live on west side San Joaquin River, from below Firebaugh 'bout five mile down, to north Los Banos town, north where San Luis Creek run in San Joaquin River. They live too in west hills all along from Panoche north [to] San Luis Ranch. San Luis Creek all belong Kahwatchwah. Their home village[s] both on Los Banos Creek, one [at] hills and one [at] San Joaquin River (Latta 1977:144-145).

Sophano took Pahmit to his natal village, Kah-to-mah, located, according to Pahmit, "bout two hundred yards from San Joaquin River on south bank Los Banos Creek" (Latta 1977:145). (Latta feels Pahmit means the slough west of the River, rather than the San Joaquin itself.) Sophano also told Pahmit that at one time there was a Kahwatchwah village on the San Luis Ranch, near where the ranch house stood. This village was called Hah-no-mah (Latta 1977:147).

Unfortunately, neither of these village names appear in the Spanish accounts of their raids into the general study area region. Instead they mention six different villages: Nupchenche (located in 1806 on the eastern side of the San Joaquin River, approximately three leagues southeast of present-day Los Banos); Cheneches (probably opposite the mouth of Mariposa Creek), Malim (upstream from Cheneches on Mariposa Creek), Cachucho (near Nupchenche), Copicha (opposite the mouth of the Chowchilla River), and Tape, near or just south of the great bend of the San Joaquin River. Exactly how

these six villages relate to those given by Sophano, or their relationship to each other, is not presently known. Wallace (1978c:466) feels, however, that the last six were politically integrated into a tribe he names the Nopchinchi, with Nupchenche the capital. Why he feels this way is not stated.

#### Chauchela Yokuts

According to Wallace (1978c), Latta (1977), and Kroeber (1925), the plains on the eastern side of the San Joaquin Valley from the Chowchilla River northward an unknown number of miles were occupied by the Chauchela, the "fightingest of the known Yokuts tribes" (Latta 1977:156). "Their name is a byword for bravery to the southernmost end of Yokuts territory among tribes ignorant of nearer neighbors" (Kroeber 1925:458). Several village names and/or village locations have been preserved: Shehamniu, along one of the several channels of the Chowchilla River, "apparently at the eastern edge of the plains, some miles below Buchanan" (Kroeber 1925:484-485) where the Chowchilla River enters the plains; Halau (meaning "cane"), a village on Berenda Slough west of present day Berenda, although Kroeber (1925:485) suggests that it may have been an Heuchi Yokuts village; another village, name unknown, but said to be "on the east bank of the San Joaquin River downstream a short distance from opposite the later headquarters of the Miller and Lux Fremont Ranch east of Ingomar. Probably this was the location of the later steamboat landing of Dover" (Latta 1977:157). If Latta is correct, then this would put Chauchela Yokuts north of the Merced-San Joaquin River confluence, an area which others have suggested was occupied by the Coconoon and which Latta assigns to the Ausumne. It may be that by the 1820s and earlier, this area had been stripped of its original inhabitants and other groups were beginning to filter into the area.

#### Coconoon/Ausumne Yokuts

According to Kroeber, although "the plains along the Merced, Tuolumne, Stanislaus, and Calaveras" were occupied by Yokuts, little is known about these groups: "There are some names extant; but whether of tribes or towns or where these were located, is doubtful" (1925:485). One of these groups is the Coconoon, "an anciently mentioned group on Merced River, whom a vocabulary proves to have been Yokuts" (Kroeber 1925:485). However, any attempt to place them is "utterly hopeless" (Kroeber 1925:485). Wallace feels that the Coconoon were a composite group, "made up of fragments of several tribes" (1978c:466). Latta fails to mention them at all, except in passing. Instead, on his map (Latta 1977: front plate) he shows a group whom he names Ausumne occupying the region in which Wallace and Kroeber placed the Coconoon. His justification for this placement is a sentence in John C. Fremont's diary which notes that the Ausumne were living on the Merced River. Also, according to Latta, the Ausumne numbered about 450 persons (1977:156).

Given the foregoing, can we make any statements about which of the various Yokuts groups mentioned above may have used and/or lived in and about the three wildlife refuges of Kesterson, San Luis Island, and Merced? Yes, though tribal identification by name is purely speculative, since there is no assurance that any of the tribal names given above are the most correct ones and reflect native reality during the protohistoric and historic periods.

As noted above, Latta (1977:147) says the Honoumne occupied a village, Hah-kah-wal, located on the banks of Salt Slough, due east of the present-day town of Gustine. This puts the village in or very near Kesterson Refuge. Wallace, however, assigns this same area to the Nopchinchi, noting that their tribal lands began near the confluence of the Merced and San Joaquin Rivers and extended south to near Mendota and Firebaugh.

Thus, San Luis Refuge would also be within the territory of the Nopchinchi. Furthermore, given the nature of land-holding among the Yokuts, (especially the proclivity for the same land-holding group to live on both sides of a waterway), it is likely that Merced Refuge also is within lands once occupied and used by the Nopchinchi. However, it is possible that members of the Chauchela tribe may have occupied lands on the eastern side of Merced Refuge, or at least visited the area for resource procurement reasons.

To attempt a more definitive statement than this is beyond the scope of the current project. Furthermore, most of the groups in this immediate area were linguistically and culturally similar, if not identical, (remember that a Dumna from Millerton in the Sierran Foothills could understand readily a Tucuyu from below Mendota as well as a Kahwathwah from Los Banos—in fact the Dumna stated that the Kahwathwah spoke the same language as the Dumna).

### Language and Dialects

The languages spoken by the Yokuts have been classified as the Yokutsan Family of the Penutian stock. Other members of the Penutian stock include the Miwok, Wintun, Costanoan, and Maidu (see Map 10). The Penutian stock is thought to have entered California some 5,000 years ago. During the succeeding 2,500 years they expanded throughout the Central Valley and the adjacent coastal areas between San Francisco and Monterey Bay (cf. Gerow with Force 1968; Breschini 1983; Moratto 1984). Their expansion came at the expense of speakers of Hokan languages (or their ancestors). These groups may have included the Esselen, Salinan, Pomo, and Washo, and perhaps other groups (see Map 10). A detailed discussion of the factors which allowed the expansion of Penutian speakers at the expense of Hokan speakers is presented in Breschini (1983).

ShIPLEY, citing KROEBER (1925), states that there were 40 to 50 small groups or tribes within the Yokuts group, each with a distinctive dialect (1978:83). Latta (1977), however, feels that there were at least 63 separate Yokuts groups. KROEBER (1963) classified these dialects into 12 groups belonging to two major divisions.

ShIPLEY (1978) also has grouped the Yokuts dialects into two divisions, the Foothill and the Valley. Within the Valley division are the Northern Valley and the Southern Valley Yokuts. The Yokuts groups within the study area are within the Northern Valley division.

Linguistic classification of the Yokuts is difficult because of two factors. First, linguistic classification is based upon the degree of intelligibility between two forms of speech. If two forms of speech are mutually intelligible they are classed as dialects; if not they are classified as languages. With the Yokuts, however, the multiplicity of groups compounds the problem because each group could probably understand the speech of its neighbors, while distant groups were likely to be completely unintelligible. This makes the drawing of dialectical/language boundaries very difficult and subjective. Secondly, the extremely limited information available from the western side of the valley renders the problem of classification almost insurmountable (ShIPLEY 1978). For example, in his 1963 study, KROEBER was able to use lexical material from only 21 of the 60 or more dialects.

There have been numerous attempts to explore the culture history of the Yokuts through the use of linguistic data. For example, KROEBER noted as early as 1925 that "The valley dialects are the most uniform, in fact, remarkably similar to one another. A Yokuts from Stockton must have been able to understand considerable of the talk of one

from Bakersfield—a condition utterly unparalleled for any like distance elsewhere in California" (Kroeber 1925:477).

Based on this unusual distribution, Wallace states:

One interpretation of the linguistic data supports the view that the Yokuts were comparatively recent arrivals in the northern valley, suggesting that they originally did not range beyond the main bend of the San Joaquin (Kroeber 1959:269-277). Then, starting about 500 years ago, pressure from Numic-speaking Monache from across the Sierra Nevada, who began to enter the San Joaquin drainage, caused tribes on the upper river, and perhaps on the Kings as well, to spread over the valley floor, mainly toward the north. Movement northward, a gradual process taking a couple of centuries, considerably extended the limits of Yokuts territory at the expense of Costanoans, Miwok, or both, who had hitherto occupied the country (Wallace 1978c:463).

If there was a recent expansion of Yokuts northward from the southern portions of the valley, as the above quotations from both Kroeber and Wallace suggest, this may correspond with the Panoche Complex, which has been defined on the basis of archaeological data (see Chapter 4).

#### Social and Political Organization

The socio-political practices of the valley Yokuts living north of the Fresno River are not well documented from ethnographic sources. Hence, extrapolations and analogies must be made from data available for the Southern Valley and/or Foothills groups (cf. Kroeber 1925; Latta 1977; Gayton 1930, 1945, 1948), as well as the tantalizingly brief description of Northern Valley Yokuts "government and economics" Pedro Fages included in his work A Historical, Political, and Natural Description of California, first issued in 1776 (cf. Priestley 1972).

As noted above, Kroeber (1925) felt that of all the native Californian groups the Yokuts were unique in that they were divided into true tribes, each tribe possessing a well-delineated territory, a distinctive dialect, and, the demarcating feature, a tribal name. Though all other native California groups possessed the first two features, unlike the Yokuts they did not possess tribal names. Rather, they generally referred to themselves "only by the appellation of the place they inhabit" (Kroeber 1925:474). Furthermore, while other native California groups took for themselves the name of the settlement they occupied, the various Yokuts tribes each occupied a principal settlement, with a distinctive name, and several subsidiary abodes, each with its own distinctive name. And while the principal settlement's name might also be the same as the tribal name, the subsidiary villages' names were distinctive. However, members of all the villages of any one particular Yokuts group, when asked who they were, would reply by giving the tribal name, rather than their natal or residential village name. Thus, the Paleuyami are identified with Altau and sometimes called Altinin, but lived also at Bekiu, Shikidapau, Holmiu, and other places. The Hometwoli lived at three principal sites, and the Chukchansi, Tachi, Yauelmani, and others dwelt from time to time, and perhaps simultaneously, at a number of places scattered over a considerable tract. These instances confirm the Yokuts divisions as true tribes (Kroeber 1925:475).

A similar situation occurred among the Kahwathwah (or Nopchinchí) Yokuts who simultaneously occupied three home villages: one along Los Banos Creek, one in the hills west of Los Banos, and another along the banks of the San Joaquin River (Latta 1977:144-145). Each village had its own distinctive name, which was distinct from the tribal name. For example, the village on Los Banos Creek was named Kahtomah; another, located where the San Luis Ranch house stood for many years, was named Hah-no-mah. Similarly, the Honoumne Yokuts, who lived immediately north of the Kahwathwah, simultaneously occupied several principal settlements, each with a name distinctive from the tribal name. For example, the Honoumne village at Salt Slough, some miles due east of the present town of Gustine, was called Hah-kah-wahl.

Exactly how many Yokuts tribes there were in the prehistoric period will probably never be known. When Kroeber began his ethnographic field work at the beginning of the present century he estimated the number at 40 "sufficiently locatable" tribes (1925:474), with another 10 of "uncertain situation and doubtful affinities" located somewhere in the northern portions of the San Joaquin Valley. Years later, Frank Latta increased the number to 63, mainly by locating those Yokuts groups who had occupied lands along the western side of the San Joaquin Valley north of the known range of the Tachi Yokuts. There is some question about the validity of some of these west side groups actually representing discrete tribal units. For example, Latta's Tucuyu and Tano Loas were probably village, not tribal, units, the former a Kahwathwah village, the latter a Honoumne village.

No overall political unity existed among the many Yokuts tribes. Rather, the primary self-governing unit was the tribe, usually consisting of between 250 and 500 persons, though in some areas, because of the bountiful nature of the environment, a tribe might have as many as 1,500 to 2,000 persons. Each tribe occupied a known (both to themselves and to their neighbors) territory, generally of about 250 square miles (though this varied according to quality and quantity of natural resources) with the population divided among one or two major settlements and several smaller and less politically important villages.

#### Tribal and Group Functionaries

Each tribe had at least one paramount leader who performed a variety of civil, judicial, diplomatic, and religious functions. It was this tribal "chief" who was responsible for mediating civil disputes, sanctioning punishment, organizing trade and food gathering parties, rendering aid to the poor, destitute and homeless, planning and executing certain religious ceremonies, entertaining guests (including planning and organizing intra- and inter-group ceremonies), loaning money (with interest), representing the tribe at inter-tribal functions, and acting as the model "Yokuts" in thought, word, and deed. It was also the tribal leader's duty to receive "tribute" from the tribal members and to redistribute it when and where it was needed. Obviously, such an individual possessed considerable authority, and because of the demands of the office, the possibility existed for a tribal leader to amass power and wealth. This possibility was tempered, however, by the nature of the ideological underpinnings of the socio-political system: a leader was expected to be generous and giving, and wealth acquired through tribute was to be redistributed (by subsidizing ceremonies, entertaining guests, taking care of poor tribal members, maintaining the tribal image, etc.).

That the tribal leader, or at least the office, was an extremely important one is attested to by the fact that on the weekly or biweekly visits this person made to each of the tribal villages he (or she) was received "ceremoniously, [the village making] gifts to him of the best and most valuable things they have, and they assign certain ones to be his followers and accompany him to the place where he resides" (Priestley 1972:74).

Besides the tribal leader, there were also village leaders who were subordinate to the tribal leader. These village "chiefs" formed a council of elders who gave support and advice to the tribal chief as well as being:

... under obligation to give [to the tribal leader] notice of every item of news or occurrence, and to send him all offenders under proper restraint, that he may reprimand them and hold them responsible for their crimes (Priestley 1972:74).

Furthermore, it was the duty of these village leaders to oversee the collection of the daily contribution of the village to the tribal leader, and to ensure that this tribute was turned over to the tribal leader.

In addition to the tribal and village leaders there were several other socio-political functionaries, including the winatun or herald/messenger. The winatun was the leader's eyes and ears and mouth. In large, more important villages there might be two winatun, each living at opposite ends of the village so that they would be available to meet and interrogate all persons passing into and out of the village. According to Latta (1977:284):

It was the responsibility of the winatun to meet all approaching travelers, to learn who they were, what was their business and, if possible, to give them what information was necessary to send them on their way. If the traveler was not so easily disposed of, then it was the duty of the winatun to conduct him to the chief. After the interview with the chief, it was the duty of the winatun to conduct the traveler to the edge of the village, to bid him goodbye and, finally, to make sure that he left the area.

Like the offices of tribal and village leader, the office of winatun generally passed from father to son, although if no suitable male candidate could be found, a man's daughter could fill the office. At least this was the case during the historic period; perhaps it was true in the prehistoric and protohistoric periods as well. Those Yokuts Latta interviewed during the 1920s and 1930s, who were remembering events of 70 to 80 years previously, showed no indications that women filling these offices was unusual.

The winatun also oversaw certain activities associated with the lonewis or annual mourning ceremony (cf. Latta 1977:674-674). When it was time for the lonewis (or any ceremony) to be held the tribal leader would dispatch the winatun to call on other tribal leaders to let them know the date of the lonewis. When people began arriving on the appointed day, the winatun told people where to camp and build their fires and distributed food and supplies to them. It was also the winatun's duty to ensure that both the guests and the appropriate members of his own group prepared themselves at the proper times for the various rituals and ceremonies which would be performed over the several days the lonewis lasted. The winatun would walk around the encampment yelling directions and encouragements and, at the appropriate time, oversee the building of the central fire where, at the conclusion of the lonewis, items would be sacrificed in the flames. During the various rituals, ceremonies, and festivities of the lonewis, the winatun had to ensure that certain individuals, such as the hohuno, who played a central role in the lonewis, were dressed properly, as well as removing from

any shaman who was felled during the hes-wus, or "doctor's fight" (in reality a sham battle during which shamans from various groups would attempt to out do one another in contests involving the use and manipulation of "power" and, occasionally, "power beings").

Although there are no direct references in the ethnographic and ethnohistoric record to other socio-political offices of the Northern Valley Yokuts, it is quite likely that they, like their neighbors to the south and east, had such semi-religious functionaries as clowns and corpse handlers. Clowns functioned to defuse potentially volatile social situations or persons during rituals and ceremonies through a wide variety of socially sanctioned contradictory actions and language. They would mock sacred ceremonies, speak contradictorily, make fun of pompous, mean, ungenerous, or socially improper persons, and in general act in ways indecent and nonsensical (Kroeber 1925:497).

### Family Structure

Although chiefs, subchiefs, winatun, etc., were extremely important in the socio-political make-up of the group, occupying positions of power and authority, they were in some ways, secondary in importance to the basic building block of the tribe: the biological, extended family which formed the basic domestic and economic unit among all Yokuts groups.

Little is known about the family structure of the Northern Valley Yokuts. Fages, the prime data source for these people, is silent on the subject of family and familial relationships, except to note that most people had only one spouse (Priestley 1972:74). However, among many of the native California groups it was "considered proper for a chief to have more than one wife simultaneously, a reflection of the economic and political needs of his office" (Bean 1978:108). It is known that among some Yokuts groups there were men who had multiple wives, each wife coming from a different village (Kroeber 1925:493). But whether or not these men were "chiefs" is presently unknown. However, given the nature of the political organization of the Yokuts tribes, where several fairly populous villages were melded into one interactive whole under the leadership of a single individual, it would be politically and economically sound for the tribal leader to have multiple wives, especially if one wife was drawn from each of the villages comprising the tribe. Furthermore, if tribal leaders selected each of their wives from outside their natal tribe, this would widen the resource procurement zones available to each tribe and would strengthen amnity ties, therefore reducing tensions among tribes. Thus, multiple spouses, coupled with the Yokuts practice of village and tribal exogamy, would act as buffers against resource failure or cataclysmic social upheavals (Kroeber 1925:493).

Although Kroeber states that marriage was a comparatively informal affair among the Yokuts (1925:492), the description left by Fages indicates that it was, nevertheless, a time for feasting, singing, dancing and having a good time:

... the friends and relatives of those who have been married gather together from various villages, each one bringing his small gift for the new couple, and also his supply of food for the three or four days during which the festivities are to last, and other things ready to barter or exchange. . . . They eat and dance and sing joyously during the days of festivity and when these have passed, everyone returns to his own home (Priestley 1972:75).

It was considered customary among the Yokuts for a man to reside with his wife's family for about one year following the wedding. During this time he was expected to help his father-in-law with hunting and fishing and share in the responsibilities of the head of the house (Latta 1977:390). At the end of the first year, the newly weds were free to move wherever they chose within the boundaries of the groups from which they had come. Where the couple established their new home varied from a few yards to more than a half mile from the bride's parent's home, "as the experience of the past year seemed to make this advisable or necessary" (Latta 1977:391). This practice of residing for the first year with the woman's family appears at first to be an unusual practice for people who organize descent and inheritance along patrilineal (male) lines. However, the practice makes sense if one views the first year as a recompense on the groom's part for the future loss, to the bride's family, of a valuable socio-economic member. In other places in California, where a wife was required to reside with her husband's kin, this loss was frequently offset by the husband's family gifting food and material items to the wife's family. While there seems to have been some of this among the Yokuts, the general practice was that outlined above.

A sociologically significant, but little understood, organizational feature among the Valley Yokuts was the moiety. According to Kroeber, the Yokuts were divided into two named, totemic moieties, the tobelyuwish and nutuwish (downstream and upstream, respectively), with certain animals symbolically associated with each. For example, the eagle, raven, crow, blue jay and killdeer were on the tobelyuwish side with coyote, falcon, buzzard, quail and skunk on the nutuwish side. Of these animals, "one was regarded as the hereditary animal by each patrilineally descended family and was transmitted from father to child to son's child" (Kroeber 1925:493).

Apparently, Yokuts moieties served primarily to define potential marriage alliances. Kroeber noted that among the Southern Valley Yokuts and adjacent Foothill Yokuts "there was a strict rule requiring a man to marry outside his own inherited social division" (1925:493), and one may assume a similar rule among the Northern Valley Yokuts. Yokuts moieties may have also served to define potential religious, economic, and military alliances, as well as playing some role in the transmission of socio-political offices, though how this was done is not clear.

#### Settlement Pattern and Seasonal Round

Most tribes had several villages (probably from three to eight). Each was located near a perennial water source and, if possible, near timber as well. With few exceptions, villages were located in ecotones on slightly elevated ground, on sites that fostered access to varied resources and protection from normal flooding. Archaeological and ethnographic research have shown that many, if not all, of the larger village sites (such as Nupchenches and Cheneches) were located on natural levees or raised mounds within the riparian corridor lining the San Joaquin River and its tributaries. Descriptions of Cheneches mention tules, salt flats, and stagnant pools (Cook 1960:248), while Nupchenches was described as a large village located on the eastern bank of the San Joaquin River "among the willow trees" (Cook 1960:248).

Most of the Spanish accounts of village locations note this mound-riparian association, occasionally adding that some of these mounds were human-made. For example, in 1776 Anza made a trip into the northern San Joaquin Valley, visiting several villages. He noted that many of the inhabitants "made little mounds of earth as sites for their villages, to free them somewhat from the water" (Bolton 1930:149). Such raising of artificial mounds was widely practiced throughout Yokuts land, wherever environ-

mental conditions warranted it: along the banks of the San Joaquin River and its many interconnecting sloughs; along the channels connecting Buena Vista and Tulare Lakes. Some of these artificial mounds were the result of planned activity; others merely the result of the accumulation of centuries of refuse.

From ethnographic accounts of Yokuts groups living in areas east and south of the study area, it appears that each village controlled a roughly circular or oval territory seasonally endowed with sufficient food resources to sustain the group. In rich habitats, such as the study area and similar stretches of the San Joaquin and Merced Rivers, settlements might be clustered within a few hours' walk of one another. For example, the villages of Malim and Cheneches were within a very short distance of each other, while Cutucho and Nupchenche were less than one hour apart. Conversely, in less productive areas villages might be a day or two apart, as seems to have been the case with the two villages of Tape and Copicha. The former was located near the big bend of the San Joaquin River, while the latter, the next known village downriver, was at least a full day's walk away.

Generally, in any given season one, two or three of a tribe's villages were occupied simultaneously, with one of these being the socio-political center. Here the tribal leader resided, along with various assistants, and here many of the major group rituals would be enacted. It was also here at the main village that the tributary goods from the subsidiary tribal villages would be stored. In rich habitats this village, and any others similarly situated, might be inhabited the year around, while the smaller, satellite villages would be occupied only on a seasonal basis.

In other areas, the main village served as the winter residence for most tribal members, but groups would disperse to smaller villages and camps in spring and summer to take advantage of scattered, seasonally available resources. However, a few elderly people always stayed behind in the main villages (Latta 1977).

Ethnographic and archaeological evidence indicates that among most Yokuts tribes there was a correlation between the number of villages a tribe established and simultaneously occupied and the size of the tribal territory and its productivity. Tribes such as the Telamni, who were densely settled, had only three or four villages, whereas groups such as the Tachi and Yaudanchi, who ranged over much larger and somewhat less economically productive territories, sometimes established as many as eight to ten villages in widely scattered locations, although not all of these villages would be simultaneously occupied.

Did either of these patterns, or another pattern, occur among the Yokuts of the study area? It is difficult to say given the fragmentary nature of the data base, but there are some clues. Apparently at least six villages, with an aggregate population of between 1,800 and 2,500 persons (Cook 1955b:52), were being simultaneously occupied at the time of the first Spanish entrance into the general region of the study area: Cheneches and nearby Malim, each with about 300 persons; Nupchenche (250-300 persons) and adjacent Cutucho (400 persons); Copicha (300 persons); and Tape (300 persons). Tape was about eight leagues (approximately 17 miles) southeast of Copicha, which was in turn, located about eight leagues southeast of the population center of Nupchenche-Cutucho. Cheneches and Malim were located about four leagues northwest of Nupchenche-Cutucho.

The environmental setting within which Tape and Copicha were located is less rich in subsistence resources than the setting of both Nupchenche-Cutucho and Cheneches-Malim, which may account for the spacing among these various villages. However, the nature of the social and political ties among these various villages is unknown. There is a reference in a letter of Marquinez dated 1816 to the effect that "the Cheneches recently have killed two Christians from Malim. The latter rancheria thereupon allied itself with Notoalh and Luchamme" (Cook 1955b:52). Why the Cheneches attacked the two

Malim Christians and to whom Malim was allied before allying itself with Notoalh and Luchamme (location and political affiliation unknown) is unknown. Given the geographical proximity of Malim to Cheneches one would expect them to be members of the same tribal unit, hence their respective members would be on friendly terms with each other. But the killing of two Malim Christians by the Cheneches, with the resulting shift in alliances of Malim from, presumably Cheneches to Notoalh and Luchamme, suggests that Malim and Cheneches were not of the same tribal group. It may be that Malim was situated on the frontier between the tribal unit to which it belonged and that with which Cheneches was associated. Without recourse to Mission Register analysis it is impossible to delineate the socio-political reality of these two villages.

For the other villages, it is possible that together they made up a single interactive tribal unit. Given the social, political and economic importance of a tribal capital, one would expect to find it centrally located with respect to: (1) the tribal territory; (2) lines of communication, trade and travel; and (3) the immediate habitat. Furthermore, it is likely that a tribal capital would be located in an ecotone where a multiplicity of resources would be readily available, while subsidiary villages would not necessarily be so situated. Do the villages of Nupchenche, Cutucho, Copicha, and Tape fit these data? Possibly.

According to early Spanish records, Nupchenche and Cutucho were located near each other in the vicinity of the Santa Rita Slough-San Joaquin River confluence. This is an extremely rich habitat, an ecotone where several environmental zones come together. It supported a population of at least 650 persons at the time of first Spanish contact, around 1806 (Cook 1955b:51-52). Copicha and Tape, on the other hand, were widely spaced from each other and from the Nupchenche-Cutucho axis: Copicha was about eight leagues upriver from Nupchenche, while Tape was another eight leagues upriver from Copicha. Interestingly enough, both Copicha and Tape had populations approximately equal in number to Nupchenche and Cutucho. If we accept Wallace's (1978c), Latta's (1977) and Cook's (1955b) hypotheses concerning tribal homogeneity along the central reaches of the San Joaquin River, then it is likely that Tape, Copicha, Cutucho and Nopchenche were member villages of the same tribe, and that the tribal capital was either at Nopchenche or Cutucho. Concerning the affiliation of Cheneches, it may be a member village of the same tribal group, or perhaps of the tribe immediately north of the Nopchenche-Cutucho-Copicha-Tape group. Until detailed mission register research is carried out, the question of tribal affiliation of these, and other villages, must remain unanswered.

Although we cannot clearly delineate the inter-relationship of the various villages believed to be associated with the Yokuts inhabitants of the study area, we do have information about intra-village spatial relationships. According to Latta (1977), village layout was regulated by tribal law or custom and both lake and plains houses "were built and arranged almost with city-ordinance uniformity. When several houses stood near one another, they were erected in a straight line and approximated the city-ordinance regulated alignment of a row of houses in a pioneer white town" (Latta 1977:388-389). At the tribal capital, the tribal leader's house was in the center of the village, and if the village was sited along a stream bank, then a 'messenger,' or chief's helper, would live in the last house at each end of the village. At the downstream end of the village would be the sweathouse, while occupying a prominent place in the village layout would be the playing, or gaming, field. This was usually a large area of smoothed and tamped earth where various group games were played, where certain rituals and ceremonies were conducted, and where men and or women would gather for certain communal activities, such as basket making by the women, net making by the men. Additional structures, such as ramadas (sun-shades) and granaries, were placed about the village as required by house placement and work tasks, and completed the general village landscape.

Like the village landscape, the tribal landscape was composed of a variety of elements: a set of villages and temporary hunting-gathering-processing camps; a network of trails; religious activity areas; and modified natural communities, all reflecting local relationships between land and life. These relationships were expressed in a variety of ways, in the annual subsistence round, in the ceremonial calendars and activities, in the subsistence patterns (Gayton 1946). Although we have no information on the seasonal round of the study area's inhabitants, we may postulate a tentative one based on ethnographic analogy and archaeology.

The people would winter in their permanent villages along the San Joaquin River and its many channels and interconnective sloughs, subsisting on items collected and stored the previous summer and fall, including such foods as fish, birds, seeds, and acorns. However, continuously throughout the winter the people would continue to collect anything and everything that was edible, such as rabbits from the surrounding plains, snakes and fish from the waterways.

At the beginning of spring when "poppies flow upon the valley to the dikes of the mountains" (Miller 1938:462) and it seems that "the blood of the whole country burst, after months of restraint, in a brief dark orgasm, an orgasm which was celebrated with the feast of the wildflowers" (Baker 1931:57), the Yokuts began a series of ceremonies celebrating totemic associations with the wildflowers, rattlesnakes, Datura and other things.

In May and June, when spring faded, men began to actively hunt larger game, to fish and fowl with an ever increasing quickness, while women collected bushels and bushels of seeds, roots, tubers, berries, and greens. This was a time when:

The south sides of the foothills became spotted with brown, and the spots gradually enlarged until only the shaded north slopes retained the spring green. Where the Indian paintbrushes and the poppies had colored whole fields purple or orange, the rankly growing wild oats mounted until they too turned from green to brown, and then slowly bleached to yellow (Baker 1931:57).

This was also the time when groups from many different villages, as well as from several different Yokuts and non-Yokuts groups would come together for the annual antelope surround. It was a time for feasting and merry-making; a time for adventure and travel to outlying camps and gathering areas. It was also a time for hard work, as many of the products secured at this time of the year had to be dried or smoked or salted, then stored for the coming winter.

By September and October people began returning to their main villages in preparation for fall hunting, fishing and fowling activities, as well as in preparation for the annual acorn harvest. Although acorns probably were not as important to those groups living in the study area as to the Yokuts living along the distributaries of the Kaweah, or in the Sierran foothills, they undoubtedly contributed a share to the riverine dwellers' larder.

With the coming of winter the people settled in and preparations began for the various ceremonies, including the all important annual mourning ceremony. Guests came from all over Yokuts land and it required many weeks of preparation to have the necessary foods available to feed the guests. It was at this time that the people reaffirmed their oneness with one another and with the creator beings. It was a time of excitement, for the cosmological dramas surrounding creation, life and death were reenacted. It was also a time of fun, of games and gambling, of the exchange of both

ritual goods and secular trade items. It was a time to make new friends, renew old friendships, and perhaps find a lover and future spouse.

### Subsistence Patterns and Food Resources

Concerning the Yokuts subsistence patterns, Bandini writes:

Their life and customs are those of Nature herself, who with a liberal hand supplies them with wild quadrupeds, fowls, fish, and nourishing seeds, with which they meet their only need (Bandini 1951:18).

There is little direct information in the ethnographic and ethnohistoric records concerning the Northern Valley Yokuts' subsistence practices. We may make some inferences based on the practices of neighboring groups, such as the Southern Valley Yokuts, some of whom occupied similar environments and possessed similar technological strategies. We may also combine such inferences with the meager accounts left in the historical records to obtain a general picture. But a definitive statement must await detailed archaeological and paleoecological analyses of the many village, food gathering, and processing sites.

The Yokuts of the study area had developed a diversified subsistence pattern which led them to exploit a wide range of resources in their river-tule marsh-plains environment. Each natural community offered a distinct set of foods and materials on a seasonal basis, and the Yokuts learned to use hundreds of different plants and animals in their diet; they were one of the most omnivorous groups on the continent. They were fishers and fowlers as well as hunters and gatherers, employing a wide range of techniques and tools in their quest for food. And they lived amidst a bounty almost unknown in other parts of the world. However, like peoples everywhere, certain foods were preferred and supplied the bulk of their larder: these included fish, waterfowl, game (including deer, elk, antelope, rabbit), grass seeds, forbs, and acorns. These staple foods were collected as they became available and much of them prepared and stored against the lean periods of winter.

Nature provided the riverine-marsh dwellers with an abundance of waterfowl and fish, antelope and rabbits, elk and tules. At certain times of the year the waterways would be choked with birds of all kinds: geese, ducks, and other waterfowl. Fages, on his trip through the lower end of the San Joaquin Valley in the early 1770s, noted the presence of:

... large and small white geese called Catilian, which weigh from eight to ten pounds; there are also black ones, and brown ones both light and dark in color. These latter are the best, for some of them weigh up to fifteen pounds. There are many fresh-water gruffed grouse, from which the Indians take the skins, feathers and all, with which to make their cloaks. There are ducks, swallows, cranes, and white pelicans, larger than the geese of Castile ... (Priestley 1972:76-77).

Many of these were year-round inhabitants; others seasonal visitors dropping down out of the sky to rest and nest before resuming their great migrations. Even as late as the beginning of the twentieth century, waterfowl still visited the San Joaquin Valley in uncountable numbers. For example, in 1907 Latta "saw more than a square mile (640 acres) of land covered so thickly with ducks that they hindered each other in landing and taking off. In the distance in all directions, the country seemed as thickly covered as

was the area under my close observation" (Latta 1977:130). Similarly, the early Spanish reports are full of references to the super-abundance of animal life in all portions of the Valley, making special notice of the "very numerous bands of deer and antelope" (Cook 1960:248).

Fish, particularly king salmon, river perch, suckers, pike, and 250-500 pound sturgeon were as abundant in the water as waterfowl were on it. Muñoz noted in 1806 that near the lower reaches of Mariposa Creek there were many salmon, as well as beaver, in the river (Cook 1960:248). Thirty years earlier, in 1776, Anza and Font travelled through the San Joaquin Valley's lower end, stopping at various Yokuts villages. Among the things they saw and described were the fish being taken by the Yokuts living there:

The fish most abundant at present from the mouth of the bay to here are salmon. They are very red in color, and are tender, and none of those we have seen is less than five quarters long [roughly 40 inches]. Today we met twenty-two heathen loaded with these fish and from carrying four apiece they were almost bushed. At the village which we passed there were so many that it seems impossible that its residents could eat them, and yet part of the inhabitants were in their little tule rafts engaged in catching more (Bolton 1930:142).

Obviously, the lower end of the San Joaquin Valley was a veritable paradise containing a wide variety of species, some in almost unimaginable quantities. And with the possible exception of frogs, against which some Yokuts groups had a taboo prohibiting their use as food, almost everything was taken and eaten. Fish, for example, were taken by numerous means including spearing, netting, the construction of wiers across smaller streams, the use of basketry traps, bare hands, and in some areas, with hook and line. A Dumna Yokuts described for Latta one method of taking very large fish, such as one-quarter ton sturgeon, by hook and line:

My people they kill antelope, then cut off foot bones. They sharp[en] one short piece bone on one end and tie it good to little end of other bone. Then they tie small bone to bone in ham [haunch] of antelope leg [like an elbow joint] so them two bone, they can't open up. They tie all this with pic-ke[el] [sinews] and make all good, dry with hot chah-ki [asphaltum or pine pitch]. They tie strong rope to top of big bone in ham. They leave it all on. They make that rope on top [of] that ham maybe ten feet long. On loose end [of] that rope they tie three, [or] four big dry stick. They throw all that in river. Big fish, he swallow bait. Sharp bone like spike [barb] on white man hooks stick in throat. Fish drag them big, dry stick all over river until he so tired he can't swim any more. We run into river maybe ten, twelve our men and drag whole thing out (Latta 1977:59).

In some areas tule balsa rafts were used during the fishing process; in other areas fish were taken from the banks of the many watercourses which dissected the bottom lands of the San Joaquin Valley.

Not only were fish taken with nets, traps, and by bare hands, but so were all kinds of waterfowl. In some areas, such as open marshes where waterfowl congregated, nets made from milkweed fiber would be strung out across the water's surface. Then the Indians would cause the flocks to take wing and in the process many of the birds would become entangled in the nets. Waterfowl were also taken by bow and arrow and by hand, the latter method requiring the hunter to swim underwater until positioned below the birds, then grab their legs, drag them under and drowned them (Merriam 1967:429).

Frequently, duck decoys were employed to lure birds to within bow and arrow and hand range.

Another method of taking waterfowl involved the construction of tule fences in the shallow waters of the marshes and lakes. Merriam has provided the best description of this practice, based on an interview he conducted near the turn of the century with "an old Too-lol-min Indian woman who used to live at Buena Vista Lake" (Merriam 1967:428) and a similar description given by a whiteman who had witnessed the same hunting technique on Kern Lake in the early 1850s. According to these sources:

The Indians used to make 'tule-poles' by cutting the long tules and fastening them together in cigar-shaped bundles six or eight inches in diameter, like those used in making their tule boats. . . . Hundreds of these were stood up side by side in shallow water and tied together so as to form two long serpentine fences leaving a winding passageway three or four feet wide between. This passageway (enclosed waterway) led to a circular chamber, also made of tule poles, twelve to fifteen feet or more in diameter and covered over on top with a tule mat of rather coarse and open construction.

Both ducks and fishes would swim along the narrow winding waterway in great numbers and freely enter the circular enclosure, the walls of which were arranged in such a manner that when once within it was well-nigh impossible to get out.

The Indians would go in and kill the ducks by the hundreds and scoop up the fishes in basketfuls (Merriam 1967:428).

Although many of the ducks and fish taken in this manner were consumed soon after catching, others were "dried in vast numbers and kept . . . through the winter and spring" (Merriam 1967:428).

Waterfowl were not the only food resources taken in large quantities at a single hunt. Rabbits were a favorite resource for the Yokuts, not only for the meat they supplied but also for their skins which were processed in a special way and made into rabbit-skin blankets and robes. The most frequently employed method of taking them involved massive rabbit drives, requiring the services of everyone from the village.

A series of nets, made from the fibre of the milkweed plant and each about a meter high and several meters in length, would be joined together end-to-end to make one very long net. This net would then be strung out across an area where rabbits lived, with several people stationed along the net, while others formed a long line parallel to and at some distance from the erected net. Then either the grass and brush between the net line and the human line would be fired, or the people would simply beat the brush as they began moving towards the net. As the rabbits fled away from the people and the fire they would become entangle in the net, where they were then clubbed to death. Generally, the nets were woven so that as many rabbits escaped as were caught and killed.

For hunting large game animals, several different techniques and tools were used. Deer were generally stalked by one or two hunters wearing disguises made of a stuffed deer head, with the body skin still attached. The hunters would arm themselves with bow and arrows, and then proceed to an area where deer were known to be. Once there, they would put on the deerhead disguise, and then move through the brush, occasionally knocking the bow against either an arrow or a short stabbing spear. This sound was said to resemble the sound of a male deer rubbing his antlers against brush and would be a challenge to any other male deer, who would then, in the process of investigating the sound, come within range of the hunters.

Because of the nature of the Yokuts hunting bow, and the nature of deer as prey animal, it was necessary for the hunter to get fairly close to his target, perhaps 30 feet or less. However, deer are nervous animals with an extremely keen sense of smell. Obviously to get within 30 feet of one is no small feat and requires considerable preparation, skill, and patience. As a part of the preparation, a hunter would spend many hours in the village sweathouse, sweating away his human smell while simultaneously, through religious procedures, bringing his mind into communion with the animal(s) he sought. He also would bring into the sweathouse with him all the clothes and hunting equipment which was to be used during the hunt.

Although stalking was a technique used frequently to acquire deer or other large game animals, these animals also were taken by snares, traps, and deadfalls. However, one of the most interesting hunting techniques used by the Valley Yokuts was the surround, employed primarily to take pronghorned antelope. This event usually was held once or twice a year and was both economically and socially important. From an economic standpoint, the surround was an extremely productive undertaking. It required a small energy output and in return almost always yielded several thousand pounds of meat, as well as hundreds of yards of skins and hundreds of pounds of bones which could be fashioned into various artifacts. From a social standpoint the surround was also productive. They were almost always inter-group, cooperative affairs involving whole villages (men, women, children) and were attended frequently by members of several tribes, some linguistically and culturally non-Yokuts, such as Miwok, Mono, and Tubatulabal (Smith 1968-1971). Obviously, such gatherings provided an opportunity for activities beyond those related to biological subsistence, such as visiting and trading, seeing old friends and relatives, making new acquaintances, swapping tales, dances, songs and stories.

Latta (1977:489) described one of these Yokuts antelope surrounds as follows:

One or two decoy Indians secreted themselves in the tall grass where antelope were in the habit of watering. Drivers from the several tribes secreted themselves at a distance around this point.

When the antelope began to come to the water hole, the decoy Indians lay on their backs and raised their feet into the air above the grass. In some instances, strips of skin, or woven grass, were tied to their feet, which were kicked backward and forward in a way to wave the attached materials before the antelope. It seems that no antelope ever lived that was able to resist the temptation of approaching as closely as possible to such a performance.

They would crowd together and circle about the decoys, first at a distance of several hundred yards and then gradually nearer until, forgetful of everything else, many hundreds of them milled within a few yards of the decoy. Many times this system was used for the purpose of decoying and killing one or two antelope, but on the occasion of the surround, the game was not disturbed until hundreds of scattered Indians had drawn inward and formed a complete circle, or Yokuts fence, meaning a fence of people, around the crowded band of animals.

When the word was given, the decoys arose and fired into the band, killing two or three. As the band attempted to scatter, they were turned by the Yokuts fence and forced into a frightened, milling mass.

One Indian from each tribe, or if only one tribe was present, one Indian from each family, was allowed to enter the circle for the purpose of killing antelope (Latta 1977:489-490).

If the surround took place close to a village, the slain animals were taken there and dressed, with some of the meat immediately consumed and the rest cut into strips and sun dried. If there was no village near-by, a temporary camp would be set up, the slain animals dressed, some of the meat consumed then and there, but with the majority of the meat cut into strips, sun-dried, then packaged-up for transport back to each groups' villages.

Antelope were not the only game taken by the surround, though they were probably the most frequent objects of this kind of hunt. Kroeber (1925) has suggested that tule elk were occasionally taken by long-distance drives and surrounds, though this was by no means the only way the Yokuts hunted them. Latta (1977) reported that elk were sometimes taken with snares laid out along narrow pathways among the tule marshes or were shot with bow and arrows from blinds constructed at watering places. Because of an elk's large size, one or even several arrows would be insufficient to bring one down. Consequently, after a hunter had wounded an animal, he might be required to track it for several hours before it died.

Throughout California, the harvesting of wild plant foods usually supplied the bulk of a family's food supply. Plants were the mainstay of a families diet, usually with only a few species being of primary importance. In the Central Valley, important food plant species were tule (*Scirpus* spp.), cattail (*Typha* spp.), and oak (*Quercus* spp.).

Throughout the San Joaquin Valley the ubiquitous tule and cattails were extremely important food sources, providing pollen (made into cakes), seeds (ground into flour and made into mush or bread), and roots (eaten raw or baked or reduced to flour). Regardless of the season of the year, some parts of these plants were always available, and procurement was a relatively easy task requiring few tools: stone knives for cutting the stalks, and digging sticks for getting at the roots. On the other hand, food preparation required a considerable amount of culinary expertise, though the tool kit necessary for preparing the various plant parts was, except for cooking baskets, also relatively simple.

Opinions vary as the relative importance of acorns in the diet of the Northern Valley Yokuts. Some researchers feel that acorns were very important, perhaps the most important plant food. Others suggest that acorns, while important in some areas (such as along the middle reaches of the Merced, Tuolumne, and Stanislaus Rivers where there were large groves of oak trees), occupied a rather small place in the overall dietary habits of other Yokuts groups. At this time it is next to impossible to determine where acorns stood in relationship to other food sources for those Yokuts groups who lived in the study area.

That acorns were used is highly probable, but how frequently or to what extent they were relied upon as a staple is unknown. We suggest that they were of minor importance to groups occupying the study area. This is so for a number of reasons, not least of which is that on both sides of the San Joaquin River, from north of the Merced-San Joaquin confluence to well past the present-day town of Mendota, there were relatively few oaks (Kahrl 1978:17). In this region, according to Spanish and early Anglo accounts, the river was lined with a broad belt of tules, cattails, and other hydrophytic vegetation, in many places from one to two miles in width. Away from the tules were either sinks and basin lands characterized by intermittent water high in mineral content (Kahrl 1978:17), or, on the arid western side, open prairie lands containing little in the way of vegetation except for grasses. If the riverine-tule marsh dwellers of the study area wished to gather acorns in any quantity, they would have had to travel at least 20-30 miles (to the Diablo Range) to do so. While 20 miles is not a long way to go for some food types, it is a great distance to go for acorns. Except for the occasional long-distance trading parties which journeyed to the coast to gather high-value, low bulk items (such as sea-shells, salt), relatively few members of a village would ever see

lands more distant than 5-7 miles from their homes. Furthermore, the amount of acorns needed by one family to see them through the year, at least 2,000 pounds, is a considerable weight to carry over a tractless plain for 20 miles or more, to say nothing of the amount of time involved in collecting and transporting them.

The amount of time involved in harvesting 2,000 pounds of acorns may be considerable if the trees bear lightly, which they do about every three out of five years, or if trees are scarce, as they are on the open prairies of the San Joaquin Valley near the study area. In addition, it may require at least 20 to 30 one-person trips to carry acorns back to the village. A healthy, strong individual can carry 60 pounds over a distance of 20 miles in about 1.0 to 1.5 days. If four people attacked the load, they could bring 2,000 pounds of acorns back to their village in 12 days or less. Obviously, acorn collecting for the riverine dwellers of the study area would not have been energy efficient.

So while the riverine marsh dwellers might have traded some of their fish or tule-products for a few hundred pounds of acorns, or gathered a few hundred pounds from the few oaks growing along the edges of the tule marshes, it would not have been very efficient or productive to rely on acorns as their principal plant staple. It is much more likely that their main vegetable staples came from the streams, nearby bottom lands, and adjacent grassy plains where there were, according to season, tules, various roots-bulbs-corms, berries, greens of all types, herbs, shrubs, and many varieties of seed-bearing grasses.

Many of the plant products eaten by the Yokuts required few tools to procure and process. For greens, only hands and carrying baskets were required; for roots, bulbs, and corms only the ubiquitous digging stick was needed. Many foods, Fages noted, were "good to eat without any preparation" (Priestley 1972:78). One food, "a kind of wild bastard onion," was eaten when cooked, but in its raw state "can be substituted for soap" (Priestley 1972:77). He was referring to the amole, or soaproot plant (Chlorogalum spp.), used by Indians throughout the state as both a food and a soap.

One other collecting strategy, and the food resources at which it was directed, needs mentioning: the collecting of 'sugar' and 'salt'. Like most peoples around the world the Yokuts liked sweets and had found at least two plants from which a 'sugar' could be obtained. According to Fages:

Native sugar is made from the olive-like fruit [identity unknown] produced by a very leafy, tufted shrub six feet high with a stem of reddish color and leaves like those of the mangrove. The preparation of the sugar is so simple that it consists in gathering the ripe fruit, separating the pulp from the seed, and pressing it [that is, the pulp] in baskets to make cakes of sugar when dry and of a good consistency (Priestley 1972:79-80).

The second sugar source was the "dwarf bamboo, or sugar cane [which was] common along most of the streams in Yokuts territory" (Latta 1977:443). However, it was not the cane itself which was sweet, but rather the saccharine droplets left as exudate by aphids on the cane's outer surface. Many groups throughout California obtain 'sugar' from this 'sugar cane,' which is not the sugar cane of C and H fame, but rather a species of Phragmites (Smith 1968-1971). The saccharine droplets were collected by cutting the cane, laying it down on a skin and then beating the cane to dislodge the saccharine crystals. The cane would then be discarded and the crystals collected, moistened slightly with water and then pressed into cakes or balls (Smith 1968-1971), and stored. When needed, pieces were broken off the cakes and eaten as is or mixed with water to form a refreshing drink.

While sugar is not vital to one's biological continuity, being rather a 'luxury' item, salt is vital. For the Valley Yokuts there were no locally available deposits of mineral salt; hence the acquisition of this "indispensable article of diet was a serious problem" for them (Latta 1977:436), a problem which they solved in several ways. Some salt was acquired through trade, either from coastal groups who provided sea salt or from peoples living in the Sierras who supplied them with mineral salt (which they in turn had obtained from peoples living on the eastern side of the Sierras). But the bulk of their salt came from 'salt grass,' *Distichlis spicata*. In fact, as late as 1950 many of the Yokuts still obtained a large portion of the salt they consumed from salt grass (Latta 1977:436).

This preference for salt grass over table salt is not unique to the Yokuts. Smith (1968-1971) found that several southern Sierra Nevada groups, including the Tubatulabal and Kawaiisu, were using salt grass in the late 1960s, enjoying the collection and processing of it as much as the salt grass itself. The methods employed in collecting the salt are somewhat similar to those used to collect sugar:

The salt is exuded from the leaves of the grass and adheres to them in small globules smaller than a seed of mustard. In the early morning this excretion exists as a small drop of liquid. By noon of a warm day it has become solid and by mid-afternoon is dry and hard and can be removed from the grass by threshing [after first cutting the grass and laying it on a hide or mat] (Latta 1977:436).

Although there is no direct evidence for the use of fire as a management tool within the study area, it is most likely that, like native peoples in other parts of the state, the Yokuts also practiced this technique. Wisely using fire maintained ecological transition zones (ecotones), where plants and animals were most diverse and abundant, and increased their productivity. By altering the timing of plant growth and maintaining simple stages of ecological succession, fire assisted the spread of preferred food plants; by improving forage for herbivores, fire enhanced the availability of game (cf. Lewis 1973:83; Odum 1971:151). Also, by releasing nutrients that would otherwise be bound up in slowly decaying plants, fire encouraged grasses and forbs to sprout earlier in the fall and to grow more luxuriantly than they would have under natural conditions (Preston 1981).

As is clear from this discussion, the Yokuts had at their fingertips a wide range of subsistence procurement strategies and a cornucopia of food resources. Nearly all native animals figured in their diet: even ground wasps and skunks were relished (Latta 1949:27-28). However, it must be remembered that these are only some of the foods and their procurement strategies. Undoubtedly others existed, but the people who could tell us about them have been dead for more than 150 years. Until archaeological extractive and analysis techniques are applied to the sites of the study area we will never really know how broad based Yokuts subsistence resources were.

However, it may be safely stated that the Yokuts of the study area, like all of California's native peoples, let no opportunity pass by, extracting energy from almost every part of their environment: fish or fowl, mammal or insect, seed or greens, nuts or berries, roots or aphid excretions. All resources were potentially exploitable, and probably were. As to which ones were preferred and eagerly sought after or only used as a last resort, we can not say. Living as a part of nature and in intimate communion with the plants and animals, the Yokuts were one with nature's rhythms and were always ready to shift their harvesting energies from one resource to another, rarely shunning anything that was edible. Should one resource fail, there were always a dozen others to take its place. Although Kroeber characterized California's food resources as "bountiful

in their variety rather than in their overwhelming abundance" (1925:524), at least along the rivers, streams, marshes, ox-bow lakes, and the adjacent plains of the study area, nature was profligate in both variety and abundance. Furthermore, thanks to their subsistence technology and the unusual richness of their habitat, they developed one of the highest regional populations anywhere in aboriginal North America (Cook 1955b:45; Kroeber 1962:91). For example, if Cook's (1955b) population figures for the middle San Joaquin River are correct, there were at least 5-10 persons per square mile, a high figure for hunting and collecting peoples.

### Architecture

Early travelers in the San Joaquin Valley frequently noted that on approaching an Indian village "the inhabitants came running out of the ground like rabbits from burrows" (Latta 1977:345). The reason for this is that many of the plains and lake dwellers occupied semi-subterranean houses covered with an earthen roof on which grasses and occasionally small shrubs grew. In fact, so much like the natural landscape were these houses that travelers would almost be on top of them before they realized these 'hummocks' were artificial.

From the accounts of early travelers, interviews with Indians and the "testimony of the spade," it is known that the Valley Yokuts built several types of structures: 'earth lodges,' variously shaped tule-houses; sweat houses (a scaled-down version of the earth-lodge); small, lightly built sunshades (called ramadas by the Spanish); and 'lean-tos', or brush shelters.

The semi-subterranean houses varied from oval to round in floor plan and ranged in size from a few meters to more than 10 meters across, although a few larger ones are known. For example, at the Menjoulet Rancheria site, CA-MER-3, on Los Banos Creek, in western Merced County, archaeologists have uncovered portions of one of these structures whose diameter was over 30 meters. Another similar structure, with a diameter greater than 20 meters, was found near Salt Slough.

Several authors have suggested that all semi-subterranean structures were houses, with the larger ones being communal houses where the members of an entire village slept and stored their tools, food stuffs, manufactured goods, etc. (cf. Latta 1949, 1977). Wallace (1978c:465), however, suggests that the very large semi-subterranean structures were not houses, but rather ceremonial lodges, somewhat akin to those built by peoples in the Sacramento Valley where they were the 'theatre' in which the various rituals and ceremonies of their ritualized cult system were performed. Wallace's hypothesis is supported by the archaeological findings at CA-MER-221, northeast of Los Banos. At that site 55 housepits ranged from 5 to 20 meters in diameter, while a single large "ceremonial" structure with an attendant earth platform measured 40 meters in diameter (Scientific Resource Surveys 1979:45).

Regardless of the function, all of the structures appear to have been built along similar lines, using similar materials. First, a semi-circular or circular pit was excavated to a depth of 0.5 to 1.0 meter, the soil being loosened by digging sticks and the earth scooped into baskets and piled around the excavation's rim. Once the hole was dug, willow poles were placed around the inside of the pit, against the walls, and pushed into the ground. In the center of the excavation anywhere from four to six poles would be vertically embedded into the ground to form a square or rectangle. Additional willow poles were then woven horizontally between the vertical poles at the excavation's margin, and tied in place with milkweed or hemp fibre. Eventually, the house's framework took on the appearance of an upside-down basket with an opening, generally

on the south side, left as a door. Over this framework was laid a thatch of tules and brush, followed by a layer of wetter dirt which was packed down to form a water-tight covering varying in thickness from a few inches at the apex to as much as several feet at ground level. These houses were so well made that they could be used for 15-20 years before needing to be replaced.

Houses of this same type, though without the earth covering, were also used. An 1819 visitor to the northern San Joaquin Valley told of seeing villages where the houses were "composed solely of the . . . tules, with their ends bent like those I had seen on the shores of the river and sloughs" (Gayton 1936:83). In addition to these inverted basket-shaped houses, the Yokuts also built tule-houses which resembled quonset huts and cheese wedges, the latter with the narrow end pointing skyward.

Anyone who has spent any time on the treeless plains of the San Joaquin Valley or along the humid, sun-drenched shores of the Valley's lakes and sloughs will readily approve of the Yokuts practice of erecting sun-shades, or 'ramadas,' near their homes. Such structures were indispensable in the summer time, especially since, by and large, the Yokuts did not use their houses for many purposes beyond storage (foods, raw manufacturing materials, tools and weapons) sleeping, and as a refuge in only the worst of weather. T.J. Mayfield, a San Joaquin Valley pioneer who was raised by the Choinumne Yokuts for 12 years, from 1850 to 1862, noted that "the house was used only for storage purposes, except during the rainy, or cold season. . . . At all other times all food was prepared in an outside firepit and eaten outside" (Latta 1977:379).

Not all Yokuts lived in earth-covered lodges. Latta reports that the Chauchela living along the banks of the Fresno and San Joaquin Rivers "built a cone-shaped house similar to that of the Yaudanche [Yokuts living along the upper Tule River], but supported the interior with props or posts and covered with grass thatch" (Latta 1977:373). These houses were roughly 12 to 15 feet in diameter and, like the hemispherical earth-covered lodges, had their interior floors sunk about one-half meter below the surrounding ground's surface.

Yokuts frequently built smaller and less permanent "shelters" when occupying temporary camps (such as during antelope surrounds or attending festivals at other villages) or when traveling. Some were merely brush or tule windbreaks and, according to Latta, were the most frequently built structures "after the Indians had been dispossessed of their permanent village sites which always were at good springs and so were the first locations taken up by the whites" (Latta 1977:373).

Another structure built by Yokuts at their main villages was the semi-subterranean, earth-covered sweathouse. These were built with much heavier supporting members than the earth-lodges, were smaller (in fact, the roofs were so low that one could not stand upright in them), less than three to four meters in diameter, and were always located immediately adjacent to a stream at the downstream edge of the village. The placement allowed the men (for the sweathouse was for the exclusive use of males) to go directly from the sweltering heat of the lodge into the invigorating waters; it also ensured that the village's water supply would not become muddied while the men and boys frolicked in the water.

Although the Yokuts sweathouse, both in form and principal function, differed little from those of other native peoples in California, it was never used as a dance house or assembly hall, as was the case among many other Indian groups. However, it was considered the regular sleeping place for older men who were without families.

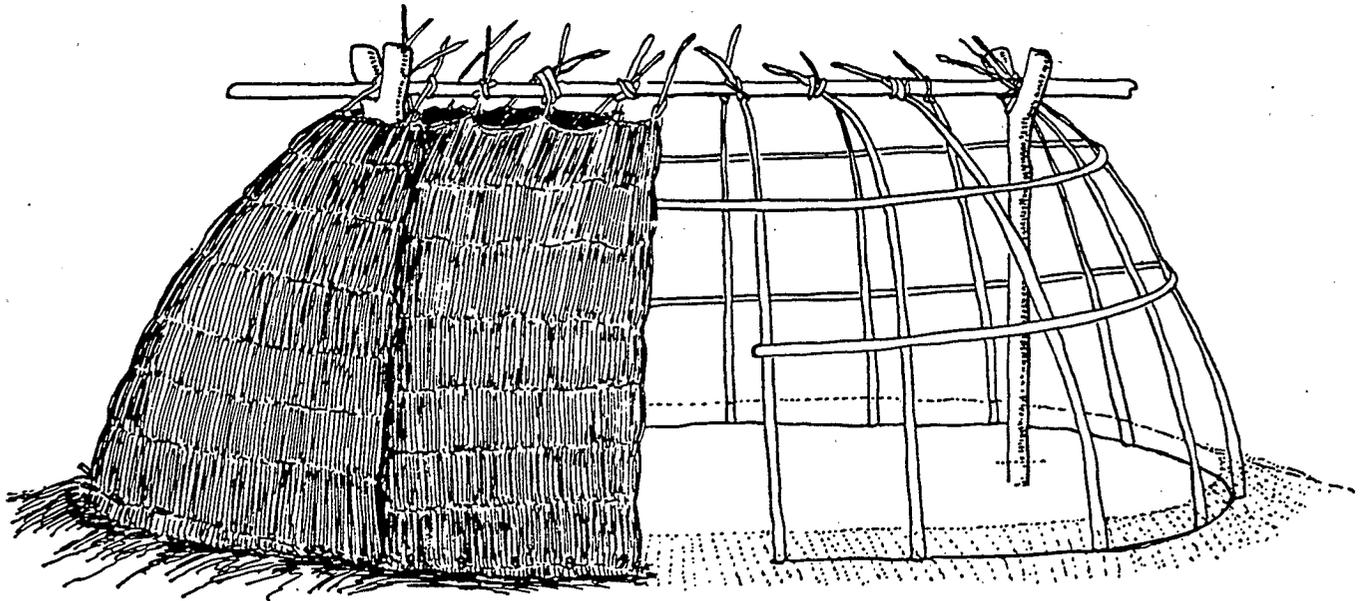


Figure 17. Valley and Central Foothill Oval 2-Post, Mat-Covered House (from Gayton 1948:12).

## Medicines and Healing Practices

Powers states that the Tule River Yokuts believed that disease resided in the blood. Scarification (bleeding) was a favorite remedy. For diseases of the bowels "they boil up a mess of a large and very stinking ant, and give it internally" (Powers 1976:378).

Merriam was told several tales of Yokuts medicine men who lived among the Kings River Indians. These medicine men reportedly had great power over all of the tribes which they visited. However, the majority of the medicine men in the stories related to Merriam seemed to have died after either losing a patient or committing some other social sin (Merriam 1967).

Powers relates that the shamans:

... sometimes chew the seeds of the jimson-weed (Datura meteloides) to induce delirium, which their dupes regard as the touch of an unseen power, and their crazy ravings as divinely-inspired oracles. It is related that an ambitious wizard once chewed too much seed and yielded up the ghost (Powers 1976:380).

Among Merriam's Wikitchumne notes appears the mention of two plants used as medicines. A gum made from salt grass (Distichlis spicata) was used as a cure for bad colds and for loss of appetite. Jimson weed (Datura meteloides) was used both internally and externally. Internally, it was used as a cure for appendicitis and other unspecified diseases. It was also used as a ceremonial narcotic. Externally, a poultice made from the roots and leaves boiled together was applied repeatedly to a patient (Merriam 1967). According to Latta these same Indians also used the crushed leaves of wormwood to cure poison oak, the stings of insects, and minor infections. Latta also mentions that the brittle fern and common fern were used as medicines (Latta 1977).

## Dress and Personal Ornamentation

Fages describes the clothing of the Northern Yokuts he encountered in the Sacramento River Delta area as follows:

The captains wear their cloaks adorned with feathers, and a great coiffure of false hair folded back upon their own. The common Indians wear a small cloak which reaches to the waist; in their hair they interweave cords or bands with beads, among the folds of which they bestow the trifles which they need to carry with them. The most common of these small articles is a small horn of the antelope containing tobacco for smoking, wrapped in leaves . . . . The figure and form of these Indians is graceful; both men and women are taller than ordinary. The men have the custom of smearing their heads in the form of a cross (the efficacy and mysteries of which are yet unknown to them) with white mud. The women observe in their dress the styles of San Luis Obispo, but with greater neatness and decency; they have also the fashion of wearing the hair in a toupe with a braid (Priestley 1972:72-3).

Fages observed that these Indians removed the skin of the fresh-water ruffed grouse with the feathers intact for use in making their cloaks and that likewise the skin of the white pelican (also complete with feathers) was used to wrap their babies (Priestley 1972:76).

Fages also mentions that these natives slept "upon the skins of animals, and covered themselves with other skins" (Priestley 1972:73).

### Currency and Exchange

The primary unit of currency among the Yokuts was strings of beads. Among the Wukchumne, Palhdwishe, and Kaweah the standard unit of measurement for a string was the distance around the hand, measuring just outside the thumb. The Talumne used a slightly different standard of measurement. They measured the distance from the tip of the longest finger to the first wrinkle in the wrist, while other Yokuts tribes measured the distance around a hand placed flat on the ground. The distance measured was from the base of the thumb to the base of the little finger (Latta 1977).

For intertribal trade, monetary exchange was conducted by first comparing the lengths of the tribal standards and developing an exchange rate which would even out discrepancies among the standard units (Latta 1977).

Trade items were also packaged in standard units. Asphaltum and paint were traded and sold in standard sized balls which were midway in size between a tennis and a baseball (Latta 1977). Latta mentions recovering several of these standard size balls from an archaeological context:

When the Smithsonian Institution expedition of 1937 excavated the old Tulumne Yokuts village at the east point of the Buena Vista Hills in western Kern County, a number of balls of asphaltum were recovered. They were almost exactly the same size as described by my informants. Some appeared to have been wrapped in tules or in strips of rabbit skin. This can be appreciated when one takes into consideration the stickiness, particularly on a Buena Vista Hills afternoon when the temperature stood at 110 [degrees]. Also, I recovered similar balls of asphaltum in Indian cemeteries at Alamo Solo (Tache country) in southwestern Kings County, and in the Sweet Mound (Chunut country) about four miles southwest of Waukena in Western Tulare County (Latta 1977:306-307).

Latta also reports having found two of these standard sized balls of red and white pigment at the Menjoulet Rancheria on Los Banos Creek (CA-MER-3) (Latta 1977).

Other items of trade such as Cladium root and red bud were also bundled into standard sized units for trade. However, particularly rare items such as sword fern root were made into proportionately smaller bundles because of their greater value (Latta 1977).

### Manufactured Items

The Southern Valley Yokuts, and probably the Northern Valley Yokuts as well, depended largely on tule as a source of raw material. It was utilized in baskets, structures, cradles, boats or rafts, mats, clothing, and in dozens of other items (cf. Wallace 1978b:450-452, 1978c).

Fages mentions the following manufactured items in his description of the Northern Yokuts:

They have stone mortars very like the metates of this kingdom, jars of the same material, and trays of all sizes made of wood or reeds artistically decorated with fibrous roots of grass which always keep their natural color, which is variable according to the species (Priestley 1972:73).

During his stop at Santa Rosa Reservation (a Tachi Yokuts reserve just east of the study area) on June 4, 1903, Merriam made the following observations regarding Tachi Yokuts basketry:

The papoose baskets or cradles are the simplest I ever saw. They consist of a small and rather narrow mat of tules on which the baby is laid. The sides of the mat are then brought up on each side of the baby and laced across the baby. . . . The basketry is interesting and all of it is coarse. I am convinced that they make no fine baskets and never did. They showed me a number of good coiled baskets of the so-called Fresno and Tulare styles, some very, very old, others new, which they told me they bought from Indians in the mountains—some on Kaweah River, others near Centerville. Now, owing to the demand for baskets, these Tah-che or Yokut Indians are making crude imitations of the Tulare style of baskets—some large, some small. Most of them are of Tulare root (Cladium) and the black in them is fern root (Pteridium) which they buy from the Sierra Indians. They showed me some first attempts, and some made by women who had been making them for two or three years and can now produce fair ones. But their own primitive baskets are excellent if coarse, and several are quite different from any I have previously seen.

The coarse openwork scoop baskets are common and of several sizes. . . . They are now drying blackberries in these baskets. They have an excellent deep twined bowl which they call chaw't.

They tell me they used to cook in canteen vessels called ke-wesh, not in baskets.

On a subsequent visit to these Indians (on October 4) I saw a papoose frame like some I have seen among the Wiktchumne Indians. It is a forked stick with crossbars, against which is fastened a narrow mat of tules. . . . They make a water bottle of twisted tule-like material not pitched or coated on either side. . . . They make a very simple circular winnowing of coiled small tule, held in place by radiating lines of string (Merriam 1967:404-5).

#### Trade and Trade Routes

The Yokuts maintained extensive trade networks which brought in a variety of exotic trade items. Obsidian, paint pigment, soapstone, abalone, periwinkle, and Pismo clam shells were among the most common trade items (Latta 1977). Latta also reports the archaeological presence of Arizona or southeastern New Mexico pottery as near as eastern Fresno county (Latta 1977:307-8).

Latta includes two informant descriptions of trading. The first describes trade both to the west and the east:

Icho, a full blood Wukchumne . . . stated: "Some of our men go to coast to trade, go over mountains to Owens Lake to trade. They go across to coast by where Coalinga is now. They go across mountains from Tule River across Kern

River where white men built that Jordan Trail. My grandpa Chechin told me about that. His father used to trade at them places. From here he take deer skins, antelope skins, elk skins, Kadis (kay-dis, steatite), ahdit (salt from saltgrass), and good baskets over to them Indians at Owens Lake. He bring back lots fine Kots (obsidian) to made good arrow point and some salt like white people use. He sell that kots and that salt for our money and buy more things to trade (Latta 1977:309).

The second description is from Yoimot, reportedly the last full blooded Chunut Yokuts from the northeast shore of Tulare Lake. She states:

The Indian traders used to meet at the Poza Chana' to trade with the coast Indians. Kahn-te was the oldest chief of the Tache I ever knew. He used to have charge of the trading. He told me all about it and taught me his song. I have always remembered it. Lots of other old-time Tache told me about it, too.

The bead and seashell traders from the coast met the Tache traders at Poza Chana'. The Tache and the other Indians would not let the people from the west come right up to the lake. They were afraid they would learn how to get things without trading. . . . Then the trade started. The Teahs did all of the talking for their people. They talked to each other and agreed how much each could have. It was all done by rules. . . . Kahnte told me that his people used to trade off fish, kots (obsidian), salt grass salt, and some seeds. Sometimes they traded kuts (koots, soapstone) beads. They brought back shell beads and sea shells, traw-neck (abalone), cawm-sool (clam), and caw-sool (Olivella, or periwinkle). Kahnte told me about a funny dried thing that one of his men got in trade. I know now that it was a star fish (Latta 1977:728-9).

Concerning trade with the West Side (i.e., the western side of the San Joaquin Valley, where lands included within this study are located), Latta states:

A few Yowlumne traders traveled to the West Side to trade for asphaltum from the deposits near present Maricopa and McKittrick. Some venturesome traders traveled to the coast near Morro Bay to trade for abalone, pismo clam, keyhole limpet and periwinkle shells. From these most of their money and ornaments were made.

Many kinds of herbs, roots and seeds, in addition to saltweed ashes and salt from salt grass, were traded, but to a limited extent, because the growth of most herbs and roots was widespread in the San Joaquin Valley. Cakes of dried blackberries were traded to the people who lived on the lake shores and the plains away from the rivers where these berries grew in abundance.

Yowlumne traders traveled as far north as Yokohl Valley, northeast of present Lindsay, to trade for steatite, or soapstone, from which they made cooking vessels, bead money, talcum powder, and ornaments. Any stone which chipped easily into arrow points also was valued very highly. Rare curios or oddities of any kind had a high trade value. Quartz crystals, star fish, sea urchins, cowrie shells, the canine teeth of grizzly bears and any other uncommon objects were certain of a ready market by trade (Latta 1977:310).

## Religious Beliefs and Practices

The Southern Valley Yokuts religious practices were not rich in group ceremonials. The largest ceremonial was the annual mourning ceremony, a six-day affair generally held during the summer or fall, but which was occasionally skipped for a year depending on the number of deaths and other factors. Such a major ceremony involved the entire tribe, and guests from adjacent areas came in by the hundreds (Wallace 1978b:456).

Upon death, the body was buried almost immediately. The body was tightly bound, and placed in a grave with the head toward the west or northwest. Cremation was practiced in special cases, particularly when an individual died away from home or away from the appropriate shamans. Among the Tachi, anyone of consequence was cremated. Mourning was generally limited to the direct kin, and the name of the deceased was never mentioned again. It was believed that after two days the soul left the grave and traveled westward or northwestward to the afterworld (Wallace 1978b:454-456).

The shaman was the only religious specialist. Among the Southern Valley Yokuts the shaman was almost always a male, and as elsewhere in the study area, the shaman's office centered around the curing of disease. Wallace (1978b, 1978c), Latta (1977), and Kroeber (1925) provide additional details on the religious practices of the Yokuts, as do the various publications of Gayton (cf. 1930, 1936, 1945, 1946, 1948).

## Intergroup Relations

McCorkle writes that "Yokuts and Monache societies apparently were generally peaceable ones with their peoples showing little enthusiasm for armed conflict" (1978:698). But, like the other groups discussed above, the Yokuts appear to have been at odds with their neighbors on occasion. For example, Latta states that the Yokuts lived in constant fear of being attacked. As part of their defense system signal fires were used to alert the Yokuts to the presence of strangers in the Valley. The position, size, strength, and intentions (hostile or friendly) of the strangers was rapidly spread via these signal fires throughout Yokuts territory (Latta 1977).

McCorkle notes that among the Yokuts, Monache, and Tubatulabal:

Motives in five actual conflicts included three based on invasions of food-gathering territory or theft of seeds, an adventurous raid by young men on a neighboring people, and an alleged death by sorcery where the shaman's relatives took up arms after he had been killed by indignant relatives of the dead person . . . [another] incident involved killing of several Tubatulabal men by Yokuts when they broke formation during a joint antelope hunt. These last killings were unavenged and thus may have been perceived as deserved punishment (McCorkle 1978:697-698).

Keeping watch for raiders from other groups appears to have been a common occurrence. Like the Chumash and other groups, the Yokuts felt the need to guard their camps from surprise attack:

They have two meals within the course of the natural day, one before dawn which lasts an hour more or less, and another in midafternoon which lasts for the space of four hours. When it is finished they set themselves to smoking tobacco, one after the other, from a great stone pipe. If there is to be a dance in celebration of a wedding or feast, they dance until dawn, or, if

they stop sooner, they set alert watchmen in the customary places, who give signals between themselves and for the entire village, by whistling or by strumming the cords of their bows, thereby giving notice that the enemy is approaching, that a house is burning, or that there is some other accident in the silence of the night (Priestley 1972:73-74).

### Ethnohistory of the Yokuts in the Vicinity of the Study Area

With the exception of the central and southern coastal peoples perhaps no other groups of native Californians experienced so intensive a period of enforced culture change and cultural disintegration as did the Northern Valley Yokuts. Less than 60 years after first sustained contact, these people were essentially extinct as ongoing cultural units. By the early 1900s, there were less than a bare half-dozen descendants left. Today there are none. What happened is the subject of the following section.

The Yokuts of the study area were first encountered by the Spaniards soon after Spanish settlement began along the central California coast. Pedro Fages, one of the original members of the first Spanish land expedition into California, led a small band of soldiers into the lower portion of the San Joaquin Valley during the spring of 1772. He and his men visited several Yokuts villages, and what he recorded forms the bulk of our first hand information on the Northern Valley Yokuts. While he states that his descriptions apply to all of the peoples on the "plain of San Francisco," meaning the area from the Sacramento Delta to the Tehachipi mountains, his travels in the San Joaquin Valley were limited to the Delta and the extreme southern end of the San Joaquin Valley.

Four years later, Anza, Pedro Font, and Jose Moraga, with a small contingent of soldiers, also visited the lower end of the San Joaquin Valley, generally following the route used by Fages, but adding little to our knowledge of peoples outside the San Joaquin River-Delta region. A few months later, Moraga led a party across the coast ranges into the San Joaquin Valley, entering it well north of the study area. He then turned south and followed the San Joaquin River for three days, until an Indian showed him where he could safely cross. He spent one day traveling on the plains east of the river, heading north, and reached the vicinity of present-day Stockton before returning to the coast the way he had come.

Moraga, with Rivera, repeated this trip three years later, in 1779, fording the river, but stopping short of the previous trip's northernmost penetration. From that time until 1806, when Gabriel Moraga and Pedro Muñoz crossed over Pacheco Pass and into the San Joaquin Valley, official Yokuts-Spanish contacts were minimal, or non-existent, though unofficial contacts may have been more frequent, especially toward the end of the 1790s, as coastal Indians began fleeing into the interior to escape the Spanish.

Beginning in the early 1800s, Spanish exploration of the lower San Joaquin Valley began in earnest. During the late 1790s, the supply of coastal Indians was close to exhaustion. The missionaries, fueled by reports of thousands of Indians in the San Joaquin Valley, viewed the region as an ideal location from which to draw converts to the coastal mission sphere, as well as a potential location for new missions. Also, as coastal Indians became disenchanted with the mission system and the 'benefits' of Christianity and 'civilization', they fled to the interior, joining up with Yokuts and Miwok groups. As a result, beginning in 1806 several military expeditions were organized by the Spaniards and sent into the San Joaquin Valley to recapture the

'cimarrones,' or runaway converted Indians, and to explore for potential mission sites (Gayton 1936; Cook 1960).

Unfortunately for the Yokuts, these expeditions, though charged with capturing and returning the 'cimarrones,' frequently burned Yokuts villages suspected of housing runaways, and in the process indiscriminantly wounded and killed adult Yokuts and kidnapped their children, oftentimes treating these children as if they were hardened criminals. For example, Sophano, a Kahwathwah Yokuts, was taken captive when he was about 12 or 13 years old and removed to San Juan Bautista. During the raid the Spaniards "shoot, kill lots Indian men, women" including his father (Latta 1977:145). Most raids followed the same pattern: the Spaniards attacked at dawn, a favorite tactic since it increased the probability of little or no resistance, coming in "shooting, then chased the Indians and cut them down with *espadas* (sabres). They caught [young Indians and] tied them to a reata and led and herded them to Mision San Jose" (Latta 1977:138).

During this period the Spanish authorities often made no attempt to distinguish between mission and non-mission Indians. As a result, hundreds of Northern Valley Yokuts were brought under the control of the missionaries at Santa Clara, San Jose, San Juan Bautista, Soledad, and San Miguel where they were forced into servitude. However, while the Spaniards were stripping the San Joaquin Valley of any Indians they could find, those who were captured on earlier raids were escaping and fleeing back to the interior, often accompanied by coastal Indians, most of whom had been under Spanish oppression for 30 years or more. In the process, these escapees introduced new ideas, new goods, and disastrous diseases to the Valley dwellers.

As Cook noted (1962:206), there was "a frequent tendency for the missionized, interior Indians to return to their old homes when they became seriously ill." Unfortunately, this did more harm than good, as the sick Indians usually infected the entire village, with most of the people dying because they lacked both background genetic and acquired immunities against the many European diseases, such as smallpox, cowpox, cholera, malaria, plague, influenza, etc. (Robin P. Brooks M.D., personal communication 1984).

During the Spanish (A.D. 1769-1822) and succeeding Mexican (1822-1846/47) periods, the San Joaquin Valley was used as a rendezvous for Indians fleeing the Spanish establishments along the coast, and as a staging ground for the increasingly frequent raids against Spanish and Mexican ranchos by the Yokuts and other Indian groups. This was a cataclysmic time for Yokuts groups and their culture, as the fugitives often introduced alien practices learned from both the Spanish and coastal Indians.

Perhaps the most important element introduced into Yokuts culture at this time was the horse, used first as food, and later as a means of transportation. In consequence, the still-free Yokuts, bolstered in numbers by runaways, began altering many of their cultural practices, so that by the middle 1830s they had made the switch from being fairly sedentary hunters and gatherers to mounted raiders and eaters of horse flesh. In fact, by 1828 all the Northern Yokuts and the remnants of the Plains Miwok had turned to horse meat as a staple article of diet (Cook 1955b). This practice led to their eventually being referred to by the Spanish as the 'Horse Eater' and somewhat later the 'Horse Thief' Indians.

During the years 1821-1847, when Mexico was nominally in charge of activities in California, several events occurred which adversely affected the Valley Yokuts. Military expeditions were still sent into the San Joaquin Valley, but their emphasis shifted from exploratory and the taking, or retaking, of Indians for missionary purposes, to punitive raids aimed at recapturing stolen horses and punishing the Indians for horse-rustling. Rarely, though, did the Mexicans attempt to distinguish between guilty and innocent Indians. The feeling among the Mexicans at the time was "If you are an Indian,

then you are guilty." These raids also aimed at capturing Indian women and children for conversion into pools of cheap labor.

This same time period also witnessed the secularization of the coastal mission establishment, an event often characterized as the watershed in California history. Theoretically, with secularization, the missions were to be turned into parish churches, the Indians granted equality of citizenship, and the mission establishments turned into Indian towns with half of the property going to the native people, the other half held in trust by secular administrators. What really happened is that the missions were plundered and the native peoples forced out.

The breakup of the missions began a very difficult time for many Indians, Yokuts and non-Yokuts alike. Hundred were virtually enslaved, forced to labor on ranchos or in the towns, while others were flogged or killed on the slightest pretext, or driven from what were, for many, the only homes they had known. Others, like some of the recently 'converted' Yokuts, tried to return home, only to find Europeans living where their villages once stood, or as in the case of Sophano, a Kahwathwah from the Los Banos area, to find no one at all. When Sophano left Mission San Juan Bautista in the 1830s he traveled up and down his ancestral tribal territory, but could not find an Indian anywhere in this land which had once been home to between 2,000 and 3,000 Yokuts. They were all gone, gone and buried at the missions or dead from the great pestilence of 1833.

Some of the Yokuts who had been at the missions for some time were able to find work as manual laborers on the surrounding ranchos or as domestics in the towns. In fact, in several of the coastal towns, such as Monterey, great numbers of Indians were found, generally living in shanty towns on the outskirts and working at various jobs. Although outside the study area, the observations of Richard Henry Dana on the conditions of the Indians in Monterey in the mid-1830s, are germane to conditions existing among the surviving Valley Yokuts who remained near Mexican settlements. Dana wrote that the Indians:

... do all the hard work, two or three being attached to each house; and the poorest persons are able to keep one, at least, for they have only to feed them and give them a small piece of coarse cloth and a belt for the males, and a coarse gown, without shoes or stockings, for the females (Dana 1969:82).

Other Indians attempted to revitalize their rapidly disappearing cultures by returning to some aboriginal practices, such as acorn and seed gathering, hunting of small game animals, and certain religious practices. But this was difficult, as most of the land from the coast to the San Joaquin River was now owned and occupied by non-Indians. Also, many of the Indians' food resources were gone, eaten by horses and cattle (seed bearing grasses and flowers) and hogs (acorns). Furthermore, as many groups had been reduced to just a handful of survivors, returning to aboriginal lifeways was impossible. In a few instances, native settlements were able to survive within rancho boundaries, but only because the rancheros needed the Indians as laborers, cowboys, and servants. In a few of these settlements, some aspects of pre-mission native cultures were revived or preserved, generally because the Mexicans had little interest in suppressing such traits, as long as they did not interfere with business. The majority of these native communities, however, were composed of native peoples from many different groups. Consequently there was a mingling of many different cultural patterns, all overlain by traits introduced by the Europeans.

Hence one cannot speak of a revitalization of say, Yokuts culture or Miwok culture, but rather of a reinstatement of general native patterns from many diverse elements. Such multi-ethnic communities were prominent during the late Mexican Period and at the early years of the American Period (post-1848), generally located

within close proximity to existing towns. For example, at Pleasanton, San Juan Bautista, and elsewhere, remnants of several different Yokuts, Miwok, and other Indian groups founded such communities, the women going into the towns to work as domestics, and the men working as ranch hands and farm laborers.

Unfortunately, opportunities for personal growth, as well as cultural continuity, were severely limited in these communities, and they were gradually abandoned as the older people died and the few young people moved away in search of a better life. (Of note with regards to population dynamics and the forces behind population shifts, there is a recurrent theme throughout the years from the 1850s on of many Indian men choosing not to take spouses and have children. Our ethnographer, Charles R. Smith, working in the late 1960s, late 1970s, and early 1980s among the Yokuts, Tubatulabal, Kawaiisu, Salinan, Chumash, and Costanoan, found that this phenomenon is still operative among aged males: many of the males he interviewed have no direct lineal descendants. While part of the explanation may lie in the unavailability of 'suitable' mates within these men's own ethnic groups, apparently there are also some subtle socio-psychological forces which lead these men to choose not to have offspring).

Although Indian mobility and military power increased, this did little to alter the flow of change set in motion by the coming of the Europeans. For a time the Yokuts and some of their neighbors were able to resist further European encroachment on their ancestral lands. Frequently, they were able to mount counter-offensives, raiding Mexican ranchos, burning buildings, and running off the stock. They were generally quite successful. In fact, after about 1833 the raids were so successful, and so expensive to the Europeans, that the Mexican authorities asked the home government in Mexico City to send additional military aid. There was even a movement afoot to build a fort in Pacheco Pass to block a favorite coastal-valley route over which hundreds, perhaps thousands, of horses had been spirited. And had conditions remained static, things might have turned out differently for the Indians. But time was running out for the Valley people . . . forces had been set in motion which were far beyond their knowledge or ability to deal with. Soon they would be overwhelmed by a massive tide of gold and land hungry people following their "Manifest Destiny."

Although their numbers had been reduced somewhat by the late 1700s and early 1800s, over most of the San Joaquin valley Yokuts population and cultural continuity were only slightly affected. However, by the early 1820s, many of the west side Valley dwellers had been brought into the mission system. Many died; others, especially the children, were forced to learn new lifeways and trained for tasks which would prove, by and large, worthless outside the mission system, leaving many of them strangers to their own cultures and their own homelands. Those who had managed to elude the Spanish had either to flee their homelands, seeking haven with Foothill Yokuts and Miwok, or to live precariously among the tule marshes, ever alert for raiding parties of Spanish and later Mexican soldiers.

Obviously the psychological pressures operating on both the mission-dwelling and free-dwelling Yokuts were tremendous: the enforced exile from their lands, the cumulative effects of the raids, the burnings of villages and the killing of adults and children alike, the kidnappings, the cultural and populational disruptions brought about by the large numbers of non-Yokuts fleeing to the interior — these factors all acted to bring about, in one way or another, the disruption and eventual disintegration of Northern Valley Yokuts culture. But the most devastating blow, one which made all the others pale in comparison, was the introduction of diseases for which the native peoples had no immunities and no cures.

As noted above, some diseases were introduced into Yokuts populations almost from the beginning, carried by native peoples who returned to their natal homes when they fell ill. This behavior was related to the overwhelming desire to die at one's home, not just in one's territory. However, while the number of Yokuts with communicable diseases remained small, and their mobility remained at the pre-horse level, the effects of diseases on whole populations were relatively small and their spread generally limited to one village. Unfortunately, as more and more Indians fled into the interior the opportunity increased for communicable diseases to be transmitted to greater numbers of people.

With their lack of immunity, and their greatly increased mobility, the stage was set for the dance of death. All that was needed was the music. And that came in 1833 when an epidemic (etiology unknown, though we believe it was influenza) of unbelievable ferocity swept through the San Joaquin Valley, killing fully three-quarters of all the Indians still living there. In 1832-1833, the trapper Ewing Young was in the Central Valley twice. On the way north (in the fall of 1832), the following observation was made by a member of this party:

The banks of the Sacramento and San Joaquin, and the numerous tributaries of these rivers, and the Tule Lake, were at this time studded with Indian villages of from one to twelve hundred inhabitants each. The population of this extensive valley was so great that it caused surprise, and required a close investigation into the nature of a country that without cultivation could afford the means of subsistence to so great a community, and who were such indifferent hunters. . ." (quoted in Minick and Bohr 1969:18).

The same party returned from the north in late summer 1833, less than a year later, and reported that:

From the extreme northern part of the Sacramento Valley to the Tulare lake, death had obtained a victory as unequalled, as it was unknown by nearly all, except the recording angel. Here and there, near the mouth of the American river, and along the San Joaquin, the shadowy form, or ghostly figure could be seen, flitting through the forest, as if afraid of its own shadowless appearance. Not one female did we see. The numerous villages which we had left filled with life were converted into Golgothas. The first struck down were buried. But the increasing dead gave not time to the living to thus dispose of their departed fellows. Huge piles of bodies were consumed with fire, and the ashes deposited in tombs near the village. But when no means would stay the destroyer, and strength was not left to thus dispose of the victims, they and the villages were deserted by the living, who fled to the scattered groups of trees, or to the solitary shade and there in families—pairs—or solitary and alone waited the approach of the Tyrant. The decaying bodies compelled us nightly to pitch our tents in the open prairie. . ." (quoted in Minick and Bohr 1969:18).

Whole village populations were wiped out in a few days. And the survivors, helpless against an unseen and unknowable enemy, fled, hoping to escape. But there was no escape: the diseases spread from one group to the next as the few survivors of village after village tried to find help. By the time the epidemic had run its course, a matter of just a few weeks, only a handful of Yokuts survived. However, they were so demoralized and so few in number that it was virtually impossible for them to reconstruct their cultures, in whole or in part. They were forced to seek new homes and

new lives among Foothill Yokuts and Miwok, or live precariously on the fringes of European settlements.

The period between 1835 and annexation of California by the United States is one of darkness for the native peoples. Few, if any, west side Valley Yokuts were living in the area. Most were dead or living in multi-cultural communities on the fringes of European settlements or scattered, living a hand to mouth existence. With the annexation of California came the total disappearance of the native peoples of the lower San Joaquin Valley. As the tens of thousands of gold-seekers poured into the Sierra Nevadas, settlers, following in their wake, began to invade the San Joaquin Valley, displacing, often ruthlessly, the few remaining Yokuts. In the process these Yankees irrevocably changed the face of the land as they drained the tule-marshes, erected fences, and turned cattle and pigs loose on the land, thus ensured the eventual disappearance of the native peoples. The hogs competed more successfully for the acorns than could the native. So too did cattle out-compete them for the seed-bearing grasses and flowers. And the fences made antelope and rabbit drives impossible. The newcomers hunted the native game animals almost to the point of extinction, or so despoiled the animals habitats that they could not survive. As more and more land was usurped and turned into farm land, irrigation lowered the water tables and food plants grew poorly or not at all. Rich tule swamps, which had once supplied the Valley Yokuts with food and raw materials were drained and converted into farmlands. In short, not only were there strangers in Yokuts land, but the strangers had made the land strange.

Perhaps a more lasting, and hence more devastating, effect of the Yankee occupation of California was the world view they brought with them, including such concepts as Manifest Destiny and racial and cultural superiority. Many of the newcomers treated persons with any degree of native blood as less than human; Indians were hunted for sport, and in some areas lynched so frequently that newspapers did not even bother to record such everyday events. In a few short years the few remaining Valley Yokuts were pushed to the brink of extinction. They found themselves trespassers on lands where their ancestors had lived for generations. With their culture and technology demolished, and the land base gone, the Indians were now miserable where once they had been happy, poor where they had once been affluent, weak and dying where they had once been strong and flourishing.

If it is difficult to obtain a picture of the Yokuts during the last years of the Mexican Period, it is virtually impossible to obtain any picture of them during the American Period. It is as if they had vanished completely. And for most of the Northern Valley Yokuts this was indeed the case. Many had already succumbed to introduced diseases, to culture shock, to the psychological trauma of being taken from their lands and seeing those lands despoiled. Also, those people who were interested in 'Indians' were interested in how things had been done, and what it was like, in the 'old times,' before the Europeans came. By then the Indians had been separated from their aboriginal lifestyles for more than a century, and most had never lived an 'aboriginal' lifestyle, though certain aspects of aboriginal culture (for example, a world view which gave meaning and direction to their social lives; some child-rearing practices; some medical knowledge; certain food preferences) were still in existence. But few, if any, investigators asked the Indians what had happened to them, how they felt about the recent past, or bothered to record the changes these peoples were undergoing.

History texts, both from the time as well as those of today, were more concerned with recording the growth of the new state than with recording what happened to the handful of Indian survivors. In general, the first 60 years of American control were ones of poverty, hardship, and bitter memories for the native peoples. Many were living in the poorest of structures, eking out a bare existence. Some were engaged in seasonal farm and fruit work, moving from crop to crop, area to area, and then returning to a

winter residence near where they and their ancestors had lived before the Euro-Americans came. Some were able to scrape together enough money to buy their own small parcels of land. For example, during the late 1850s and early 1860s several Indian women, from several different linguistic-cultural groups, banded together and acquired land near the site of Mission San Juan Bautista. Here they lived out the remaining years of their lives, living on the fruits of their gardens and on the few dollars they could earn as domestics in San Juan Bautista. But few could afford to buy land and so they lived as squatters on unwanted or unclaimed land on the outskirts of the many small communities scattered throughout the coastal area, where they became sources of cheap labor for housewives, farmers, and businessmen. Isaac Mylar, an early 1850s settler at San Juan Bautista, recalled just such a situation and settlement. According to him, several Indian settlements were located on the outskirts of San Juan Bautista, one in particular at the southeastern edge of town near where the road turned due east on its way to Hollister. His description of the nature of Indian employment typifies conditions among most of the coastal native peoples of the time, as well as general attitudes toward Indians. Among other things he noted that:

The women did laundry work. They washed clothes on a smooth board two feet wide and three feet long with one end of the board in the creek that ran down past my father's place from the San Juan Canyon, and the other end of the board was slightly raised. They would get down on their knees and rub and scrape these clothes until they were clean, using nothing but cold water. At first they used the amole or soap root which they dug out of the ground up in the hills, but as this began to be scarce they used soap. After getting the clothes clean, they would spread them on the grass to dry. I never saw cleaner or whiter clothes than garments washed by these Indian women. On Saturday afternoons they would be seen going into San Juan with big bundles of clean clothes balanced on top of their heads, which they were delivering to their patrons in the village. The Indian men did odd jobs.

There was another location in the lower end of the valley which also contained a number of these Indian families. With this latter aggregation there lived an old Indian who claimed to be over one hundred years of age. . . . He claimed to be one of the Indians who had worked on the old Mission when it was being constructed.

Some of these men were large, strong, and of fine physique. They were excellent workers in the harvest. I only remember them as Indians, (although I knew them well personally) . . . .

These Indians are today about extinct. Is it not strange that where these simple people come into contact with our so-called civilization they gradually disappear? (Mylar 1970:123-125).

Since the 1820s the U.S. Federal Government had followed a "removal policy" as its general solution to "the Indian problem." A permanent U.S.-Indian frontier had been created (unilaterally by the U.S.) along the Great Plains eastern perimeter and through a long series of treaties the Indian "nations" or tribes of the eastern and central portions of the country had been induced to move west of this "permanent" line and into lands which the U.S. Government promised to reserve for them "as long as the grass shall grow, water shall flow, and the sky is blue." But scarcely had this process been completed, when in the 1840s the frontier disappeared with the annexation of the Far West.

In California, since it was not possible to remove the Indians to lands further west, many American settlers argued that the only solution was to remove the Indian from the face of the earth. Most Californians readily agreed with Peter Burnett, the

first elected governor of California, who told the state legislature that a "war of extermination will continue to be waged between the races until the Indian race becomes extinct," and that it was "beyond the power or wisdom of man" to avert the "inevitable destiny of this race" (W. Bean 1968:166).

The federal government's policies toward the native Californians were very different from those expressed by Governor Burnett, but they were equally unsuccessful in providing any solution to "the Indian problem." Though the federal government attempted to guarantee protection of Indian lives and property, they approached the matter with less than wholeheartedness, and with little understanding of Native reality. Congress, in 1850, passed an act authorizing three Indian agents to negotiate a series of treaties with the California Indians which would, it was hoped, insure peace by segregating the Indians from the Whites as completely as possible. The 18 treaties which were eventually negotiated, some with mixed bands of Valley Yokuts survivors, called for the removal of all Indians from mining districts and other areas of White settlement, so that they could be concentrated on large reservations. The sizes of these proposed reservations varied, but together they totalled about 7.5 million acres, or about 7.5% of California's entire land area.

Unfortunately the commissioners overreached themselves, and the plan, for a variety of reasons, was unworkable. First, only a small percentage of the native peoples were contacted, and even fewer moved, even temporarily, to their "new" homes. Secondly, the federal government could neither persuade nor force the American settlers in the San Joaquin Valley and elsewhere to respect the various reservation boundaries. Thirdly, in the California legislature hostility to the treaties was intense, with legislators arguing on the one hand that Indians had no right to any land and that they should be moved outside of the state's boundaries, while on the other hand they resoundingly castigating the federal government for attempting to remove the Indians who supplied the towns and ranches in the valley and in southern California with their valuable, and essentially free, labor. Opposition to the treaties became so severe and so vehement that the United States Senate rejected all the treaties when they came up for ratification in 1852.

Ratification rejection, however, engendered widespread fear among non-Indians that the Indians would revolt. Thus, in 1853 Congress authorized and adopted a more modest plan recommended by Edward F. Beale, the new superintendent for Indian affairs for California. Beale proposed the immediate establishment of smaller reservations which would also serve as military posts for the United States Army, the latter acting as shields for the native people. On these reservations the Indians would be taught agriculture and handicrafts, much like the Spanish missions had done, only without the religious component. Ultimately, these reserves were intended to become self-sustaining. Five such establishments were authorized in 1853, with the first established at Tejon, in the Tehachapi foothills, to which remnants of various Yokuts, Chumash, Monachi, Tubatulabal, Kawaiisu, and other groups either came freely, or were brought forcibly.

Scarcely had the experiment begun when Beale was removed from office, partly because of his lack of business acumen, and partly through the efforts of his political opponents. Five years after the program was instituted, a federal investigator reported that the system was a lamentable failure and that the reserves were "mere almshouses for a trifling number of Indians" (W. Bean 1968:168).

During this period, and for a time afterwards, the remnants of the Valley Yokuts peoples either went to the Tejon reservation, or to the Fresno reserve, although some remained as laborers and domestics on White-owned ranches. When the Tejon reserve

failed in 1859, the Indians were removed to Tule River, where in 1873 a reserve was established for them.

Many of the surviving Yokuts could get food only by stealing it from the Americans, which led to constant and violent retaliation by the Americans, or by becoming virtual slaves on American-owned ranches, or by working as domestics in the towns. Also, unemployed Indians, because of an act passed in 1850 by the state legislature, could be declared vagrant and forced to labor on public works projects, or auctioned off to the highest bidder as indentured servants. Meanwhile, the illegal business of kidnapping Indians, especially children, for sale as servants and slaves, flourished.

By the beginning of the twentieth century few Yokuts lived in the San Joaquin Valley. There were fewer than 200 living on the Tulare (or Santa Rosa) reserve, most of these belonging to Yawalmani and Tachi speaking groups (Wallace 1978b:460). During this period, and for several decades before the establishment of the reserve, the few remaining Yokuts lived widely scattered across the land. They lived on the fringes of White settlements and society, working, when they could, at odd jobs, most frequently as migratory farm laborers or continuing the age-old pattern of domestic servants.

The years of the American Period (1847 - present) have been ones of deprivation and depression for the surviving Valley Yokuts. The bulk of their aboriginal cultural patterns were lost as whole villages and tribes were wiped out, either through disease or through the indiscriminant killing of native peoples by settlers. As more and more people died, it became increasingly more difficult to carry on the old ways. And as each person died, a little bit more of the culture died. In the 1920s Frank Latta, the Yokuts ethnographer, recorded the life history of Yoimut, a Chunut Yokuts from the southern San Joaquin Valley, who had been born sometime in the late 1850s. Her story is a lengthy one, and much of what she told Latta is not germane to the present study. But her own summation of her life serves as a fitting epitaph for all of the many different Yokuts groups, and perhaps for many of the other native peoples (Latta 1977:729-730):

I am the last fullblood Chunut left. . . . I am the only one who knows the whole Chunut or Wowol language. When I am gone no one will have it. I have to be the last one.

All my life I want back our good old home on Tulare Lake. But I guess I can never have it. I am a very old Chunut [85 years] now and I guess I can never see the old days again.

Now my daughter and her Mexican husband work in the cotton fields. . . . Cotton, cotton, cotton; that is all that is left. Chunuts cannot live on cotton. They cannot sing their old songs and tell their old stories where there is nothing but cotton. My children feel foolish when I sing my songs. But I sing anyway:

Toke-uh lih-nuh. Wa-tin-hin nah yo Hi-yo-um-ne a-he oo-nook mi-uh-wah.

(Westside show me the straight path. My home, Indian village. This is I, the charm stone, over you.)

That is all. [Yoimut died in 1937.]

Today, only bits and pieces of the old Yokuts lifeways persist, just as only a fraction of their original numbers remain. The descendants of those Yokuts met by Fages and others today live scattered among the multi-ethnic communities of California. Many have forgotten their ethnic heritage, while others remember theirs, but as the years pass more and more of the old Yokuts lifeways disappear. Some still recall the teachings of their grandparents, as well as the experiences of the years when their people were hunted like wild animals. But they do persist, and they are beginning to reassert themselves, attempting to maintain or regain what they consider to be essential parts of their heritage. And paramount among these concerns is the preservation of an undisturbed land base. From the land flows not only physical well-being but also spiritual well-being. Although the land has changed in many ways over the last 225 years, it still endures. Hopefully, so will the Yokuts.

It should be obvious from this discussion that there are probably few, if any, descendants of the Northern Valley Yokuts alive. By 1800 many of the Yokuts living in the northern end of the San Joaquin Valley had been removed to the missions established to the west. Between 1800 and 1820 the removal process continued, but the agents of removal and the reasons for it were somewhat different. Whereas prior to 1800 the justification for removal had been a desire to "save the Indian's souls," just after the turn of the century the goals changed: raids were made into Yokuts territory to recapture 'cimarrones,' that is, those Indians who had fled the Spanish establishments on the coast, and to punish those Indian groups who aided and abetted the runaways. During these raids, the Spanish seldom if ever bothered to find out which Indians in a village they were attacking were runaways until after the smoke had cleared and the groans of the dying had stopped.

Beginning in the late 'teens' and continuing up through the opening years of the Mexican Period the purpose for the raids changed again. Villages were still raided, and Indians were still killed, but now it was because they dared to steal and eat the horses of the Spaniards. Also, once the adults were disposed of, the children could be taken and eventually used as cheap labor.

By the beginning of the 1830s these raids had taken their toll on the aboriginal population of the Northern Valley. In fact, one researcher has stated that "since about 1790 there had been no Yokuts Indians along the West Side plains and foothills" (Latta 1977:xix). This would seem to be the case as most of the Spanish documents relating to these areas contain few references to Indians. It is not until they reached the marshes and sloughs of the San Joaquin River bottom lands that they encountered Indians. In Pedro Muñoz's diary of the 1806 Moraga expedition, several large villages were visited, one with an estimated population of about 250 persons, another with a population of around 400 persons. Nine years later, during the expedition of Jose Dolores Pico, there were at least five villages in this general area, with a possible aggregate population of no less than 1,800 persons (Cook 1955b:52).

However, beginning with the Pico expedition and continuing up until the 1830s, very serious attrition was going on among these bottom-land dwellers. Villages were constantly being attacked, the people massacred or kidnapped. In 1819 Estudillo noted that three other expeditions besides his own were ranging up and down the San Joaquin bent on killing any Indians found.

Simultaneously, European diseases were making heavy inroads into the native populations. Estudillo, during his 1819 expedition, found the entire surviving population of the village of Tape (presumably a Nupchinchí Yokuts village) sick and dying, and it may be assumed that similar occurrences were transpiring at other villages along the San Joaquin's bottom lands. Unfortunately we have no direct evidence for the years between 1819 and 1833, when one of the worst epidemics swept through the entire valley.

What few villages were still inhabited were swiftly depopulated. J.J. Warner, who was a member of Ewing Young's expedition through the Central Valley in 1832 and 1833, encountered numerous Indian villages along the San Joaquin from its confluence with the Merced River south. However, on his return through the Valley in the summer of 1833, he encountered just a few living Indians. He wrote:

On our return, late in the summer of 1833, we found the valleys depopulated. From the head of the Sacramento to the great bend and slough of the San Joaquin, we did not see more than six or eight Indians; while large numbers of their skulls and dead bodies were to be seen under almost every shade-tree near water, where the uninhabited and deserted villages had been converted into graveyards and on the San Joaquin River, in the immediate vicinity of the larger class of villages, which, in the preceding year, were the abodes of a large number of those Indians, we found not only graves, but the vestiges of a funeral pyre (quoted in Cook 1955b:54).

So complete was the depopulation of the Valley that when Powers traveled through this region during the 1870s he could not locate any native peoples who had lived along the San Joaquin River's bottom-lands. Since then, none of the various researchers who have studied the Yokuts have been able to locate any Yokuts who have knowledge of Indian use or occupancy of the area. Nor have any Yokuts been located who are descendants of the west side and bottom-lands dwellers.

However, that does not mean that there are none. Wallace (1978c:462) notes that although "most of the groups are now completely gone . . . others are represented either by small remnants living among other tribes or by a few isolated survivors." According to him, most of these survivors "have lost their identity, and it is only by hard search that a few can be found. The survivors live generally in obscurity and poverty on the fringes of the White society" (Wallace 1978c:469).

Frank Latta, who devoted much of his long life collecting and recording information about the Yokuts, was able to locate only one "full blood" survivor of the Northern Valley Yokuts, Chah-pu-leen, a Kahwathwah who died (date unknown) at Hanford, California. However, nowhere in Latta's compendium on Yokuts life is there any information which Latta attributes to Chah-pu-leen. Perhaps Chah-pu-leen died before Latta could interview him. Perhaps he did not wish to be interviewed.

In recent years, several researchers engaged in preparing cultural resource management documents for lands once occupied by the Northern Valley Yokuts have been unable to locate descendants of these people. Based on field work carried out by Munoz and Peak (1982), and Smith (in Breschini, Haversat, and Hampson 1983), and based on the field work conducted for the current project among Yokuts and other groups residing in the San Joaquin Valley and Sierra Foothills, it is our conclusion also that there are no surviving descendants of the Yokuts who once occupied the study area.

While somewhere there may be peoples who carry some degree of genetic inheritance from the Northern Valley Yokuts, they have, in Wallace's words, "lost their identity . . . [and] live generally in obscurity" (1978c:469). Perhaps they may be located, by dint of "hard research." It is a challenge. Latta spent all his adult life looking, without success: it is, indeed, a challenge.

## Overview of Study Area History

### The Hispanic Period, 1769 - 1846

Interest in the exploration and charting of the western Spanish frontier in the New World began with the coastal navigations of Juan Rodrigues Cabrillo in 1542, and continued with periodic lulls into the eighteenth century. Colonization of the remote lands was not considered, however, until reports of Russian and English interest in the idle and unprotected Spanish domain were taken seriously by Charles III. Guided by an ultimate objective of establishing secure military outposts within the context of a supportive network of agricultural colonies, land and sea exploration parties were organized and equipped from Baja California in 1769.

The overland expedition was charged with assessing the strengths of the port of Monterey, and with recording features of the Alta California landscape and native population between San Diego and Monterey. They were to report in detail on those places that presented the most desirable features for permanent settlement. The various diarists of this and later expeditions meticulously recorded the information of greatest value for potential settlement as they traveled the length of southern and central California, leaving a rich and intimate account of a land and its native people seen for the first time through European eyes.

Based on the detailed reports of the first land party, and those that followed, 21 sites were selected for missions between 1769 and 1823. Each developed associated gardens, corrals, grazing lands, grain fields, and vineyards, and eventually built remote chapels, housing, and warehouses within their holdings. In addition, each benefitted from certain natural resources unique to its chosen location, including hot springs, mineral resources, furs, timber, and useful wild plants. The mission community, operating as a self-sufficient factory by the labor of its neophyte Indian work force, was able to support itself and the military garrison attached to it, as well as the garrison at Monterey. Missions also supplemented the pueblos within their districts, and exported products to Baja California and Mexico. Those favorably situated near coastal landings also engaged in clandestine trade with foreign ships during the Spanish regime, and in authorized open trading during the period of Mexican government that followed.

For the most part, the mission communities prospered through the early years of the nineteenth century, then deteriorated rapidly as Spain withdrew political and practical support of the outposts to concentrate on revolutionary battles within other portions of its far-flung empire. Under Mexican independence, neglect of the missions shifted to hostility against their control of the best agricultural land in California, and the years between 1822 and 1833 marked a continuous effort to free California's vast mission holdings for open colonization. With secularization orders in 1833, the desirable, productive mission lands were redistributed to men already serving the government in California. Only a few acres at each mission, usually containing the chapel, gardens, and housing, remained under the control of the Catholic Church. Portions of the mission holdings were granted to Christianized Indians residing at each mission at the time of secularization, but only rarely did the Indians actually receive any of the developed, productive land set aside for them by secularization orders. The surrounding lands were granted to Mexican citizens as petitioned, subject to their actual settlement and use.

In the few years following secularization, Mexican California developed into a pastoral landscape reminiscent of the seventeenth and eighteenth century great haciendas (estates) of Mexico, populated by a widespread network of nearly unanimously related families and a few naturalized foreign born. The export economy of Alta Cali-

ifornia was based exclusively on the hide and tallow trade. This economic base encouraged a social delineation composed of a hierarchy of interdependent groups, with the landed aristocracy, comprised of the ranchero (ranch owner) and his family at the top; the Indian laborers on whom the successful operation of the frontier cattle industry depended at the bottom; the vaqueros (including some Indians), a class of highly skilled specialists in cattle raising and horsemanship, occupying a position neither landed nor servant; a merchant class of traders (largely non-Hispanic Euro-Americans and others); and the local governmental officers and the military.

Separate from this, but interacting at every level was the religious community, who, in the Catholic nation, continued to oversee a much reduced community of land-owning Christianized or "Mission" Indians on the former mission lands. The church and its localized community served also as the central social institution of rural life, and provided hospitality, advice, and introductions to the frequent foreign travelers. The ranchos, pueblos, and missions were linked to one another and to coastal and inland ports by extensive roadways and horsetrails crossing mountain pass and plain. Separated from remote governmental centers by distance and terrain, the rural society was regulated by a code of honor reinforced from within by ubiquitous family ties.

The California society developed an interdependency that was interpreted by foreigners as a casual view of personal and real property ownership resulting in hazy or unconfirmed legal transactions, and a round of social activities centered on Catholic holidays that together either shocked or seemed without precedent to many Protestant New England visitors. Increasingly, tradesmen, agents, and explorers from the eastern United States wrote scathingly of Mexican California's wasteful disregard of its potential land wealth, of the succession of inept governorships, and of a poorly equipped military charged with its protection and survival.

The period of American occupation from 1846 to 1848 was considerably aided by complicity from individuals within the Mexican economic and political structure, who saw in an American government a greater potential benefit for themselves.

Although the first Spanish overland expedition in search of suitable Mission and pueblo siting did not penetrate the San Joaquin environs of the study area, the region very shortly attracted the attention of mission founders. In 1772 Pedro Fages noted the fertility of the northern San Joaquin Valley, the abundance of seed plants and wild game, and the house forms and seasonal migration pattern of natives residing in the area (Priestley 1972:72). Gabriel Moraga's 1806 expedition to the interior established the San Joaquin Valley route from the northern to the southern missions along El Camino Viejo, closely following the toe slopes and waterholes at the western edge of the valley, turning west to San Juan Bautista by way of San Luis Creek (Hoover, Rensch, and Rensch 1966:200; Latta 1936).

Mission San Juan Bautista, 15th of the 21 California missions, was established west of the study area in 1797, and drew the bulk of its labor force from the surrounding Costanoan/Ohlone population. In 1824 the mission received a population influx from the Tulare Valley, quite possibly as a result of the aggressive military expeditions at that time. Its population had peaked in 1823, with 641 male and 607 female residents. All San Juan Bautista's outlying range and pasturelands lay west of the study area, bordering lands that would later be claimed as Rancho San Luis Gonzaga (Engelhardt 1931). Additional information on the impact of missionization on the native people of the study area may be found in the first half of this chapter.

In addition to the exploratory and punitive expeditions sponsored by the Spanish government, a number of American trappers and explorers traversed portions of the San Joaquin Valley, beginning with Jedediah Smith in 1826, Ewing Young in 1829 and 1833, and

Joseph Walker and John C. Fremont in the 1840s as American interest in the country quickened (Clark 1973:2).

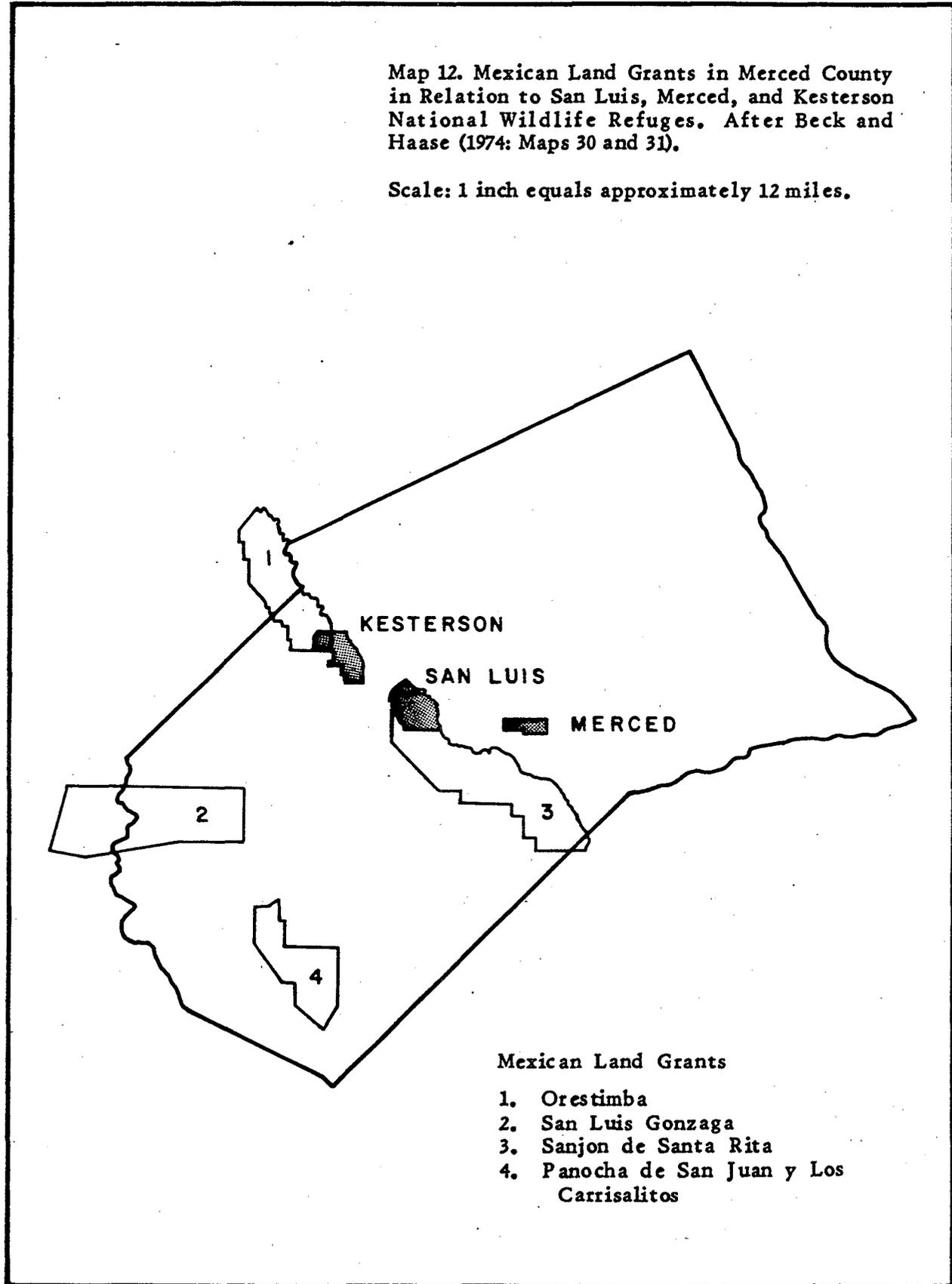
By the time Mexico achieved its independence in 1822, the rich and valuable lands held by the missions had long been a sore point among newly independent Mexican citizens who felt that all California lands should be opened up to settlement, not just those government sponsored pueblos and the few grazing tracts granted to a select group of favorites. Consequently, increasing pressure was brought on the government to recognize the temporary intention of the missions under the old Spanish Laws of the Indies governing their original establishment, and to support colonization attempts such as those envisioned by secularization proponents Jose Maria Padres and Jose Maria Hajar. Governor Echeandia issued decrees in 1826, 1830, and 1831 that weakened Indian dependence on the missions and set in motion the process of secularization of the 21 Alta California missions. The orders were immediately revoked by his successor. They were replaced by a secularization law adopted by the Mexican Congress in 1833. Finally, Governor Figueroa's proclamation of August 9, 1834, defined an immediate plan for secularization and dispersment of mission property (W.W. Robinson 1948; Pitt 1971; W. Bean 1973).

In spite of the decreed purpose to release mission Indians from conditions of near slavery and dependence and to open the land for settlement by petitioners, the immediate effects of secularization throughout California were to deprive a large percentage of the remaining mission Indians of their rightful property, and to disperse mission property quickly, frequently without regard for legal process, to a relatively few fortunately situated individuals. Favored, of course, were those individuals already serving the Mexican government in California, and those retiring soldiers to whom the government owed pensions. Between 1834 and 1842, more than 300 ranchos (land grants) were granted to Mexican citizens, most carved from former mission lands (Robinson 1948:30-31). Inland, a number of grants followed the navigable watercourse of the San Joaquin River, including two of the four located in what would become Merced County (Beck and Haase 1974: Maps 31-33; see also Map 12 in this report). Portions of the Orestimba and Sanjon de Santa Rita grants lie within the study areas, and a third (San Luis Gonzaga) considerably affects existing historic resources in the San Luis Refuge study area.

The procedure for petitioning and claiming a private land grant was laid out with formality and care, but the actual process was subject to variations imposed by distance to archives and officials, commonly held conceptions of place names and vaguely defined boundaries, and a web of family ties that frequently carried more commitment than did the official papers that accompanied the proceedings. The grant applicant first filed a formal petition with the Governor that described and mapped the requested land, verified its availability, and confirmed the applicant's status as a Mexican citizen. The application was forwarded to a local official for verification. When verified, the Governor signed his approval, authorizing the grant, and ordering an official survey. On confirmation of the survey, possession was effected (Blomquist 1943). The survey boundaries, carelessly defined and of little practical significance at the time, were to become a major source of dispute after American annexation, and in fact contributed to a maze of misinformation regarding ownership and construction of buildings now located within the San Luis Refuge study area.

Map 12. Mexican Land Grants in Merced County in Relation to San Luis, Merced, and Kesterson National Wildlife Refuges. After Beck and Haase (1974: Maps 30 and 31).

Scale: 1 inch equals approximately 12 miles.



### Individuals and Groups Pertinent to the Study Area

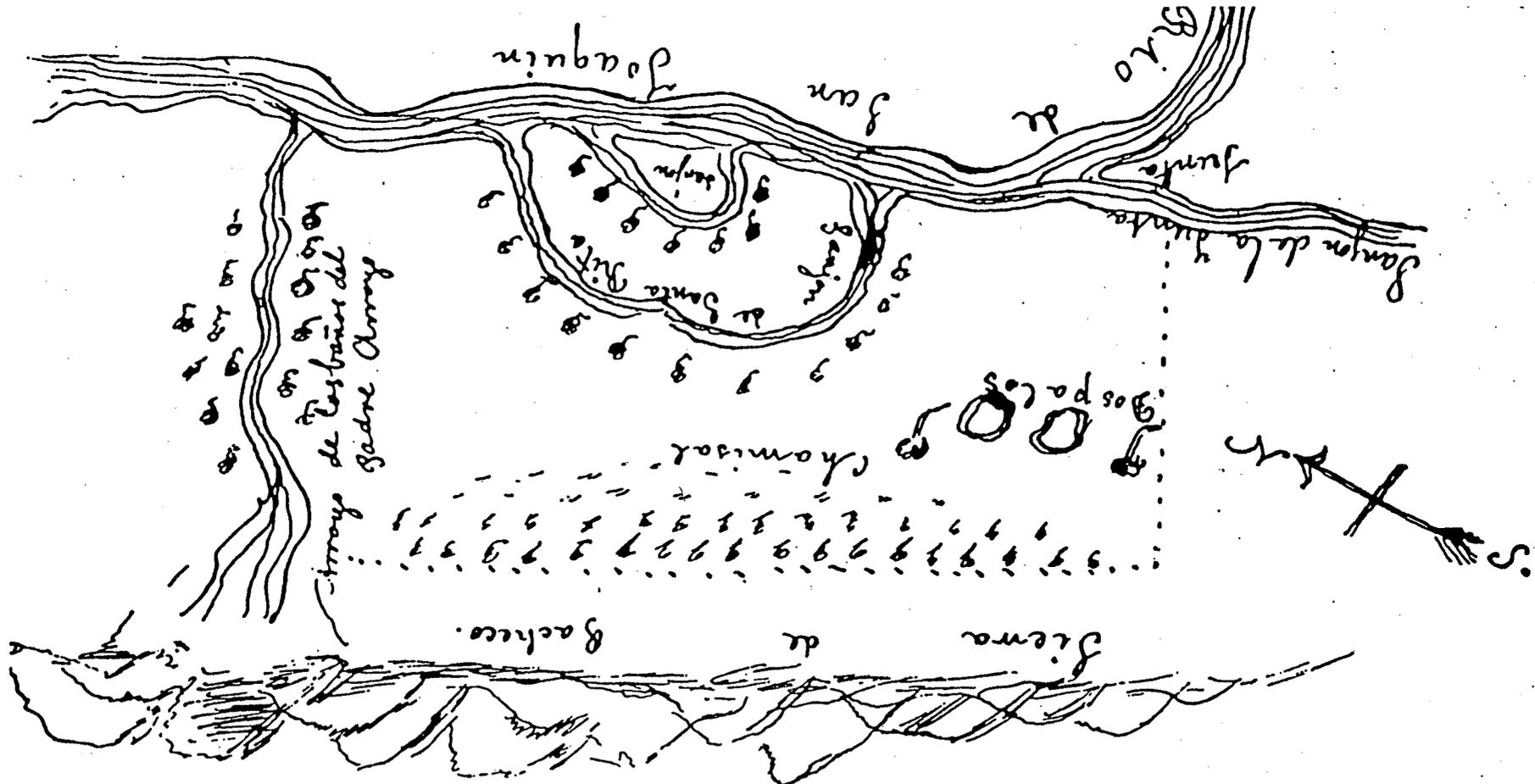
In 1841 Francisco Soberanes petitioned Governor Alvarado for the place named Santa Rita, which was granted by decree September 9, 1841. A diseño (land grant map) believed to have accompanied the original petition is attributed to a Frenchman named Cambuston of Monterey (see Map 13), who according to testimony frequently made maps and plans for petitioners. The diseño for Rancho Sanjon de Santa Rita places its boundaries at Dos Palos on the south, Arroyo de Los Baños del Padre Arroyo on the north, Rio de San Joaquin on the east, and the Chamisal on the west, for a total of 48,000 acres, or 11 square leagues. Mountains designated Sierra de Pacheco are depicted well west of the rancho boundary, while the Sanjon de Santa Rita, today known as Salt Slough, and situated on the San Luis National Wildlife Refuge, occupies the center of the diseño (Cambuston n.d.). Map 13 is a copy of the diseño, redrawn by Ralph Milliken in 1965.

Although no structures are depicted on the diseño, testimony was provided during the land case hearings that supports early construction of buildings on the rancho. In defense of Soberanes' title to those lands, Vincent Perfecto Gomez testified that he was residing nearby in 1843-44, when Soberanes occupied the rancho with two or three servants. All were driven off by raiding Indians shortly after their settlement (U.S. District Court Southern District 1853).

In December, 1841, Francisco Jose Rivera of Monterey petitioned for and received Rancho de San Luis Gonzaga, whose boundaries were the lands of Francisco Perez Pacheco's Bolsa de San Felipe on the west, El Arroyo de Los Baños del Padre Arroyo on the south, lands of the Gentilidad, or "heathen Indians" on the north, and El Rio on the east, by which name was commonly known the Sanjon de Santa Rita, or Salt Slough (Milliken n.d.a).

Rivera returned to Mexico City soon after the San Luis Gonzaga grant was made, leaving his grant untenanted. In September, 1843, Pacheco's son Juan Perez Pacheco joined with Captain Maria Mejia to petition for the abandoned lands. The lands were regranted on November 4, 1843, on payment of a release fee to Rivera. Three days later Mejia conveyed his interest in the grant to Juan Perez Pacheco. In defense of Pacheco's title years later, the Pacheco family made it clear that they understood the eastern boundary of "El Rio" to mean the main bed of El Rio San Joaquin, and not its western branch at Salt Slough. Historians point out in defense of this assumption that Pacheco has always been assumed the builder of several outlying adobes throughout the holdings, including one at San Luis Camp on the western bank of Salt Slough, within the study area. In testimony before the United States Land Commission in 1853, Jose Abrigo defended Pacheco's claim for San Luis Gonzaga, saying that Pacheco at that time had already built several small houses on the grant for himself and his employees. A second witness corroborated Abrigo's testimony in 1855, saying that as soon as the condition of the country and the hostility of the Indians permitted, houses were built by Pacheco and the ranch stocked with cattle (Milliken n.d.a). A court fight over the boundary issue continued until 1871, when a hotly protested 1859 survey that greatly reduced the original holdings was upheld (Shumate 1977:15, 20). To this day it is commonly held that the San Luis Camp Adobe was built by Juan Perez Pacheco in the 1840s to hold a claim on the eastern lands infringing on Soberanes' Rancho Sanjon de Santa Rita (Paula Fatjo, personal communication 1984; Strickland 1978; Native Sons of the Golden West 1967).

Another Pacheco family member, Francisco's son-in-law Sebastian Nuñez, was granted 26,660 acre Rancho Orestimba in 1844. The southeasternmost portion of Rancho Orestimba includes lands now a part of Kesterson National Wildlife Refuge (see Map 12). Testimony provided to the United States District Court by Jacinto Rodriguez and Benito Diaz in 1855 related that Nuñez was unable to take possession of the rancho immediately, due to "the savage state of the wild Indians" (U.S. District Court 1855). A



Map 13. Diseño of Rancho Santa Rita (from Cambuston n.d.).

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rancho map filed with the land claim in 1861 indicates a road in what is now the northwest portion of Kesterson Refuge, which joins a crossroad approximately 1/2 mile outside the northwest corner of the Refuge (Dyer 1861). Hoffman's topographical map of 1873 (Hoffman 1873; see Map 14) indicates an "adobe" near a crossroads close to the same area. That adobe might have been the same one occupied by the "half-breed" son of a deserter San Juan Bautista soldier in 1852 believed to be located in that area (Hoover, Rensch, and Rensch 1966:540).

The San Joaquin Valley had few settlers during the Spanish and earliest Mexican periods because the more desirable lands near the coast had not yet been completely taken up in grants, and because of the constant raids of the Indians. At the time grant selections were made in the early 1840s, the valley was empty of inhabitants other than the Yokuts Indians who had survived or escaped missionization. There were no nearby markets for farm products, and no transportation facilities to carry products in bulk to distant markets. The only practical use of the undeveloped land was in support of the hide and tallow trade, well established along the coastal and coast valley ranches. The coast ranges were most suitable for this use because their height insured enough rainfall to provide a fair stand of wild grasses in most years. The canyons and ridgelines of the coast range, where the bulk of San Luis Gonzaga lands were located, offered routes to the established ports and markets, providing relatively easy access when compared to the difficulties of crossing the marshy expanse of the valley floor. The floodplain, where Ranchos Santa Rita and Orestimba were located, was also selected for grazing land because of the year round verdure associated with the widely overflowing river-course and high water table. Eastern valley and foothill lands were much less desirable because of the effects of the coast range rain shadow (Graham 1957).

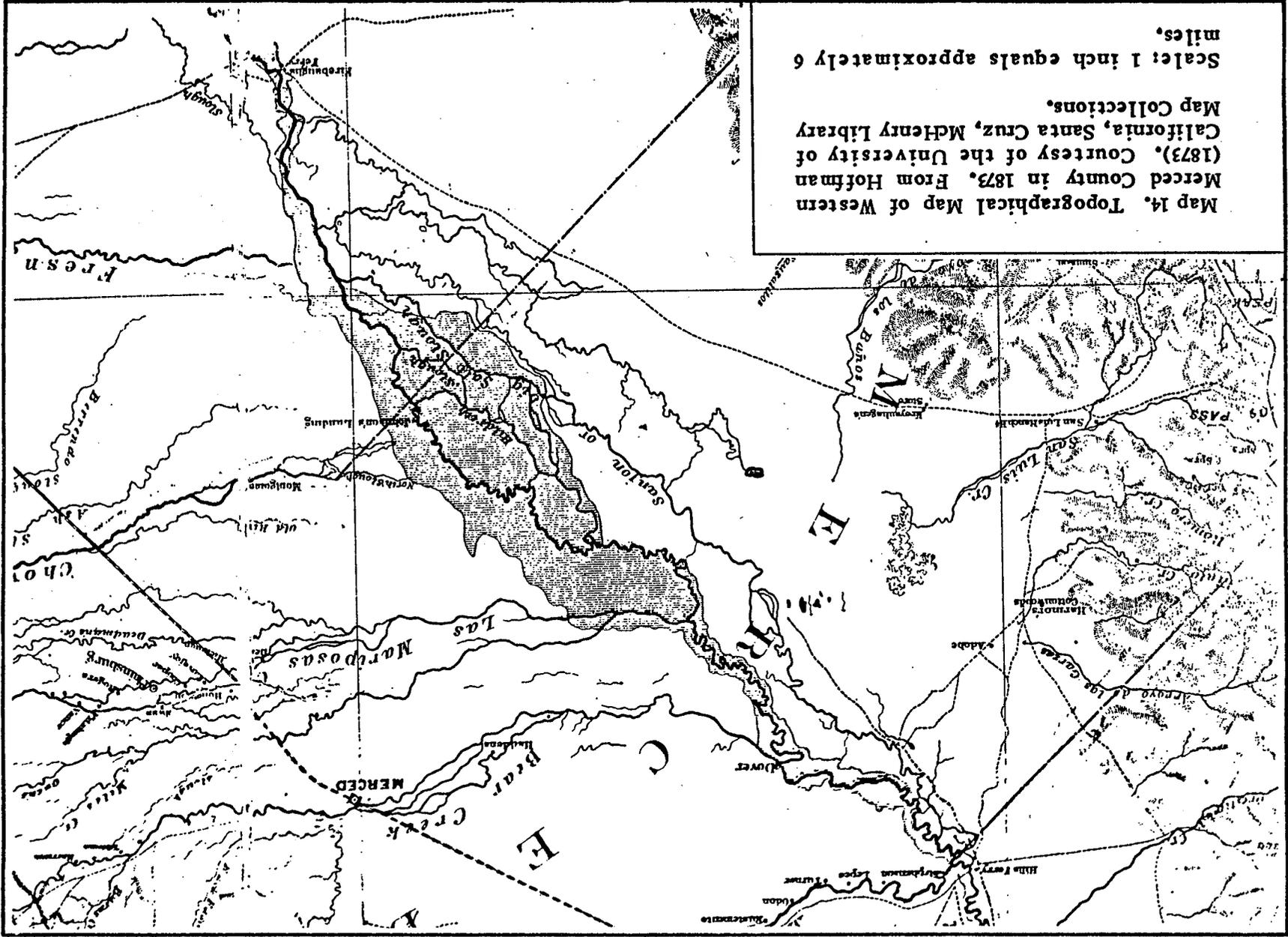
The life of the California ranchero became much romanticized in the literature of the later nineteenth century, but in fact the operation of a self-contained stock ranch, singularly dependent on the hide and tallow products of its cattle, followed a highly structured social and physical organization. A typical rancho layout would include a main family house, with attached vaquero and domestic workers quarters. Nearby would be adobe or prickly pear fences, corrals, adobe ovens, gardens, and functional out-buildings. Scattered over the acreage were houses for Indian laborers, a slaughtering ground, and a landing if the ranch was situated on a waterway.

An army of Indian help formed the backbone and foundation of a successful rancho. Small rancherías (Indian villages) might be scattered over the estate, or an established village of Indians displaced by mission secularization might be located on the rancho. Laborers to support the seasonal requirements of the rancho, particularly the annual matanza (slaughter), were recruited from nearby rancherías. Based on census tallies originally done in 1852, an individual ranchero might employ 11 to 32 Indians of all ages and both sexes (Genealogical Records Committee 1933). The domestic help lived closer in to the main complex, caring for the needs of the ranchero's household as well as the frequent and long-staying visitors to the country.

The vaquero was much more than a cowboy, enjoying an elite status as member of a highly skilled family line. The ranchero himself was patriarch to a vast extended family, whose social and domestic customs carried on the traditions of Colonial Mexico (Pitt 1971:24-26; Edwards, Hickman, and Breschini 1974; Farley and Detlefs 1977:6; Farley 1974:8-10).

Based on the information cited in previous paragraphs that was provided by witnesses in the District Court proceedings to establish title to the three study area ranchos, it is clear that the early Hispanic settlers in the study area environs had difficulty establishing rancho operations, due largely to the presence of hostile Indians. Only the Pacheco name appears in subsequent literature with any frequency in relation

Map 14. Topographical Map of Western Merced County in 1873. From Hofman (1873). Courtesy of the University of California, Santa Cruz, McHenry Library Map Collections.  
 Scale: 1 inch equals approximately 6 miles.



to the cattle industry, and those operations, other than activities presumed by many historians to be associated with the San Luis Camp adobe, took place well to the west of the study area.

#### Early American Period, 1847 - 1900

The signing of the Treaty of Guadalupe Hidalgo transferring the territory of California to the U.S. coincided with the unanticipated discovery of gold at Sutter's Mill on the American River. The plan to transfer social and political institutions gradually with little disruption of traditional California life was torn apart within months by the mass migration of an unprecedented number of people, mostly single men or married men traveling without their families, to the gold fields. Consequently, the vast, potentially rich lands all over the state, but particularly in the well-watered valleys, came to the attention of those seeking permanent homes and/or quick money in the west.

Pressure was brought on Congress to break up the ranchos of the established Californians in the new U.S. acquisition, much as the Californians and their immediate ancestors had pressured for the release of mission lands barely two decades earlier. Disregarding the terms of the recently signed treaty, the U.S. Land Commission was formed under the Land Act of 1851, requiring all landowners to prove title to lands acquired prior to American rule. Complicating this, squatters arrived to situate themselves along the disputed boundaries of the ranchos under litigation, believing themselves encouraged by pre-emption laws already in effect covering the dispersal of public lands. While most California titles were proven correct, the effects of the financial burden encumbered by litigation, along with devastating floods in 1861 - 1862 followed by droughts that destroyed the cattle industry, combined to bring about the desired subdivision and dispersal of land to incoming American settlers and speculators.

Agricultural experimentation and improved stockraising practices encouraged by the State Agricultural Society dominated the rural scene, as settlers located 160 acre homesteads or purchased plots from speculators under public land laws now applied to California. The growing numbers of settlers were linked by regular steamship mail and supply service along the coast, and an expanding network of maintained stage roads, ferry crossings and river steamship routes in the inland valleys. Commercial hubs grew along the roadways at junctions to the populated canyons and inland valleys, where rural and semi-urban settlers met and renewed their interdependence with the larger world, aided by traveling lecturers and through readership of an increasing choice of newspapers and magazines. Schools and post offices were established at regular intervals in the hinterlands to serve the more remote populations, while social halls filled a multipurpose role as church, dance hall, or meeting place in the back country.

In striking contrast to this clustered pattern of settlement in the coastal valleys, extensive tracts of land in the San Joaquin Valley were taken up in the corporate holdings of such giant enterprises as Miller and Lux. There settlements on the river routes and important crossroads were separated by enormous tracts of rangeland where population was sparse or non-existent, except at ranch headquarters.

There seemed to be no limit to the opportunities created by the land boom that followed the entrance of major rail lines in the 1870s and 1880s. The Central Pacific Railroad (stimulated by the Civil War), the Southern Pacific, and later the Santa Fe all brought in people and equipment, while supplanting former river steamship lines moving local products to world markets. Narrow gauge feeder lines linked major routes with important remote resources, while in the valleys, hamlets bypassed by the railroads simply picked up and moved onto the new route. Speculators and colony schemes

multiplied in the accessible valleys, where the influx of immigrants fed a shift to orchards, vineyards, and horticulture in a system of tenant or subsidized farming. Land sales and industries of every sort boomed in the 1880s and 1890s, as immigrants from Europe, Asia, and every part of the Americas brought diverse skills, folkways, trades, and products to the burgeoning communities. While valley lands filled in with grain fields, canals, dairies, and vineyards, oil and mineral extraction companies boomed and faded in the coastal hills. Capitalizing on the ease of rail access and connecting roads, spas and resorts catering to the wealthy city dweller and long-term vacationer were established at well-known hot springs throughout the coast ranges. Regional products achieved world-wide fame, particularly those from the coastal and San Joaquin Valley orchards, vineyards, and croplands operated on tenancy or plantation systems totally dependent on immigrant labor.

The settlement and development of the northern San Joaquin Valley followed trends that described the California central coast in general, modified somewhat by particular local topography and shifts in the predominating economic resource base. The 1850 and 1852 census reports indicate that the settlers who preceded the Gold Rush, and those who closely followed it with the intention of procuring farms, were predominantly young single males or young consanguineal kin arriving with their brides and babies. The participants in this initial group were largely under age 35, with many in their mid to late teens and early twenties. They hailed most frequently from the eastern U.S. and western Europe, but had emigrated most recently from Missouri, the last organizing stop for those joining wagon trains. They apparently anticipated U.S. public land preemption rights to agricultural parcels within large tracts already claimed by earlier settlers under Mexican law. They were greatly encouraged in this belief by California's 1851 Land Act, which ignored land title provisions of the Treaty of Guadalupe Hidalgo, and by the extension of the 1841 Preemption Act to California's public domain in 1853. On arrival, some rented land from undisputed owners, while others squatted on lands under dispute in the courts. Squatters in particular were attracted to the unsurveyed boundaries between ranchos such as San Luis Gonzaga and Sanjon de Santa Rita and the as yet undefined public lands that were sure to result from eventual boundary adjustments in court. People with diverse needed skills were attracted to the Americanized towns that sprang up near the old missions, pueblos, or rancho headquarters, where they purchased farm or town plots from the welcoming merchants and landowners (Breschini, Haversat, and Hampson 1983).

#### Individuals and Groups Pertinent to the Study Area

Immediately after confirmation of his title by the U.S. District Court in 1853, Francisco Soberanes had sold nine square leagues of Rancho Sanjon de Santa Rita to Manuel Castro, a prominent political figure. Government surveys completed in 1855 showed that the only signs of settlement at this time were at Hills Ferry (see Map 2), northwest of the study area on the San Joaquin River, San Luis Ranch on the Pacheco holdings, and the Stockton-Visalia wagon road following just to the east of the old El Camino Viejo on the plains (Outcalt 1925:95). Castro sold two square leagues of the nine to Salisbury Haly in 1858, who then sold that acreage to William Dumphey in 1861. Dumphey entered into a partnership with Tom Hildreth, who had been driving Spanish cattle from southern California to the mines since 1849, and who had in 1853 organized one of the earliest drives to bring Missouri beef cattle to California (Milliken n.d.b). Hildreth and Dumphey sold their holdings, along with Hildreth's family "Double-H" brand, to Henry Miller on May 22, 1863.

By 1866 Miller had negotiated the purchase of the remainder of Rancho Sanjon de Santa Rita, and made Santa Rita the headquarters for 68 contiguous miles of holdings in the San Joaquin Valley (Hoover, Rensch, and Rensch 1966:203-204). The Nuñez grant, Rancho Orestimba, had changed hands in the late 1850s before it too was purchased by Miller and Lux (Shumate 1977:24); and by 1872 Miller had negotiated a lease on San Luis Gonzaga, which he held until 1892 (McBride 1956).

The cattle economy begun during Mexican tenure prevailed on the west side of Merced County through the early American period, far more so than on the eastern side of the developing county. Development and settlement of the west side was brought about largely through the activities of "Cattle Kings" Henry Miller and Charles Lux. As noted, Miller and Lux purchased Rancho Santa Rita in Merced County in 1863 as their San Joaquin Valley headquarters. Additional extensive land purchases were made through circumvention of the letter and spirit of the Homestead Act, and by acceptance of land script for currency from former soldiers, which was then applied to the purchase of government land. Graham's (1957) research into Merced County land records showed that Miller and Lux were listed as grantees in 287 land transactions between 1863 and 1887. Most of those were 160 acre parcels, indicating the practice of purchasing homesteads from claimants. Miller also showed proof of reclamation on thousands of acres of swampland, eventually claiming a continuous strip of land on the western border of the San Joaquin River in Merced and Stanislaus Counties.

By 1873, Miller and Lux owned 161,000 acres of grazing land in Merced County alone, only part of their empire stretching from Oregon to Nevada and southern California. Since the Miller and Lux holdings monopolized cattle grazing lands on the west side, nearly all the population were employees of the corporation. Most of these employees were Hispanic, either descendants of first families in the region or emigrants from the coast valleys. The dominance of this one cultural group had the effect of prolonging the colorful era of the Mexican rancho lifestyle longer in western Merced County than in many parts of California. Settlement during this period was sparsely distributed, with most of the population concentrated at the Santa Rita headquarters (Graham 1957).

Transportation and commerce between the coast, Los Angeles, and the mines in the 1850s and early 1860s was carried north and south via the Stockton-Visalia Road, and east-west via a system of ferries and low-water crossings. A Post Road, or toll road, had been established from Monterey to the Tuolumne mines via Pacheco Pass as early as the end of 1850. The same route was graded and widened for Charles McLaughlin's stage line in 1856, and by 1858 the route listed five stations between Gilroy and Firebaugh Ferry, passing south of the study area [Milliken various dates (a): Pacheco Pass].

The Stockton-Visalia freight road may have passed adjacent to or within the study area during dry periods, when its route shifted to the east from the base of the western foothills. Teams of four or five oxen were used in hauling loads along the freight road, often spread out for miles, with as many as 40 outfits sharing a water hole at the end of the day's drive. The west side freight road was much preferred over any kind of travel to the east of the San Joaquin River, as the east side was barren of feed and the roadways excessively sandy and unsuitable for hauling heavy loads. It is consistently reported that the San Luis Camp Adobe, located within the study area on Wolfsen Road, was once an important low-water station on the Stockton-Visalia Road (Hoover, Rensch, and Rensch 1966:202; Clark 1973:6).

In addition to the very early ferries mentioned on the San Joaquin at Hill's Ferry, just north of the study area, and at Firebaugh to the south (Hoffman 1873; see also Maps 2 and 14), a third ferry town sprang up at Dover, approximately four miles north of the San Luis Refuge boundary. Dover was laid out in August 1868, and struggled with problems of summer season low water during the critical harvest period, finally passing from

mention by 1872, although it does appear on Hoffman's map of 1873 (Map 14) (Outcalt 1925:195-211). Its location as a ferry landing may have been chosen because of its long historic tradition as a low-water crossing; old-timers related stories of sometimes seeing "a string of Indians a mile long one behind the other crossing the river on the way to the mountains" at that spot [Milliken various dates (a): Dover].

In spite of traffic passing to the immediate north, south, and west of the study area, the specific lands of the study area attracted few settlers. Miller and Lux had locked up the area, in a manner of speaking, and the extensive swamp land attracted no permanent residents other than range cattle. One of Ralph Milliken's pioneer informants, Mr. Noble, related that, "There were very few settlers in the Los Banos country. There were camps out there in the tules. They were summer camps of the Mexican people. They came to camp and fish and hunt" [Milliken various dates (a): San Joaquin Valley Settled].

Early government surveyors setting the boundaries of Rancho Orestimba recorded a trail in what is now the northwestern portion of Kesterson Refuge, close to the present check station (U.S. Surveyor General 1860); and an adobe house was shown about two miles west of the present Kesterson boundary in 1861. Additional activity in 1861 may have been associated with the "Road to Mr. Harmer's House" in Section 1, Township 8 South, Range 9 East, but no occupied houses or cultivated fields are shown within the study area (U.S. Surveyor General 1861). The lands that comprise Merced Wildlife Refuge were in those early years simply described as "Tule Swamp" (U.S. Surveyor General 1862).

By 1870, however, another "small house" was recorded in section 32, close to what now comprises the boundary between Kesterson Refuge and Fremont Ford State Park, while just to the south the Hill's Ferry Road traversed the northern half of the present refuge (U.S. Surveyor General 1870).

The attraction of the rangeland interspersed among the sloughs and marshes was undisputed. Another Milliken informant recalled that the area was intensely productive: "The finest filaree [an introduced plant] and clover one ever saw grew all over the plains. It would go a ton and a half to the acre, and there was a good demand for it, baling it and selling to the different stations" (Bibby 1923).

In any normal year, California was ideal cattle country, with unending miles of green grass carpeting the hills with the annual winter rains. When the rains ceased each April, cattle found an abundance of nutritious pasture in the dry alfalaria ("filaree") and burr clover that covered the ranges. Beginning in 1862, however, a series of climatic misfortunes paved the way for a major revolution in the dominant economy of the state. Prolonged rains began in December 1861, causing floods that paralyzed business and travel and drowned thousands of head of cattle, destroying possibly a fourth of the state's taxable wealth. The Central Valley became an inland sea with runoff from the coast ranges and Sierra Nevada. The loss of cattle throughout the state ran to about 200,000. When the rains finally ceased, they had produced a rich and luxuriant pasturage that fattened cattle and increased stock in an already overburdened market.

The great flood, however, was followed by two years of unparalleled drought. Cattle prices dropped lower and lower as the drought continued, and enterprises such as wealthy stockmen Miller and Lux purchased starved cattle from the ranches at \$8 per head. A few months later, cattle were routinely slaughtered for the trifling value of their horns and hides. Only those who had the means and mobility to drive their cattle to the Sierra Nevada, or in the case of Miller and Lux, to Oregon, were spared nearly absolute losses. In addition to losses caused directly by the drought, thousands of weakened cattle fell easy prey to mountain lions, bears, and coyotes. When the drought ended, the cattle business had passed from dominance in California's economy (Cleland 1964:102-137).

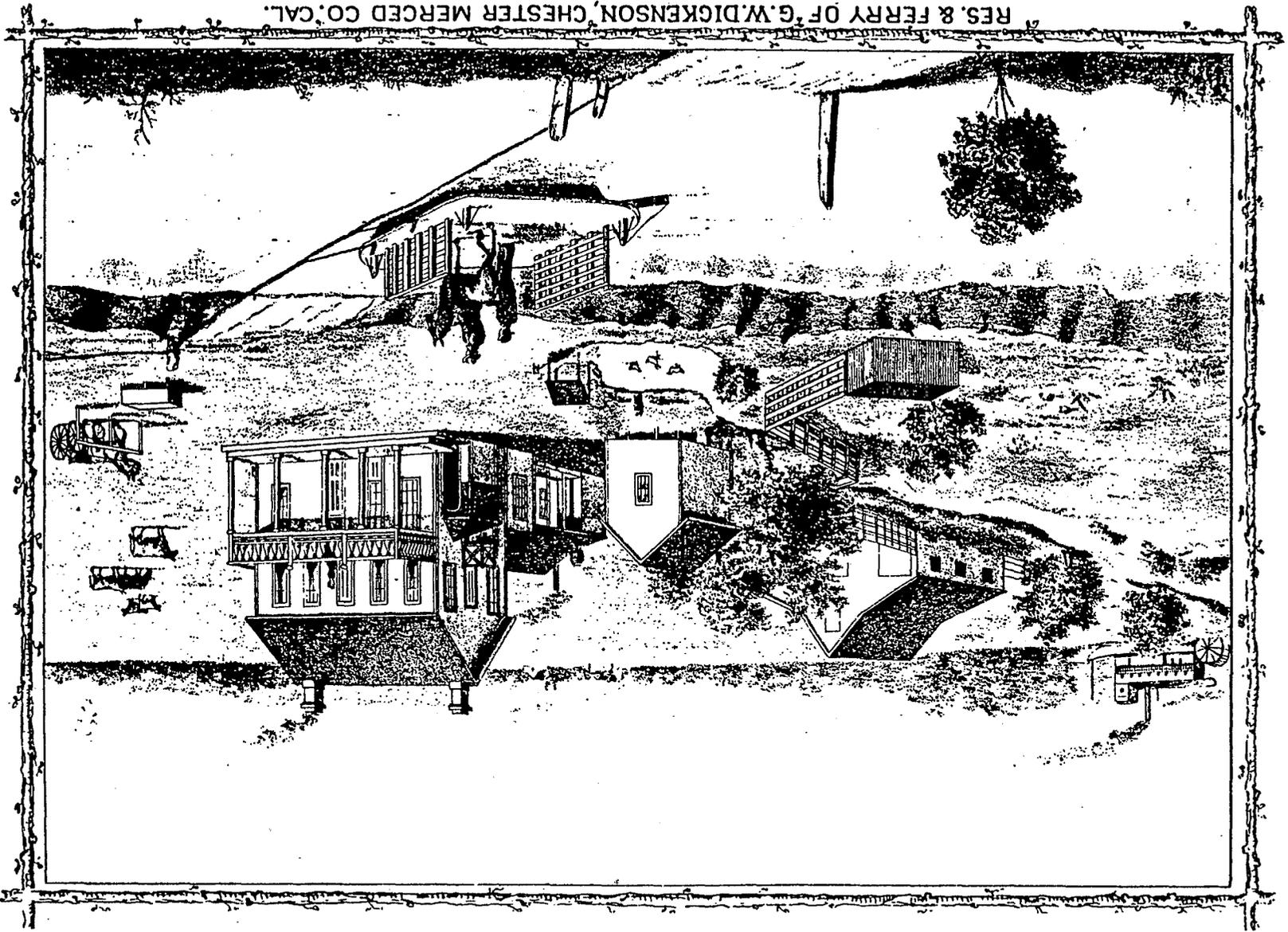
The late 1860s saw a second wave of settlement in the county, with wheat farmers challenging the domain of the cattlemen. The east side of the valley successfully made the change from stockraising to wheat farming, altering the population distribution and composition. With the construction of rail service on the east side in 1872, grain farmers found competitive market access. West side farmers, however, found the rainfall undependable and rail transportation non-existent. As a result, they were dependent on their landlord Henry Miller for feed, seed, and marketing. Miller and Lux remained in control of west side land use and consequently controlled the west side economy.

Stories of both Miller's beneficence and his hardness abound in the legends collected about this most famous personality of the West Side. His policy of backing any farmer who wanted to stick the harsh conditions out was explained by the simple statement, "The people gets a living and I gets the feed." He required not only hay and grain for the cattle, but fed sheep on the stubble. He would let a settler on his lands take any number of calves from his herd, provided the settler raised them through weaning, and frequently had his San Luis Camp vaqueros bring a steer to a settlers place, send out word to the surrounding settlers, and butcher the steer to distribute the meat. He took care of 42 renters in this manner, feeding them and providing supplies (and deepening their debt) through the lean years to encourage permanent settlement, while closing on those who drank, wasted supplies, treated their wives poorly, or in general seemed not to work to capacity [Milliken various dates (a): Settlers, Renters].

Conflict between the "Sky Farming" wheat farmers and cattlemen in the low foothills just to the west of the study area was continuous until fencing laws were enforced. Traditionally, and by law, cattlemen were free to range their stock over unfenced plains, with the burden on the farmer to protect his crop from cattle damage. Farmer agitation resulted in the passage of the "No-Fence Law" in 1872, forcing the stockraiser to confine his cattle. This was actually the repeal of the Trespass Act of 1850, which had required farmers to protect their planted fields from free-ranging cattle with the construction of a fence 4 1/2 feet high of stone, or 5 1/2 feet high of lumber or rails, or a 5 foot high hedge if they wished to receive payment for damage done to crops by range cattle. The repeal of the act required that the stockman fence his stock in, rather than the farmer fence them out. One reaction to the No-Fence Law was a tremendous increase in barbed wire patents in the 1870s, which helped bring the cost of fencing down (Clar 1959:82; Carstenson 1962:265; Brown and Snow 1944). The "No-Fence Act" effectively forced the cattleman from the fertile alluvial plains to the poorly drained valley trough that describes the study area, and to the mountainous ranges on both sides of the valley floor (Graham 1957).

Henry Miller's reaction to the fencing requirement was immediate. He special ordered milled lumber 8 inches wide, and 1 1/4 inch thick, specifying that it be strong enough to hold his bulls. The lumber was shipped up the San Joaquin River to Dickenson Ferry (see Figure 18), a landing within the study area on San Luis Wildlife Refuge, and hauled from that point out to the plains by ox teams. Miller's ranchhands then proceeded to erect a board fence five feet high, not only encompassing the Santa Rita, but holdings as far as the McPike Ranch at Hill's Ferry down to Firebaugh, undoubtedly crossing both the present area of Kesterson and San Luis Refuges. The intention was to control his cattle, holding them close to the river during the dry months, and protecting them on higher ground during the winter. However, Miller did not bother to weed out any other branded or unbranded cattle that found themselves within the fence; this was done for him by an angry "Livermore Crowd." The fencing also provoked those who had free access to the marshes for hunting. The fences were regularly chopped for firewood at camping areas until Miller relented and allowed hunting access to the holdings [Milliken various dates (a): Board Fence].

Figure 18. The Town of Chester and the Dickenson Ferry ca. 1881. From: Elliott and Moore (1881).



RES. & FERRY OF G. W. DICKENSON, CHESTER MERCED CO. CAL.

C-075217

Anecdotes about Miller's management of the Santa Rita and adjoining ranches abound in interviews taken by Ralph Milliken from retired employees and their families of the Santa Rita, Los Banos Canal Farm, and San Luis Camp in the 1920s-1940s. Most prevalent are remarks about Miller's hatred of waste, and his canniness both in increasing his property and in his constant attention to future needs, guarding against poor years that were sure to follow those with good rains and lush growth. Many West Siders recall the large stacks of hay stockpiled throughout the Santa Rita holdings, but particularly at San Luis Field within the present San Luis Refuge, where the hay always grew best.

Of his way of doing business and watching the profits, Mr. Dugain told of Miller's lease arrangements with the owners of the vast Pacheco holdings of San Luis Gonzaga and San Felipe in 1872. Miller sent five of his most careful herders to count the cattle, sheep and hogs under Dugain's supervision, coming up with an exact tally after six weeks, but noting every odd brand or stray. After closing the deal and settling up for the count, Miller released the entire crew from the Canal Farm to get up there and pull in the strays noted by Dugain. The final count was 4,000 stray sheep in addition to those tallied for the lease, 600 additional stray hogs, and 3,000 additional head of cattle plus 400 veal calves. Dugain refused Miller's offer of a nice house on the ranch as a reward, but accepted a raise and time away to prove up his own homestead nearby. With the Pacheco holdings also his, Miller's men could drive cattle from Santa Rita to the railhead at Gilroy, stopping each night at his own holdings: Canal Farm, San Luis Gonzaga, Mountain House, Bell Station, San Felipe, then Gilroy (Bibby 1927:170; Dugain 1933:212). Far-reaching as his holdings were, and awesome his control over his employees, Miller still had to contend with the unpredictable moments of stockraising, as the following message to him from San Luis Rancho (Gonzaga) on March 21, 1869 makes apparent:

Mr. Miller:

Dear Sir: I drop you this line to let you no how things are a bout three o clock this morning I had one hell of a stampeade when daylight came I was in front of Chs Wood sheep camp I had five men on gard all the men this side of hell could not of stoped them I am six head short I had good Lucke the whole trip untill this morning

Yours in haiste

E.M. Crocker

[Source: Milliken various dates (a): Miller and Lux Records]

During this period the adobe at San Luis Camp, situated just within the study area, served as a ranch station on the Miller and Lux Santa Rita Ranch. Here, a bedroom was kept ready for Miller every night of the year, as one was at each of his San Joaquin Valley stations for his personal accommodation during constant inspections. Another part of the San Luis Camp adobe housed the San Luis Camp foreman and his family, and a dining hall and kitchen for the ranch hands who camped out on the grounds.

Miller's employees also provided Ralph Milliken with excellent and in many cases first-hand information about the fabled and commonly understood origins of the San Luis Camp Adobe within the study area. In addition, comments were collected about an unrecorded adobe site on Salt Slough, apparently within the study area, and historic use of Dickenson Ferry Road and the ferry crossing at Chester, both within the study area, as well as land use within the Kesterson Refuge study area during the Early American period.

Excerpts from the comments of Milliken's pioneer informants follow below. Explanatory comments regarding locations and antiquated place names have been provided by Mrs. Robey Kuhn of the Milliken Museum, Los Banos.

#### Oral Histories Regarding the Use and Appearance of San Luis Camp

[At San Luis Camp] was an adobe house where Miller and Lux kept one man, where the buckaroos would stop when in that part of the country (Bibby 1927:170).

Mustangs in 1874 used to run right below San Luis Camp . . . good horses . . . dangerous to run them on the plain because of gopher holes (Bagley 1942:79).

There were four adobes on the plains when the Webbs came in 1869: one at San Luis Camp, one at Centinela [west of the study area], one at San Luis Gonzaga [west of the study area], and one this side of where the Salt Slough warehouse was built [placing it in Section 9 of T8S, R10E, within the study area] (Webb 1935:79).

They told me old Livermore put that [San Luis Camp Adobe] there. That is what my uncle told me. Others say Pacheco built it for his vaqueros to stop in on their way to the mines in the early days with cattle (Hough 1933).

There was a regular Mexican town at San Luis Camp. At that time the Mexicans used to leave their families in the little towns and go to work on the big ranches (Haun 1931).

Hildreth and Dumphey owned the Santa Rita and had a bridge across Fish Slough at the old adobe house at San Luis [Camp]. [Fish Slough is an older name for Middle Slough]. There were no bridges across the San Joaquin. This 'dobe house was the only one along the route from Hills Ferry to Santa Rita except for two or three houses at Dover [this places the time period between 1868 and 1872]. A Frenchman used to live at the adobe house. Mr. MacDougall knew him well. He had two bands of sheep. His shepherders murdered him at the 'dobe house and took his sheep. There was an old frame barn across the road to the south of the adobe (McDermott 1924).

Went to the San Luis Ranch [Camp] on Fish Slough with Jim McDermott, and down to the old Salt Slough Warehouse--only broken shingles left, and pieces of board. Several autos and tents, duck hunter's headquarters [at San

Luis Camp]. Went into adobe: immense fireplace on west end. Ceiling open, only rafters and braces, can see roof. One window on the south end, one door on north. One door on east that leads into a long wooden addition. Jim says there used to be a silver dollar nailed to the door sill for years and years—not there now. One small room is used for a kitchen. The building is now headquarters for the Island Gun Club. Attendant says lots of stories of money buried in chimney and yard. People from L.A. came to search with a diving needle, but never found treasure. [Stories related of stage robbers burying treasure there, and that the murdered Frenchman had buried money there. Date of murder 1867] (Milliken comments in McDermott 1924)

Camped at Salt Slough, stayed at San Luis [Camp] house. Jim Haggarty was the foreman . . . Short time later people came to the house and dug a can out of the chimney with \$1800 in it. Indian mounds were near here, and the remains of old irrigation ditches "that evidently belonged to the Indians" (Mrs. Bascomb Newton 1929).

Mr. Miles was raising horses down at the San Joaquin River about 1852-54, very possibly he built the adobe house at San Luis Camp. He later moved up into the hills (Mills 1930).

Possibly Indians built the San Luis Camp adobe. Vasquez' mother and [Mrs. Moreno's] mother were half sisters (Mrs. Moreno 1927).

There used to be a very old buckaroo when [Smith] was living at San Luis Camp who always said the old adobe was a hangout of Joaquin Murietta (C.W. Smith 1928).

A man by the name of Pico settled first at San Luis Camp [Milliken adds "Rafael Pico"]. He sold out to Miller and Lux. Then he went to Centinela, and built the two story adobe there. These were Spanish Basques, and were sheep men (Rojas 1942).

Mrs. Marie Indart came to Centinela in 1863, and died in 1865. Her husband Juan Indart was partners with Juan Etchevery, Salvador Isagar and Seguil Murietta; all were Basques except Murietta. The adobe at Centinela was one story, old, with one window and no floor. They built a large two story adobe out of it. The San Luis Camp adobe was there in 1863 when the Indarts came (King 1944).

I remember seeing government survey posts all around San Luis Camp. The adobe was built by the same people who built the Centinela adobe. Tony Aguila told [him] it was four Basques, they built the San Luis adobe the same year as Centinela. It wasn't built before 1864. I was there in 1874 fishing, and no one was there. It was practically a new building, a brick walk around the building, and woodwork sawed at the old mill at Gilroy (Knight 1944).

When the Webbs came in 1869, the only fence in the country was at San Luis Camp; a section or more was enclosed. Calves to be branded were turned in there. This wasn't connected to the new [1872] fence (Webb 1935).

Miller kept the finest steers down on San Luis Island; there was better feed there (Webb 1938).

To Charles Lux, San Francisco. January 19 1869:

the way the country is plowed up and settling we are compelt to fenz as soon as possible from San Luis Camp down.

Yours Truly

Henry Miller

[Milliken various dates (b): Miller and Lux Records]

To John McPike, March 27, 1869:

I suppose you are aware your stock is on ourer Land and at we will commence to fenz from the San Luis Camp down connecting with your line fenz et will be necessary for you to find pasturage for them.

Yours Truly

Henry Miller

[Milliken various dates (b): Miller and Lux Records]

Three adobe houses once stood along the River. They were nothing more than Mexican rendezvous. One was back of Holland Farm on the San Luis. One old adobe was at the San Luis Camp. There once was an old one near Salt Slough, now just crumbled. The San Luis Camp Adobe was practically a new building in 1874. But the Fatjo [San Luis Gonzaga] ranch building was really old, with rafters tied with rawhide (Knight 1926).

Two of Milliken's informants, both sons of Oscar E. Smith, had lived at the San Luis Camp adobe in the 1870s. Their recollections contain vivid images of San Luis Camp buildings and surroundings:

There was no bridge over Salt Slough in the 1870s when the Smiths lived at Salt Slough. The ford was a few hundred feet south of the San Luis [Camp] house, where the banks flattened out. After crossing, the road followed east of the slough, and cut to the ford where Dickenson Ferry was later. There was no ferry when the Smiths lived at San Luis Camp in the 1870s. The old house was much as today. Miller's bedroom was the adobe part, where a big fire was made when he was there. In the wooden part adjoining, vaqueros stayed. The east end of the building was occupied by the Smiths. The same old barn was there, had a stairway to sleeping loft . . . also an old hen house; those comprised the buildings at San Luis Camp in the old days. Mr. Smith fed the cats at the Salt Slough Warehouse once a week. Cats were kept to

keep mice out of grain stored there. As many as five outfits from Canal Farm would stay at San Luis Camp when unloading at the warehouse. Miller stored wild hay on Santa Rita . . . Smith would watch through goggles to see if the cattle broke fences around the haystacks. In high water had to row to stacks to repair fence. The Island [San Luis Island] was thick with cattle in the old days.

An old Mexican named Joaquin and his wife had been in charge of San Luis [Camp] for years when Smith came to San Luis Camp. Mr. and Mrs. Smith married in 1874, ran McPike Ranch [the northern ranch, to Hill's Ferry] in 1875, moved to San Luis Ranch [Camp] in Spring of 1876. At that time there was the adobe part with a fireplace. Next room to the east was wooden part, where buckaroos slept. Next room to the east was for Smiths. There was a large kitchen where everyone ate, and a porch on the north side. An old Spaniard named Joaquin was at the ranch when they come, said the house was built by relatives of Vasquez, and Vasquez had once lived there before becoming an outlaw. The adobe was "old-looking" when the Smiths moved in.

Mrs. Smith once ran a Chinaman off with a shotgun; evidently he had come up the slough from Hill's Ferry [approximately 18 miles northwest of San Luis Camp], where a number of them lived at that time, to fish. There were great quantities of perch in the slough, also shiners, chub, suckers and salmon in season. Some of the existing eucalyptus were planted by Smith [the several preceding paragraphs from interviews with C.W. Smith (1930)].

That [San Luis Camp Adobe] was an old house when we came in 1868. There was also an old adobe house at the Salt Slough Warehouse. The old wagon road [possibly refers to the low-water freight road] ran past the Clark Adobe up near Newman, then past the Salt Slough adobe, then past San Luis Camp Adobe (Mr. and Mrs. O.E. Smith 1936).

To summarize the above, regarding the origins and uses of San Luis Camp Adobe, it is clear only that the building and its siting occupy an important place in the heritage of the West Side. Suggestions of possible explanations to account for the conflicting maze of first-hand information about the adobe will be considered in Chapter 6.

The San Luis Camp adobe today has lost its eastern wooden addition and associated outbuildings (Smith 1930; McDermott 1924), but retains its large end fireplace. A window has been added to the north wall, and the eastern door has been modified into a window. Overall exterior dimensions are 17 feet by 20 feet 9 inches. The sun dried adobe bricks measure 7.5 x 15 x 2.5 inches, and are laid one deep in a running band pattern of all headers. The north and south walls are buttressed on the interior to within a few inches of the existing full wall height. Much of the building, particularly the foundation, southwest corner, and chimney, has been repaired with modern soft red fired brick and concrete.

The Fatjo adobe mentioned by Knight (1926) has been partially reconstructed from intact wall segments at the San Luis Gonzaga ranch of Paula Fatjo, since the construction of the San Luis Reservoir inundated its original site. This adobe and the adobe at San Luis Camp were believed by many pioneers and local historians to have been built at the same time, during the 1840s. The Fatjo (San Luis Gonzaga) adobe appears to have been considerably larger than the San Luis Camp adobe, as numerous photographs and a small model in the Milliken Museum attest (Robey Kuhn, personal communication 1984). The end walls, which survived their spectacular 20-mile move intact, and are preserved in excellent condition, are constructed of dried adobe brick averaging 11 x 20 x 3.75

inches, laid two deep in a running band pattern of all stretchers (Paula Fatjo, personal communication 1984). Other pioneer informants believed that the San Luis Camp adobe was constructed in the 1860s or 1870s, probably by Basque sheepmen (Rojas 1942; King 1944; Knight 1944). Although Basque-built adobes may exist in the region, none were located for examination during project research.

#### Oral Histories Regarding Use of Dickenson Ferry (now Wolfsen) Road

Dickenson Ferry Road, which crosses the present San Luis Refuge, and the associated settlement at Chester on the east bank of the San Joaquin River also came into regular use during the Early American period tenure of Henry Miller according to Milliken's pioneer informants:

The main road from the west side to Merced in the early days passed the Smith's Place in Badger Flat [the northwest side of Los Banos], turned and passed the Dick Wilson place, north to the school house, and east to San Luis Camp. There was no bridge over Salt Slough in the 1870s when the Smiths lived at Salt Slough. The ford was a few hundred feet south of the San Luis house, where the banks flattened out. After crossing, the road followed east of the slough, cut to ford where Dickenson Ferry was later. There was no ferry when the Smiths lived at San Luis Camp [1876-78]. There was a pretty good road east of the river to Merced; on the south side the road was underwater when the river was high [through San Luis Refuge]. . . . During the June freshet of 1876 the water came up to the porch [of the San Luis Camp adobe]; we got into a boat from the porch (C.W. Smith 1930).

The best spot for crossing the river was marked by plantings of tall trees . . . cottonwoods and willows. Sloughs and rivers both were marked by tall trees, that could be seen from some distance. Not just the rivers, but the sloughs were dangerous; you had to stay off if you didn't know the roads (William Bedesen, personal communication 1984).

The finest filaree and clover one ever saw grew all over the plains. . . . Good years brought settlers, poor years sent them away. White's Bridge used a lot of hay, also Dickenson's Ferry and the San Luis Ranch [purchased baled hay from settlers]. . . . Dickenson's Ferry was a road house and ferry . . . Steamers made six or seven trips a season [up the San Joaquin River]. In May the mountain snows melted, and spring freshets began. The River would be a mile wide, as little was used for irrigation. Steamers came up through July, then stopped at Grayson [Stanislaus County] afterwards (Bibby 1923:11-12).

As late as the '90s Miller and Lux had loads of supplies brought from San Francisco to the Salt Slough Warehouse. They sent big steamers, probably to bring the railroad to lower its rates. The river silted up, and a big steamer got caught between the mouth of Salt Slough and Dickenson Ferry; it was a month before the water rose enough to float it off. That ended big steamer traffic on Salt Slough (Burch 1930:2).

Henry and Elizabeth Hoffman, friends of Henry Miller's, owned the Dickenson Ferry landing at Chester in 1875, after first operating the ferries at Firebaugh and Center Point. They left Chester to go to Dutch Corners, and from there to San Luis Gonzaga to run the hotel. After the Hoffmans left, the ferry was operated by Roberson (for whom Robey is named), then by Dickenson (Robey Kuhn, personal communication 1984). This sequence took place from ca. 1875 - 1880.

In 1881, George Winchester Dickenson, whose pioneering family had arrived in California in 1846, was written up as the proprietor of operations at Chester, or Dickenson's Ferry. In addition to a stockranch of 800 acres on the east bank of the San Joaquin River, he ran a hotel and post office for the surrounding country. The tri-weekly stage between Merced and Los Banos/Gilroy made a stop at Chester, crossing the river on a cable-drawn platform barge (Elliott and Moore 1881:139). In spite of the spirit of boosterism promoted by Elliott and Moore's County History, people who traveled regularly between Merced and Los Banos knew the harsh realities of highwater travel across what is now San Luis Refuge:

After they crossed the Dickenson Ferry the whole country was under water and all they could see was the tops of the fence posts and railings on the bridges they crossed. There was one vast expanse of water from Dickenson's Ferry to the San Luis Camp Adobe. The stage was one of those high wheeled affairs, but in some places the water was so deep that it came to the body of the stage and the travelers got their feet wet (Toscano 1931).

In times of high water the overflowed land was mostly between the San Luis Camp and the River. It was so high at times that no team could get across (Progner 1936).

On the Dickenson Ferry Road in times of high water if you got off the grade you were gone. Stakes were stuck along for guides. Men on horseback were kept at Dickenson Ferry and at San Luis Camp to pilot people through the high water. They would pilot people across the island. There were some forty bridges. The bridges were what you had to look out for. If you missed a bridge you were gone. Old man Henry Schaffer, sheep man for Miller and Lux, got drowned on this grade, also Mr. Thierrey. It was a dangerous road (Place 1935).

To Charles Lux, San Francisco, June 14 1869:

We hate last week a Man drowend at San Luis Slough.

Yours

Henry Miller

[Milliken various dates (b): Miller and Lux Records]

[According to Robey Kuhn (personal communication 1984) San Luis Slough and Salt Slough are interchangeable names.]

No matter how much the country was flooded, the land never got mirey, and people driving under water never mired down (Swett 1930).

The picture drawn by those who lived and worked in the study area during the early American period of development depicts a land of non-intensive use and little settlement. Activity was concentrated at San Luis Camp, in the southwestern corner of the San Luis Refuge study area; at Dickenson Ferry, in the northeastern portion of the San Luis Refuge; along Dickenson Ferry Road, which traverses San Luis Refuge; at fishing and hunting camps along Salt Slough; and at the Salt Slough Warehouse area close to the northeastern boundary of Kesterson Refuge.

Such lack of intensive farming and settlement activity was typical of the west side in general. Cultivation was difficult on the west side of the valley plain because of the lack of rainfall imposed by the rain shadow of the coast range. Miller and Lux owned water rights to the San Joaquin River, and by 1871 had constructed the San Joaquin and Kings River Canal up the west side of the valley to Los Banos Creek. Arable acreage on the west side increased by 153,000 acres with the construction of the ditch, enabling Miller and Lux to increase their developed pasturage, wealth, and power. The canal provided water in excess of immediate needs, and was diverted onto the alkali plains to the great benefit of later settlers, such as the Italians and Portuguese who settled Badger Flat, southwest of the study area.

From about 1867, the population began to move southward to the west side of Merced County from the Stockton, Modesto, Tracy, and Newman wheat centers. The flow of agricultural settlement was diverted onto the plains by the mountainous topography of the coast range, while the holdings of Miller and Lux, including the study area, kept settlers out of the bottomland. Agricultural parcels were rented from large landowners on the plains. The Southern Pacific Railroad in 1885 opened west side lands to settlement on which it had previously reserved route options, but much of that land had already been claimed by squatters. Only one-fourth of the county's population lived on the west side by 1890, a phenomenon related directly to lack of available wheat farming land, rainfall less than the minimum required for dry farming, and lack of transportation. Even though public lands were available west of the San Joaquin and Kings River Canal, farmers on those lands could receive no benefit from the canal as the public lands lay uphill from the canal. The wheat grown on the west side was used almost exclusively for cattle feed, and the farmers who grew it were almost totally subsidized by Miller and Lux. Between 1870 and 1890, lands above the canal were improved and abandoned on an average of three times per parcel, in contrast to the long tenure on lands below the canal. Descendants of original owners are common today on farms east of the canal, while Los Banos and more rugged western areas do not exhibit such tenure (Graham 1957).

The opening of railroad lands to increased population on the flats west of the study area in the 1880s had only one direct effect on the study area, which was construction of a bridge across the San Joaquin River at Dickenson Ferry. In 1884, the iron Pratt through truss design with its wooden deck was noted as being the first bridge in the county to cross the San Joaquin River (Milliken Museum Collection: Dickenson Ferry Bridge Photo, 1884). Only three iron truss bridges were ever erected in the County, the most famous of them at Hill's Ferry, where the structure turned on a trestle to allow steamer passage on the river (William Bedesen, personal communication 1984). The lands of the study area, always appreciated for their abundant waterfowl, game, and fish, continued to be a popular hunting ground as the West Side population grew. Although hunting leases were not formalized during Henry Miller's lifetime, he did permit occasional hunting by invitation on the corporation's study area lands (Robert Kuhn, personal communication 1984).

In addition to the Hispanic settlers associated with Miller and Lux cattle stations, noted among Milliken's pioneer informants, other ethnic groups are known to have settled the West Side during this period. These groups undoubtedly had some contact with the study area, although specific mentions have been lacking in the archival data (see Chapter 6).

Perhaps the earliest of these were the Amerikanuak, the name given by Old World Basques to those who left to settle in the Americas. Their presence was felt early in the Hispanic period, when San Blas, Baja California, was the most important sea base in the North Pacific. Between 1769 and 1797, when most of the Spanish missions were established in Alta California, Basques were the most prominent and numerous ethnic element among the many maritime officials, naval engineers, and shipbuilders of San Blas. In addition, 26 of the Franciscan friars who labored at California's missions until secularization were Basques. On annexation by the United States, and the massive immigrations to the gold fields, French and Spanish Basques joined Chilean and Sonoran Basques to form one of the most sizeable ethnic groups in the mines. Many established hotel or tavern businesses at the major ferry crossings and transportation routes to the mines.

Early in the 1850s, many of these Gold Rush Basques, particularly those from Argentina, entered the California livestock business. The catastrophic floods and droughts of the 1860s that brought ruin to the cattle business also opened up grazing lands and public lands to sheep grazing. The neglected Spanish herds had been improved, and the Civil War provided a U.S. market for wool textiles. The extension of the transcontinental railroad between the woolgrazing west and textile manufacturers of the east greatly strengthened the western grazing industry. Contractual arrangements were made between Basque shepherders and ranch owners, almost all of which shifted into independent operations when the shepherders' capitol grew.

In the San Joaquin Valley, the largest Basque-controlled ranching corporation was the Centinela Ranch, owned by Basque Juan Indart, Juan Etchevery, Salvador Isagar, and a Spaniard, Sequi Murietta. They purchased the Centinela from another Basque, Faustino Larrondo, in 1862. It was this partnership that many of Milliken's pioneer informants recalled lived in or built the San Luis Camp adobe, in the San Luis Refuge study area. The Centinela partnership extended to ownership of grazing parcels elsewhere and urban property in the motherlode town of Murpheys. By 1880, Merced County's sheep census totaled 167,749 head, and during the same period Miller and Lux was noted as a major employer of Basques, with a Basque named Oyharcabal as the sheep foreman for their entire operation. This dominance of the Basques in shepherding lasted into the 1890s, when the price of Central Valley agricultural lands forced shepherders out in favor of high return crops, and the leased Sierra rangelands were incorporated into forest preserves and parks (Douglass and Bilbao 1975:177-249).

The Portuguese were another ethnic group whose roots in the Americas dated back to the earliest Spanish coastal explorations, but whose impact on the West Side was most felt during the Early American period. By 1850, some 109 Portuguese had settled in California, a figure skewed to the low side by the practice of Hispanic or English modifications of Portuguese surnames. The first Portuguese in the far west were fishermen and whalers from the Azore Islands, who arrived during the Gold Rush and stayed to dominate short station whaling operations that followed. Whaling operations continued into the 1890s, but were supplanted by tuna and other fleet fishing operations; these also were dominated by the Portuguese.

The majority of those who came to California during the 19th century, however, came as farmers, not as fishermen. Portuguese farmers moved into the San Joaquin Valley from the bay and delta regions in the 1880s. Dairy workers came into California

after the turn of the century, eventually buying land and herds of their own; today the Portuguese dominate the dairy industry in the San Joaquin Valley (Bohme 1956:233-252).

The only documented connection between the Portuguese population of the West Side and the study area, in spite of the lengthy presence of this ethnic group, is in the important role of Alvaro Sousa in establishing the San Luis Refuge in the Modern period (discussed in a later section of this chapter).

While the Chinese were an important presence in California ethnic history, only one mention of a Chinese in the study area has been located, that incident being the Chinese fisherman run off Salt Slough by Mrs. O.E. Smith in the middle 1870s. The informant noted that a large number of Chinese were living at Hills Ferry, northwest of the study area, during the Early American period. The Chinese had been attracted to California during the Gold Rush, then came under contract to the Central Pacific Railroad after 1863. On completion of the transcontinental railroad, thousands of Chinese remained to labor in the fields, and to operate a huge fishing industry in the coastal counties. The wheat farms of the 1880s required their labor, as did many large scale construction projects throughout the state (Chinn 1969).

#### The Later American Period, Post - 1900

By the beginning of the twentieth century, conservation of public resources was a matter of increasing concern to federal and state agencies. This trend was soon reinforced by selective purchase of private lands containing natural resources, particularly in areas that had remained relatively undeveloped. While the vast Miller and Lux holdings were broken up and sold to large-scale ranchers or corporations, family operated agricultural or mixed farming activities increasingly gave way to corporate management of consolidated holdings. World War I reopened old mining ventures, while the petroleum needs of wartime and later automotive and other manufacturing industries brought exploration ventures to the underutilized and marginal rangelands.

Following the war, the California landscape again became the destination of a mobile touring and relocating public, attracted to the well-advertised climate and growing towns of the "land of opportunity." The growing population, with its increasing demands on water supplies and developable acreage, soon strained the capacity of the land and its natural resources. The resulting federal moves to protect wild natural habitats and re-establish the balance between man and the land led to the creation of the three National Wildlife Refuges that make up the study area.

Most of the landscape changes that were to affect the study area took place during the Later American and Modern periods of development. During this time, the extensive lands of Miller and Lux were subdivided into smaller tracts. Some were to be developed for housing and commercial development, while others such as the swamp and overflow lands typical of the study area remained in non-intensive agricultural and stockraising uses until converted to wildlife management and conservation use.

#### Individuals and Groups Pertinent to the Study Area

Following the peak wheat growing period, beginning about 1890, the broader West Side landscape underwent a change from wide vistas of cattle country or wheat fields to smaller family-size farms, with neat farm houses dotting the countryside. Henry Miller encouraged the railroad to extend service to the west side in 1890, and began subdividing agricultural land close to the San Joaquin-Kings River Canal west of the study area. The

decision to subdivide was partially the result of the settlement of Lux's estate on his death in 1887, and partially due to the necessity to expand use of the canal or be forced to declare it a public utility with associated federal regulation (Graham 1957).

Three clusters of population grew on the west side during the period 1890-1926; Dos Palos, Gustine, and Los Banos all acted as service centers for the rural population of the west side. Dos Palos started as a colony promoted by Bernard Marks, a professional colonizer, but its poor location on the heavily alkali soils of the plain inhibited any chance for success. Henry Miller took over the colony and moved it to his canal overflow lands, where he controlled water rights, and the colony then thrived (Graham 1957).

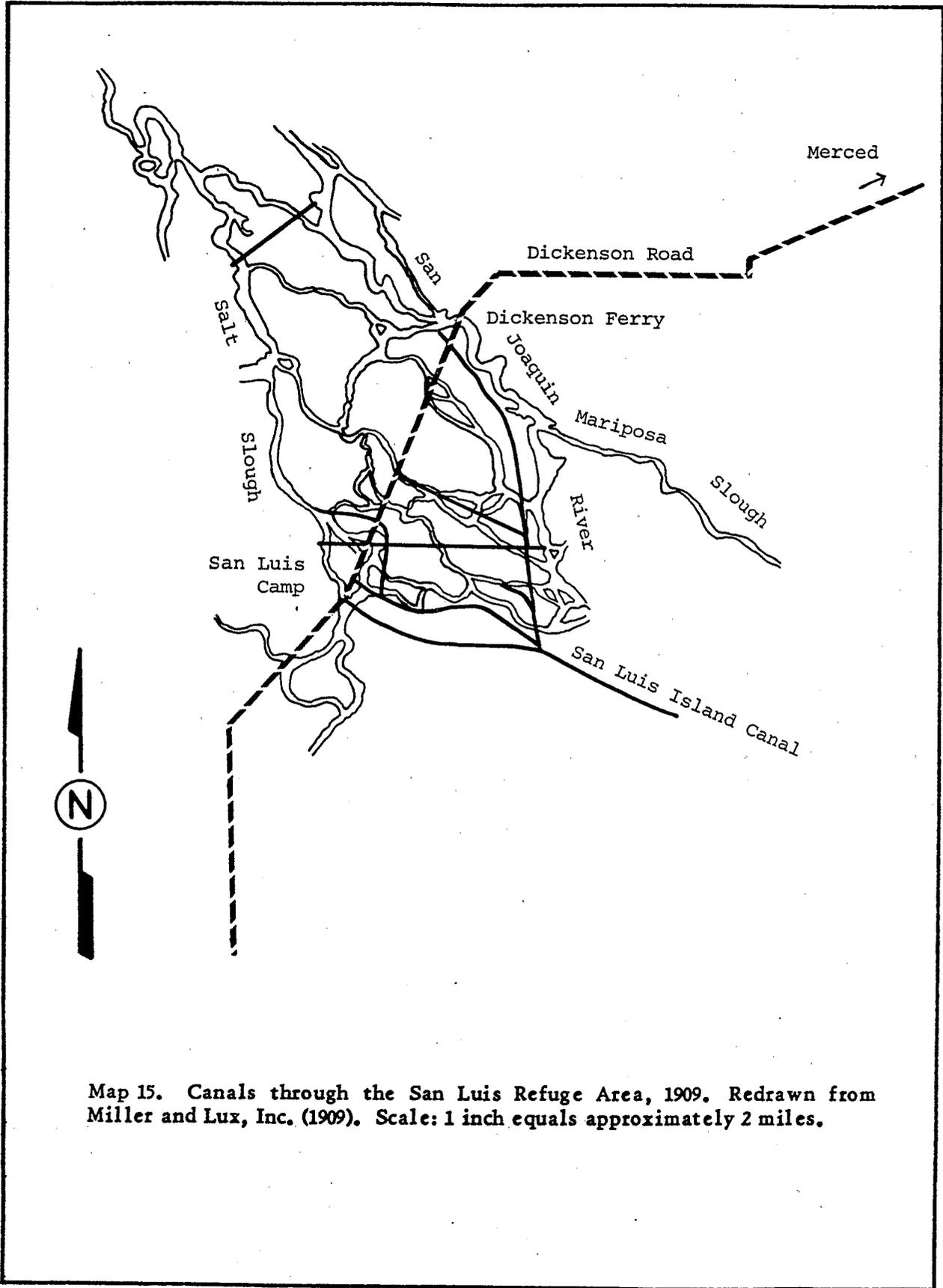
From 1900 to 1930 Miller's company subdivided parcels in increasingly smaller plots, building up the population on west side lands surrounding the marshy wildlands of the study area. Many of the purchasers were former colonists, and a large number were Portuguese dairymen who initiated the now famous industry of the area. Gustine, which had been a successful dry farming area, was heavily settled at an early date, drawing a large population close to the lands of what would become Kesterson Refuge. The population continued to increase with subdivision of large holdings following railroad access. The most desirable lands were picked up by 1910 by the predominantly Italian and Portuguese dairying and vegetable farming population; but again, the desirable agricultural lands lay outside the marshes of the study area (Graham 1957).

Improvements continued to be made on the lands of the future San Luis Refuge during this time, particularly on the 4.17 mile San Luis Island Canal system that drained and distributed water between Salt Slough and the San Joaquin River. This occurred most extensively southeast of Dickenson Ferry Road (Miller and Lux 1909; Barnes 1925). Map 15 illustrates the canal system over San Luis Island. Unrestricted selling of Miller and Lux Corporation holdings began in 1926, 10 years after Henry Miller's death (Graham 1957). Plate 33 shows Miller's holdings in the San Luis Island area in about 1926.

#### Federal Government Participation, 1900 - 1934

During the period between 1900 and 1934 the increasingly concentrated population of the West Side grew along the railroad towns and section line roads. This was also a period of greatly increasing concern over waterfowl management. The location of the study area on the Pacific Flyway had long been recognized and appreciated, as illustrated by the photo "Morning's Kill, 1910" (see Plate 45) in the Milliken Museum collection, showing a proud hunter with 133 lifeless white geese arranged about him (Sischo 1967) (see also Plate 35). However, the increasingly poor hunting seasons in the early years of the twentieth century were attributed correctly to one basic problem, compounded by overzealous hunting: in the wake of the plow, reclamation, and drought, the greater percentage of northern duck-producing land had been destroyed to make way for farm crops (Philpott 1962:19).

A series of federal and state laws were enacted to reverse that trend. In 1916, the Migratory Bird Treaty with Great Britain was enacted on behalf of Canada, which placed the U.S. under obligation to care for migratory birds while they were in this country. The Migratory Bird Treaty Act of 1918 followed, which set prescribed seasons for hunting and protection. Next came the Migratory Bird Conservation Act of 1929, which authorized a program of acquisition of land and water areas as inviolate sanctuaries for birds. The Migratory Bird Hunting Stamp Act of 1934 was passed in a state of emergency, following four years of the lowest waterfowl counts in history. Under this act, the sale of Duck Stamps provided funds for the purchase and maintenance of areas for migratory waterfowl refuges. In particular, the act directed that funds be used for the:



... administration, maintenance and development of other national wildlife refuges frequented by migratory game birds; and for such investigations on such refuges and elsewhere in regard to migratory waterfowl as might be deemed essential for the highest utilization of the refuges and for the protection and increase of these birds (Philpott 1962:21).

This legislation, coinciding as it did with the release of old Miller and Lux Swamp and Overflow Survey acquisitions into the marketplace, set the stage for eventual federal acquisition of lands within the study area.

### The Modern Period, 1935 - Present

The modern period of development, encompassing as it does the past 50 years, marks a distinction for historic preservation planning purposes. Unless specifically defined criteria as set forth in 36 CFR 800.10 are met, historic sites less than 50 years old are not eligible for the National Register of Historic Places. Therefore, it becomes the responsibility of the agency holding the public trust to recognize and manage those resources while they become eligible. For this reason, although there is overlap with the Later American Period in terms of continued activities and major trends, the most recent 50 years of historical development are discussed as a distinct period. The management of cultural resources within the study area since federal ownership in 1951 relates to this section on the modern period also, and is discussed in the section that follows.

#### Individuals and Groups Pertinent to the Study Area

The subdivision and sale of Miller and Lux lands that had begun in 1926 continued into the modern period, forming the corporate and family holdings that were to make up federal purchases of study area wildlife management lands. The lands that were to become Kesterson Refuge were sold intact in 1931 to the Quinto Ranch Company, which ran stockraising operations on this and other corporate holdings in the Gustine area. In 1936, the property was acquired by the H. Moffat Company, whose owner had been a Miller and Lux competitor in earlier years (Robert Kuhn, personal communication 1984).

Moffat built several structures on the property for the purpose of maintaining cattle. These included a windmill and watering area in Section 5, T8S, R10E, and a corral and windmill in Section 1, T8S, R9E. The corporation leased hunting rights to the Sprig Lake Duck Club until 1957. Their members built a vernacular structure with walls salvaged from old wood and glass-paneled phone booths for use as a club house in Section 36, T7S, R9E. The Moffat corporation sold surface rights to Irving Kesterson, Sr., in 1957, leasing back the grazing rights in 1958. Cattle were grazed on the property until it was acquired by the Bureau of Reclamation in 1968, to be managed by the U.S. Fish and Wildlife Service (Eggers 1980a:5-6).

The Moffat Company also acquired Miller and Lux lands that now form San Luis refuge in a complex series of transactions beginning in 1933 and continuing to 1945, mostly involving the complications of water rights held by the San Joaquin and Kings River Canal Co., the San Luis Canal Co., and Miller and Lux (Merced County Official Records 842:490, 620:171, 843:455, 408:1, 690:368, 694:1). In 1957, the same year during which other Moffat holdings were sold to Irving Kesterson, the property was sold to the Westover Company, reserving one-half interest in the oil, gas and mineral rights; any

other conditions or references in the deed that might pertain to cultural resources were obscured on the microfilmed record (Merced County Official Records 1314:397).

The Westover Company held the property until 1966, when it was purchased by the United States for the proposed San Luis Wildlife Refuge. During their ownership, the Westover Company ran cattle, constructed corrals, cultivated 265 acres in melons and other annual crops, constructed two small hunting cabins, and housed employees Mr. Ramon Figueroa and Mr. Villa and their families in several buildings located in the east half Section 6, T9S, R11E (Merced County Official Records 1735:652; Hottenstein 1966).

The Miller and Lux lands that now comprise Merced Wildlife Refuge were sold to J.A., J.A. Jr., and C. Roy Robinson in 1929 in part, with the remaining Swamp and Overflow Survey lands sold to the same buyers in 1934 (Merced County Official Records 932:281, 280:5). Beginning in June 1934, and continuing until resolved in Superior Court in February 1938, the Robinsons were among defendants in a suit involving water rights to Deadman Creek, which was decided against the Plaintiff, James J. Stevinson. Stevinson, an owner of large grazing tracts between Kesterson and Merced Refuges, claimed riparian rights to the San Joaquin River below the mouth of the Merced River, and as such claimed entitlement to any Merced River water abandoned by the Merced Irrigation District into Deadman Creek, whose waters cross portions of the present Merced Refuge (Merced County Official Records 1029:110).

The Robinson Brothers sold the acreage intact to the United States for establishment of a Wildlife Management Area in July, 1951. At that time there was a ranch headquarters on the property that included a four-room ranch house, barns, sheds, fences, and corrals (Crawford 1951:4).

During this period of change from land use dominated by stockraising, agriculture, and private hunting to conservation and protection, legislative steps to conserve and manage wildlife habitat continued. Duck Stamps first went on sale August 14, 1934; the proceeds were distributed one-third for federal land acquisition, one-third for refuge development, and the remaining one-third for refuge maintenance and operation (Sater 1962:9).

In 1939, habitat acquisition was set back by the sale of a significant portion of the legally held Miller and Lux water rights within the San Joaquin Valley to the United States Central Valley Project, with agreements from the Bureau of Reclamation to provide surplus water to property owners until 1953. This supply was reduced on operation of the Friant-Kern and Delta-Mendota canals, when impounded waters and greatly expanded agricultural land use shrank the available waterfowl areas. Depredation of commercial crops by migrating waterfowl deprived of suitable habitat increased dramatically through the 1940s, until a state of emergency was declared in 1952 (Philpott 1962:12).

As early as 1944, the U.S. Fish and Wildlife Service had begun to deal with the depredation problem in areas outside California by developing standing crops on lands already owned, and by acquiring new crop lands for the primary purpose of attracting and holding ducks during the critical damage period to rice (August, September, and early October). The results were so promising that a plan for conversion of suitable government-owned marshes for cereal crops and flooding others for marsh-feeders was developed. On the basis of depredation studies done by the U.S. Fish and Wildlife Service with the Bureau of Reclamation and several state water and conservation boards, the Grasslands Water Bill was signed in 1954, permitting delivery of available water to public organizations and agencies for waterfowl purposes (Philpott 1962:12).

Prior to this time, the Federal Migratory Bird Act was amended to allow the use of duck stamp income for the purchase of land for public shooting as well as inviolate refuges. In 1948, the Lea Act was passed by Congress, specifically permitting Federal purchase of land in California for waterfowl management including public shooting and agricultural crop protection (Philpott 1962:19). Through the Lea Act, the first purchase of refuge lands was carried out in 1951, that of Merced Wildlife Refuge (Crawford 1951). Purchase of San Luis Wildlife Refuge lands followed in 1966, after 20 years of attempted negotiations with landowners and local government, as provided under the Migratory Bird Act and its amendments (Snyder 1967). Kesterson Wildlife Refuge was established most recently, in 1969, under an interim waterfowl habitat management agreement on project lands of the United States Bureau of Reclamation (Snyder 1969).

### Merced National Wildlife Refuge

The following histories of each refuge are derived for the most part from Annual Narratives filed by the Refuge Manager each year, archived at the Los Banos office of U.S. Fish and Wildlife Service. A discussion of the acquisition process, derivation of name, and history of activities that have affected known or presumed cultural resources remaining from earlier periods of historic land use is followed by a summarized list of important personnel and shifts in management objectives through the years of refuge operations.

Merced National Wildlife Refuge, consisting of 2561.54 acres, was purchased from the Robinson Brothers in 1951, and established as a wildlife management area on July 1, 1951. The name Merced is derived from the river discovered by Second Lieutenant Gabriel Moraga of the Company of San Francisco while on an exploratory expedition to the Tulare Valley in 1806. On September 28th, Moraga's party encountered a "fine river," to which they returned on the following day, naming it El Rio del Nuestra Señora de la Merced, (the River of Our Lady of Mercy) (Cook 1960:249; Hoover, Rensch, and Rensch 1966:200). On the division of Mariposa County in 1855, the new county was named Merced after the river, and the county seat given the same name in 1872. The city of Merced is located approximately 10 miles northeast of Merced National Wildlife Refuge.

The first manager, Gene Crawford, spent most of the remaining first year of operations working with limited equipment and personnel to change a working stock-ranch into a wildlife refuge. Maintenance Supervisor Harry Wehr repaired an existing four room house on the refuge for his home, repaired other outbuildings, then cleared the ranch headquarters of weed growth, rubbish, fences and corrals. He also installed a 575 gallon gas tank. Later that same year all interior mangers and stables were removed from the "old barn," and the trash accumulations left by previous owners were hauled away. The stock corrals, chutes, and fencing were removed, with the fenceposts and lumber being salvaged for future use (see Plates 40 and 41).

An old Colusa bus was brought in and remodeled into an office (see Plate 37), while earthen dams, new concrete pipe, and control gates were built in both ends of Mariposa Slough. Hunting blinds were constructed by Nick Ermacoff and L.H. Cloyd of San Francisco. The original photographs of ranch buildings and associated structures during this period show a very large barn similar to many dairy barns throughout the West Side, and a small board and batten house, single story with 3 over 3 windows and a simple gable roof (see Plates 38 and 39). Photographs are not of sufficient scale to show clearly any particularly revealing architectural details. Crawford's interaction with the community included organizing a Lea Act Advisory Committee to coordinate wildlife management objectives with local concerns (Crawford 1951).

Development activity continued during 1952, which opened with record rains and the western half of the refuge under water. The Portland office sent Harold West and Robert Ducret to conduct a topographic survey of the area, while Crawford and his crew removed most of the structures remaining from previous use of the area (Crawford 1952). Excavations and substantial earthmoving included construction of an earthen dam in Mariposa Slough, where it flows northwest out of the refuge, leveling and landscaping of the headquarters courtyard, new ditches around all farming units, and an excavation by the barn (converted to a service building) of a mechanics' service pit. All of these activities were completed by April.

Also removed were two miles of interior fencing, with portions salvaged for use in the refuge boundary fence, and an old footbridge across Deadman Creek, which was rebuilt. Before the year was out, the old ranch house had been extensively improved, then moved 475 feet to make room for a new 28 x 76 foot cement block service building (which still stands). Several additional miles of fencing were removed, remodeling of the barn for an equipment shed was completed, a new 8 x 8 foot building was constructed to house the headquarters well pump (still standing), several miles of ditches were constructed, the entrance road was widened and elevated, 1,869 cubic yards of sand were excavated from Mariposa Slough to upgrade the northern boundary road, and 200 acres were impounded for a shooting area.

As the year continued, the Portland office sent W.N. Anderson to appraise the living quarters, and Crawford continued to interact closely with local organization concerns. Severe waterfowl depredation to commercial crops was attributed to ducks arriving at the newly created ponds at a critical period just before the rice harvest. Area hunters expressed appreciation for a facility to serve the unattached hunter (that is, one who does not belong to a private club). Only the west end of the refuge was opened to hunters at this time (Crawford 1952).

During 1953, complaints of depredation continued to mount, until by April agriculturalists from Fresno to Modesto were demanding a special goose and coot season to rid their fields of thousands of birds. Crawford in turn complained of rice fields flooded well into the migratory season, attracting birds to the commercial crops and away from the refuge. The situation was eased by distribution of goose bombs to neighboring farmers from an incendiary shed constructed near the refuge headquarters. The noise from the devices, if exploded within a mile from the refuge boundaries, was intended to flush geese back to the refuge. Drought conditions prevailing on the refuge—both Deadman Creek and Mariposa Slough dried after the season's final rains fell in January—no doubt contributed to the attraction of flooded rice fields.

Development continued, with heavy emphasis on farming. A mile of old fence along Deadman Slough was removed, and a mile and a half of trail widened and raised along the north boundary by hauling several hundred yards of black soil from Deadman Creek. Dikes and a concrete water structure were constructed in Mariposa Slough, and negotiations continued to purchase an additional 6,300 acres adjacent to the refuge on the south under the Migratory Bird Conservation Act. The acquisition was opposed by local Grangers and the Farm Bureau, supported by city and county Chambers of Commerce and sportsmen. The Fish and Wildlife position held that duck damage to crops was and would continue to be enormous unless a management area of suitable size was established, and that a place for controlled public shooting was badly needed since most of the surrounding marshland was either posted or restricted to access by membership of private duck clubs.

Also of interest during this year: house cats were fingered as the biggest predator threat in the refuge; Jack Fawcett (a Fish and Wildlife Service employee) and family moved into the small quarters on the refuge (presumably referring to the old ranch house

vacated by Mr. Wehr's family); an aerial survey of the refuge was carried out by Raymond Glahn of Willows (later reports refer to aerial census, of less use in terms of identifying cultural resources); and populations of pheasant, sandhill crane, and ground squirrels increased over previous counts, attributed to improved habitat (Crawford 1953).

During the years immediately following acquisition, emphasis was placed on resolving depredation problems, encouraging community contact, and above all developing the refuge for wildlife management, a singular focus that was to take its toll on the few above-ground cultural resources remaining from historic land use. Expansion of the refuge was successfully opposed in 1954, and in the same year the first grazing permit was issued to Robinson Brothers, the former owners of the refuge lands. The refuge continued to distribute grenades and flares to surrounding farmers in order to flush ducks and coots out of the crops, and an engineering survey was undertaken by Lee Jacoby and Harold West of the Portland office (Crawford 1954).

Removal of previously noted historic above-ground features was completed the following year, when the large barn was removed (see Plate 41). The relocated and remodeled former ranch house was retained in an effort to represent an earlier era of land use (see Plate 42) (Crawford 1955).

Buried archaeological resources were encountered from time to time as deep plowing and waterway maintenance was carried out. In 1956 a domestic well believed to date back to Miller and Lux ownership was filled in at the headquarters, and ground stone "Indian relics" were plowed up in a field southwest of the headquarters (Crawford 1956: photo 202).

A previously unmentioned "old dilapidated tool and storage shed" existing at the time of refuge purchase was razed at the headquarters in 1957, and photos of the remodeled residence and headquarters were taken (Crawford 1957). Some underground feature caused a sinkhole to appear in Field D in 1967, attributed at the time to an abandoned well; and the contents of the refuge trash dump in use since 1951 were hauled away, when the old policy of dumping on the refuge was ruled obsolete in favor of commercial removal (Howard 1967). During the 1960s and 1970s the managers coped with property devastation wrought by floods and crop depredation resulting from droughts, while public interest in the refuge as a wildlife education and conservation resource increased steadily under the public relations programs of its managers. By 1982, the most recent report filed, Merced was treated for interpretive purposes as a component of San Luis Refuge, created six miles from its western boundary in 1966 (Zahm 1982).

### San Luis National Wildlife Refuge

San Luis refuge was established in 1966 under the conditions of the Migratory Bird Conservation Act, noted in the section on the Modern Period above. Acreage totaling 7,332 acres was purchased from the Westover Company, completing acquisition negotiations that had begun in the late 1940s. Los Banos sportsman Alvaro Sousa, an ardent conservationist, was instrumental in turning solid opposition by the County Board of Supervisors into approval, and was a moving force behind passage of 16 USC 715g: PL 88-523, August 30, 1964, protecting local jurisdiction over lands administered by the federal government for wildlife conservation. Mr. Sousa received an award of national recognition for his efforts on behalf of the establishment of San Luis Refuge in 1967 (Snyder 1967).

The name San Luis is derived originally from Arroyo de San Luis Gonzaga, a name noted by Gabriel Moraga in 1806 as having been given by a preceding expedition from the Presidio of San Francisco to a stream arising from a spring near the western edge of the plain (Cook 1960:248). The name was applied to a Mexican land grant that reached from

the eastern slopes of the Gabilan range to Sanjon de Santa Rita, now Salt Slough on the western boundary of San Luis Refuge. The land on which San Luis Refuge is located, contained within the flow of Salt Slough and the San Joaquin River, has been known since the early American period as San Luis Island (see scattered references in section on the Early American Period).

At the time of acquisition, the Westover Company had been using the property for livestock production year round, and also used part of the acreage for hunting by the owner and guests. Some 40 to 60 hunting leases additionally were let to others, and the property contained two hunting cabins in the southeast quarter of Section 4, T9S, R11E, and two others in the south half of Section 36, T8S, R11E (Anonymous 1966). The Westover Company reserved the right to remove two cabins before July 1, 1967, as well as harvest 265 acres of melons and other crops, and also retained all mineral and oil prospect and removal rights (Merced County Official Records 1735:652).

As noted in the previous section, Mr. Ramon Figueroa and family were at that time occupants of a house and other buildings in the east half of Section 6, T9S, R11E, as well as Mr. Villa and family in a house trailer and other buildings. Five concrete water control structures were located on the tract, three of which included electric pumps. The property was crossed with interior and boundary fencing, and all roads were dirt or gravel. Old Dickenson Ferry Road crossed the property in much the same location as today, but terminating at a levee along the northern boundary of Section 29 (NE4/NW4), T8S, R11E (Hottenstein 1966).

Manager Leon Snyder issued a statement of four major objectives in establishing the refuge, summarized as:

- 1) To provide nesting, migration and wintering habitat for ducks and geese.
- 2) To provide habitat for other migrating and resident birds and animals.
- 3) To provide recreational opportunities for fishing, hunting, hiking, picnicking, and nature study.
- 4) To provide preservation of a segment of historical California representative of early ranching (Snyder 1968).

The range of visitor interests and volume of visitors and hunters during 1968 attest to the success of meeting the first three goals, but "preservation of a segment of historical California representative of early ranching" was problematical. After a real estate appraisal was made by Donald Doughton of the Fish and Wildlife Service Portland office, refuge personnel began dismantling the existing structures. First to go were the old hunting cabins, followed by concrete supports from an old fuel tank, and other ranch building parts recycled as rip-rap, then all old timbers, posts, wire, and other material at the ranch headquarters site, which was leveled, and lastly the horse barn remaining from an interior set of buildings was razed. An old bridge crossing San Luis Drain for access to Salt Slough was rehabilitated, as was Dickenson Ferry Road, while old wooden flood gates and other wooden water control structures and bridges (see Plate 32) were scheduled for replacement. Numerous photographs in the report illustrate the former standing structures and others not mentioned (see Plates 31 and 36), as well as a collection of ground stone artifacts excavated from "Moffit [sic] Field" (Snyder 1968).

In 1969, removal of the remaining above ground structures was completed, with the demolition of a two-story tank house, removal of a windmill at the ranch headquarters, and of 1.25 mile of fencing along the San Joaquin River. A building acquired with the refuge and used as a shop building was extensively remodeled, and the water system in

Moffat Field was completely renovated. The former owner, Butler Noble of the Westover Company, who had retained all mineral rights, leased exploratory rights to Continental and then Standard Oil. During the exploration a dry hole was drilled to 14,000 feet (Nail 1969).

During 1970 considerable effort was spent regrading, raising, and surfacing roads for wet-weather access, particularly Dickenson Ferry Road, which also served as a levee between impoundments. At this time Dickenson Ferry Road was extended 0.37 mile to the San Joaquin levee (Nail 1970).

In 1974 the first effort toward establishing landmark status for San Luis Refuge was begun. Lawrence W. De Bates prepared a proposal for the refuge manager to nominate San Luis Island as a Natural Landmark, citing as its thematic focus the land ecosystem, its grasslands, alkali grasslands, and endangered plant and animal species (De Bates 1974). Related efforts continued in 1978 when Charlotte Benson, Regional Office Archaeologist, and Harvey Heffernan discussed information required for completion of National Register of Historic Places nomination forms (Benson 1978). A National Register nomination form was prepared (Heffernan 1978), but this application has as yet not been filed (Jan Peterson, personal communication 1984).

#### Kesterson National Wildlife Refuge

Kesterson National Wildlife Refuge was established in July, 1969, on a parcel of 5,900 acres located four miles east of Gustine (Nail 1969). The name is derived from its property owner at the time of purchase, Mr. Irving Kesterson, Sr., who had owned the tract since 1957 (Eggers 1980a).

The land on which Kesterson refuge is located was purchased by the United States Bureau of Reclamation in 1968 for the purpose of constructing a series of holding reservoirs to operate in conjunction with the San Luis Drain Project. The San Luis Drain was developed to carry agricultural waste water from the San Joaquin Valley back to the Stockton Delta. The proposed Kesterson Reservoir would be used for the storage and evaporation of drain water until the San Luis Drain had been completed.

Kesterson was seen as potentially an important link in the National Wildlife Refuge system, but its value after modifications had been carried out by the Bureau of Reclamation, which had primary jurisdiction over land use decisions, was considered uncertain. Its significance at the time of the management agreement was in its relatively unmodified native grasslands (Nail 1969), as at Kesterson there still are significant areas of native vegetation.

As noted in the above section on developments during the Modern Period, the previous owners had two windmills, a watering area and a corral on the property prior to 1957, while the lessee, the Sprig Lake Gun Club, had constructed a club house from salvaged phone booths sometime between 1935 and 1937 (Eggers 1980a:5-6). Days before management of Kesterson was to commence, vandals set fire to four "old gun club shacks," location not specified. Cleanup operations began with those destroyed structures. Three miles of existing but damaged and unmaintained levees were rebuilt, two older wooden water control structures on Sprig Lake (see Plates 43 and 44) were replaced, and new fencing was built to delineate hunting areas and refuge boundaries.

Nail attempted to control severe overgrazing damage by negotiating restrictions into an existing grazing lease to Bernard Erreca and Jack Izoco that was to run to the end of the year. Additionally, the Bureau of Reclamation cooperated in restricting the number of animals permitted under a new lease to Frank Freitas, an adjoining rancher and former property owner. Photographs in the 1969 report clearly illustrate the types of

wooden and concrete water structures and an old wooden bridge (see Plate 34) that existed at the time of purchase (Nail 1969). A remaining gun club structure was moved from Gun Club Road to the present check station location along Highway 140, where in 1970 it was remodeled by a local contractor. At the same time, a garage was moved from the Gun Club Road site to the north end of the refuge, where it was used for storage. Two parking lots were graded in the northern half of the refuge, while in the southern portion the Bureau of Reclamation canceled Freitas' grazing lease and began construction of a series of holding ponds between the western refuge boundary and San Luis Drain. Photographs in the 1970 report depict the remodeled former duck club "shack" still in use (Nail 1970). No further mention is made of historic resources, as managers continued to struggle through the years with problems of cattle trespass and poaching on the refuge, with even these efforts hampered by a shortage of personnel.

#### Summary of Personnel and Significant Management Issues

Personnel, particularly management, who had an impact on the conservation of cultural resources are discussed here, beginning with the earliest.

Crawford, Gene: Manager, Merced Refuge, 1951 - 1957. Responsible for establishing continuing public relations programs on the area's first refuge, Crawford, converted Merced from ranch to refuge. Crawford's management objectives as expressed in his actions clearly were to carry out federal responsibility under the Lea Act, create habitat for migrating waterfowl, and open the area to public hunting.

Ford, Melvin: Equipment operator, Sacramento area refuges (including the study area) 1949 - 1969. Conducted the most significant earthmoving and demolition during the establishment of Merced and San Luis Refuges.

Wehr, Harry: Maintenance Supervisor, Merced Refuge, 1951 - 1952. He did all initial repairs and remodeling of existing former ranch house on the refuge.

Howard, Lynn C.: Manager, Merced Refuge, 1967. This was during the record flood damage and cave-in of Field D. Howard implemented the policy of off-site trash disposal. (Any trash deposits located on the refuges should therefore predate 1951.)

Snyder, Leon C.: Manager, Merced and San Luis Refuges, 1958 - 1969. Snyder managed the Merced Refuge from 1958, and on acquisition of San Luis in 1966 managed both refuges until 1969. Under Snyder's management, emphasis on refuge land use gradually shifted to include increasing importance in wildlife conservation education and positive community interaction.

Nail, Melvin T.: Manager, San Luis, Merced, and Kesterson Refuges, 1969 - 1975. Nail was initially responsible for establishing procedures to correct abuses to the existing waterfowl habitat from earlier land use on Kesterson Refuge. He also corrected road and trail deficiencies to allow better access to wildlife observation areas on San Luis and Merced Refuges, and encouraged increasing use of the refuges by bird clubs and other non-hunting activities.

De Bates, Lawrence W.: Staff, San Luis Complex. In 1974 De Bates made the first "official" step to recognize San Luis Island as a National Landmark.

Littlefield, Leon A.: Manager, San Luis Complex, 1975 - 1980. No Annual Narratives were compiled during this period, hampering reconstruction of land use history and management policy.

Benson, Charlotte: U.S. Fish and Wildlife Service Archaeologist. Conducted a cultural resources study in 1978, recording the significance of the heavy concentrations of pre-historic cultural resources.

Zahm, Gary: Manager, San Luis Complex, 1980 - present. Currently implementing cultural resource management recommendations of his predecessors.



## CHAPTER 6

### ANALYSIS

The following sections present brief analyses or additional discussions of some portions of the data presented in the cultural resources overview, contained in Chapters 3, 4, and 5. These analyses include the following:

- 1) A brief evaluation of the quality and reliability of the data, including information on the types of data used, data gaps which exist, and inherent biases either in the data or in its use.
- 2) An analysis of historical site types which could potentially be expected to exist within the study area.

#### Quality and Reliability of the Data Sources

The following section describes and briefly analyzes the data used in the preparation of the preceding overviews. These discussions are divided into treatments of the data base pertaining to: 1) study area prehistory, 2) study area ethnography and ethnohistory, and 3) study area history.

#### Prehistoric Resources

There is very little known about the prehistoric archaeological resources within the study area. Although we know of dozens of sites, we have no systematic data from any of these resources. There have been no excavations (with the exception of CA-MER-6, for which no report was ever prepared), so we have little information about depth, subsurface constituents, change through time, temporal periods represented, range of materials present -- we have few answers to dozens or even hundreds of questions about the past.

#### Biases in the Data

Given the limited amounts of information which are available, there are bound to be a number of biases in the data. Because much of the data comes from surface examination of sites, or from what little rodents bring to the surface, the lower levels of sites could be seriously underrepresented. This would not necessarily be the case, however, if the sites are either very thin, or have been very badly mixed through bulldozing or other similar impacts.

Another source of bias is in the way in which sites have generally been found (and this is particularly true at San Luis Refuge). In the past, sites have generally been found when they were either 1) so large or obvious that they were readily visible, or 2) were impacted by earth moving or other development. In neither case does this necessarily provide a representative sample of the range of variation in site types --

and the current project could do little to correct this situation. Our primary field task was to locate, verify, document, and evaluate the previously recorded or known sites.

A third bias was found in the material within the artifact collections at the headquarters buildings at both Merced and San Luis Refuges. In both cases the collections were small (see Appendix C for additional details), and consisted entirely of ground and pecked stone artifacts. Chipped stone artifacts (such as projectile points, scrapers, etc.) were not represented in the collections at all. There was also a complete lack of shell and bone artifacts. While size of materials may play some part in this bias, it is most likely that any well formed projectile points, beads, or bone tools found have been kept by the individuals who found them, or have been removed from the collections at the refuge headquarters. For example, in 1975, Joe Pope recovered several artifacts, including a projectile point base, other lithic materials, and a fragmentary quartz crystal from CA-MER-103 (Joe Pope, personal communication 1984). These materials were examined by Jerry Johnson, at Sacramento State University, and were thought to be potentially representative of an "Early Horizon" deposit (Jerry Johnson, personal communication 1984). During the course of our project, these materials could not be located. As a second example, Pope sketched a large "ceremonial" mortar bowl in the Merced Refuge collection in 1976 (see Figure 19). This artifact is no longer in the collection.

### Biases in Interpretation

One of the most common biases in the interpretation of archaeological site information frequently stems from the personal differences which exist among archaeologists. For example, some individuals are splitters (preferring to give a separate number to each separate cluster of archaeological materials), while others are lumpers (those who prefer to include within one "site" any materials which are (or were) contiguous, no matter how large the eventual site will be.

Because virtually all the sites on the Kesterson Refuge were recorded by the ESCA-Tech crews during a single project (Eggers 1980a), and because all the sites within the San Luis Refuge were recorded under the direction of a single individual (Joe Pope, who was assisted in site recording by Rosemary Pope), some of these sources of bias are relatively well controlled.

To date, there has been relatively little interpretation of the information from the project area. There has been virtually no information to interpret. One of the primary interpretations made by Joe Pope was that at site CA-MER-103 there was an "Early Horizon" component. Two pieces of obsidian were collected from this site in an attempt to do obsidian hydration dating, but in both cases the hydration rind was diffuse, possibly as the result of burning on the site. Obsidian collected from two other sites, however, has supported the presence of relatively early archaeological deposits within the project area (see the discussion in Chapter 7). Finally, a projectile point (see Plate 9) of an unknown type and unknown affiliations, but possibly early, was collected from CA-MER-105, adjacent to CA-MER-103. To this extent, Pope's interpretation of the materials he observed and collected is supported by additional information.

### Deficiencies in Information

As pointed out in the beginning of this section, there are huge deficiencies in the available data base. At this point, little can be done in the way of settlement or subsistence analysis. Given the amount of siltation and the extremely dense surface vegetation (due to the time of year in which the field work had to be conducted), many sites could not be adequately examined during the current project (for examples of the

vegetation and surface visibility see the plates included in this report). Because of this, we cannot, for example, provide much additional information on site types or intrasite patterning.

The only major archaeological research at Kesterson Refuge prior to the current project was conducted by A.V. Eggers for ESCA-Tech Corporation. That project, however, could provide little in the way of detailed interpretation or background studies because of the extremely tight time frame under which the work was conducted. We were told, for example, that only 15 days were allowed for the field work (i.e., all field work had to be completed within 15 days of the prework meeting), and that the draft report was due 21 days after completion of the field work (A.V. Eggers, personal communication 1984; Eggers 1980a:1-6).

The work that Joe Pope undertook on the San Luis Refuge, while an outstanding volunteer contribution, obviously made no attempts at systematic reconnaissance or research. We are lacking many of the tools which we need to begin systematic archaeological reconstruction of the project area.

To obtain better information will require a combination of 1) systematic and intensive field reconnaissance during the most favorable times of the year, 2) carefully planned surface and subsurface investigations (augering, test units, surface collections, etc.), and 3) detailed studies, analyses, and comparisons of the recovered materials. As an integral part of this, the materials which are recovered will have to be archived in a secure repository where they will be available for future research.

#### Ethnographic and Ethnohistorical Resources

It has been found, when researching the ethnography and ethnohistory of the current study area, that there is virtually no direct information available. Most of the sparse information from the past falls into one of two different categories: early records, and the results of ethnographic research.

The first, consisting of the records, letters, and diaries left by explorers, missionaries, soldiers, and expedition leaders, etc., generally includes information relevant to their needs. This will often consist of detailed accounts of journeys (hours of travel, starting and stopping times, and location of water and feed for the animals). Also included, but in less detail, are general population figures for the native groups encountered, along with approximate locations of villages, and possibly a few Indian names (but whether the names refer to individuals, groups, villages, districts, etc. is often unclear).

The second category of information is that material collected by the principal ethnographers who worked with the last surviving Indians who possessed significant knowledge of the old ways. This work generally took place between about 1870 and 1920. For the purposes of the current study there are tremendous gaps in this information: there were no Indians surviving from the immediate study area, and the information which was gathered focused almost entirely on reconstructing the aboriginal condition of the informants' parents, or more often, their grandparents. The information on the Indians' struggle over the previous 100-150 years was all but ignored.

These and other gaps, deficiencies, and biases in the ethnographic and ethnohistorical data base are described and discussed in additional detail below.

### Biases in the Data

As discussed above, primary sources are those materials written contemporaneously with the event, usually from firsthand contact with or general factual knowledge of the event being recorded. Within the study area, secondary sources include all those sources which are prepared after the fact, such as general historical overviews, cultural resource management documents, as well as ethnographic and ethnohistorical information about Indians from adjacent areas.

The biases which we have found within these two types of information are described below.

#### Primary Sources

Within the study area, virtually all the primary sources before 1815 (including the diaries and other documents from the Moraga expeditions of 1806, 1807, and 1808, and the Viader-Moraga expedition of 1810) deal with the search for future mission sites. Although most of these expeditions passed directly through the current study area, there is almost no information relevant to the goals of the current project. For example, the bulk of the information contained in the Moraga expedition diaries which deals with the native populations consists of vague references to villages and their approximate locations and populations.

For the most part, the later expeditions which passed through the study area (such as the 1815 Pico-Ortega-Escudo expedition, the 1820 Soto expedition, and the 1825 Pico expedition) were primarily concerned with recovering runaway Mission Indians, punishing non-Mission Indians for harboring the runaways, and recovering horses stolen from the coastal missions and ranchos. There was little interest in recording ethnographic information, although there are generally some tantalizing details included.

When the early ethnographers began their work among California Indians, generally between 1870 and 1910 or 1920, they found no surviving native peoples from the study area. The earliest ethnographers who dealt with the Central Valley, including Taylor and Powers, found no survivors within the study area, nor did they locate any Indians who identified themselves with the study area. The later ethnographers, such as Merriam, Kroeber, Harrington, Gayton, and Latta, though more thorough in their methods, also were unable to locate Indians from the study area. Rather, the ethnographies which they contributed dealt with Yokuts living in other areas of the Valley or in the foothills, but none claimed descent from the peoples of the study area. By the late 1800s, the original inhabitants of the study area were culturally extinct.

Because of this, the search for contemporary religious leaders and tribal elders descended directly from Indians of the study area is doomed to failure. Diligent searches have been made for over 100 years for such informants — all have met with failure.

#### Secondary Sources

Within the study area, secondary sources include those which are prepared after the fact, and include general historical overviews, cultural resource management documents, as well as ethnographic and ethnohistorical information about Indians from adjacent areas.

Because of the lack of primary information, we must rely on secondary information for the ethnography and ethnohistory of the study area. Most of this information comes from adjacent tribes. The degree to which the culture of the Tachi Yokuts (well to the south) or the Chukchansi Yokuts (well to the east) can be applied to the Indians of the study area is questionable. Some cultural traits probably were shared over great distances (such as use of the bow and arrow), while other traits were probably more localized (language subdivisions, structural types, ritual systems, etc.).

When general historical overviews are compiled, the Indians of the study area are either omitted, or are described in the most general of terms, using information from adjacent groups.

Within most modern cultural resource management documents, the information which pertains to the study area can generally be described as overviews of overviews. Within our study area, these documents (including the present study) must rely on information extrapolated from adjacent groups.

### Biases in Interpretation

As in any field, mistakes are occasionally made in interpreting the data. Given the fragmentary nature of the information which survives, this is especially true for the study area. For example, when Kroeber compiled his Handbook of the Indians of California (1925), he erroneously equated the sparsity of data for the west side of the San Joaquin Valley with the lack of aboriginal inhabitants. However, later ethnographic and archaeological research clearly shows that this was not the case.

There are other examples of differing interpretations of the data. Cook, for example, describes Nopchinchí as a tribe, whereas the Spanish documents clearly state that it was a village. These same problems also plague discussions of boundaries, extrapolation of cultural traits from neighboring groups, and the emphases various researchers place on different primary documents.

Cultural resource management studies often repeat the errors of interpretation made in the past. There are a number of causes for this, including: lack of careful research (often due to inadequate budgets and limited time), and use of general or secondary resources instead of primary resources (again often due to lack of time and money).

### Deficiencies in Information

As noted above, the primary resources pertaining to the Yokuts groups who inhabited the study area are extremely sparse. Much of the information contained in our ethnography, as is the case for all other studies of this area, is the product of extrapolation and analogy which may or may not apply directly to the specific groups who inhabited the study area.

Some of the data gaps can be filled through the application of careful archaeological research. But certain areas of native culture are lost forever.

## Historical Resources

Data sources on which knowledge of study area history is based consist of both primary and secondary archival sources. Primary sources are materials written contemporaneously with the event, usually from firsthand contact with or general factual knowledge of the event being recorded (U.S. Department of Transportation 1977:VII:29). During the preparation of this report, primary sources consulted included the following:

Documents: deeds, census records, patents, maps, recorded agreements, District Court records, Superior Court records, and General Land Office plats.

Manuscripts: letters, diaries, in-house agency reports, oral history transcripts, real estate appraisals, statistical tables, and corporate records.

Printed material: newspapers, directories, published agency reports, and event programs.

Other documentary sources: photographs, aerial surveys, artifacts, and interviews.

Secondary sources are written after the event has occurred, usually at some distance in time and place from the event being recorded (U.S. Department of Transportation 1977:VII:29). During the preparation of this report, secondary sources consulted included:

Published county history/biographies ("Mug Books"), interpretive transcriptions of oral histories, narrative histories, journal articles, unpublished research papers, promotional pamphlets, and reminiscences.

The general strategy employed for integration of data from primary and secondary sources was to prepare a chronological framework of regional history from secondary sources, with particular attention to place names, personalities, cultural groups, land use, and governmental actions. The chronological account was then further refined with site or personality specific information from contemporaneous sources.

### Biases in the Data

#### Primary Sources

While primary sources are the backbone and test of any historical research project, certain biases are inherent in the original intent and nature of the primary material. Of those primary sources pertinent to the history of the study area, such biases include:

Legally recorded documents: such documents record transactions agreed on between recognized participating parties; they may reflect interaction with or reaction to unspecified individuals, groups, or circumstances, but usually do not name the others involved, such as illegal squatters encamped on rancho lands who are eventually effected by property boundaries legally entitled to others.

Census records: intended to provide information for legislative representation and a variety of social, economic and political decisions, population counts are dependent on the perseverance of the enumerator under the most primitive transportation conditions; and also on the population residing in the place at the time the enumerator is present. For example, a river ferry or landing operator would not be operating his business during periods of extremely low water, nearly six months of the year. In addition, Caucasian ethnic groups (such as the Basques) were not differentiated within the broad "color" category of "white," and their birthplaces may have been listed only by country (France, Spain), rather than a defined region indicating ethnicity. Furthermore, the Anglo enumerators were often at a loss to spell unfamiliar names correctly, and might have relied on either phonetic spellings (as interpreted by an Anglo ear) or Anglicization of difficult surnames.

Patents and Plats: while accurately depicting the surveyed boundaries of a parcel, such documents may not record cultural features present that are not used as boundary landmarks.

Letters and Diaries: these rich and colorful sources of personal and local life at the instant are frequently replete with coded or abbreviated names, and assumptions of place knowledge shared only with intimates or contemporaries.

Agency Reports: prepared from minutes, memoranda, current files, and first-hand participation, agency reports are accurate but informative only to the degree that the preparer follows format and information requirements set by the sponsoring agency. For example, certain loquacious refuge managers provide personal opinions and observations as well as required information; others provide the minimum required according to their specific orientation. In both cases any originally recorded information that might be included in an Annual Narrative is subject to the manager's evaluation of its importance.

In addition to the problems inherent within primary data are the difficulties in finding some of the materials. For example, one of the main sources of primary data for the study area is the Milliken Museum in Los Banos. However, the archives of the Milliken Museum are only partly indexed, and, although they appear to contain information of immense benefit in the reconstruction of the land use history of the West Side and the study area, there are problems with finding certain portions of the data. Until a complete index and catalog of holdings is completed, there will be problems (particularly for non-local researchers) in using this facility.

### Secondary Sources

All secondary sources are subject to the general bias inherent in preparation after the fact, motivated by a variety of purposes of which accuracy does not always play the largest role. For example, biographical "Mug Books" are commissioned by trade boards and commercial interests, with biographies paid for by those included. Promotional pamphlets, frequently prepared by colonizers or other real estate organizations, are subject to a great deal of boosterism that may border on wishful thinking, particularly where necessary services (such as road, rail, and schools) are concerned. Columnists and correspondents have an editor and an audience to please. Pioneer reminiscences become refined over the years, selective in content, and patterned in style, until they become favorite anecdotes of the old days. None of these biases renders the information

useless, but care is required in the interpretation of such data, and confirmation through other reliable sources is always preferred.

### Biases in Interpretation

In addition to the biases of interpretation within the historical source material itself, certain biases have been imposed by those preparing this report. The historical element of an overview involves the development of a body of data about the study area through the analysis of texts. To deal with the massive amount of available written information about a region, as categorized above under primary and secondary sources, the researcher must prioritize research objectives and determine just how specific one needs to be with a given subject. The level of specificity used will depend on one's judgment about what is likely to emerge from the endeavor (King, Hickman, and Berg 1977:108).

In the preparation of this report, emphasis was placed on examining texts that were likely to contain references to developments, activities, individuals, and groups that, in addition to participating in the flow of regional history, were likely to leave an imprint on the study area as sites, buildings, structures, or objects. Additionally, the management of those types of cultural resources was followed selectively in agency reports until a management pattern or policy became apparent. The historical research was intentionally specific to cultural resources management, rather than wildlife management, except where those management objectives overlapped.

Other interpretive biases at work included the accession/deaccession policies which led to the retention of particular material by agency repositories, libraries, private collectors, and historical museums. This obviously has influenced the range of material available to researchers.

### Deficiencies in Information

Gaps in the data occur for the period of Hispanic settlement of the two ranchos comprising large portions of the study area. For example, the available records do not specifically locate the earliest areas of land use or settlement.

Although it overlaps the Hispanic and Early American periods, the construction date and period of early use of the San Luis Camp Adobe is unclear. Interpretation of data regarding this resource—the only standing building in the study area dating from this period—is clouded by the confusion of later historians between references to San Luis Camp and San Luis Ranch, the latter of which was located in Pacheco Pass some fifteen miles to the west. Informant interviews conducted by Ralph Milliken in the 1920s-1940s present a variety of conflicting opinions about its origins from those who were on the scene in the 1860s and 1870s, the period of most controversy. In addition, a comparative study of construction styles with other adobes in the area was attempted, but failed due to insufficient local comparative data. At least three interpretations are suggested at present:

- 1) The San Luis Camp adobe was constructed in the 1840s within the claimed boundaries of Rancho San Luis Gonzaga, later resurveyed. The fact that its appearance in no way resembles the only other San Luis Gonzaga building of the same period may be attributed to the motivation of its builders (to claim possession with a hastily constructed building), or its intended use (as a way station on the cattle drive route, rather than domestic or military use).

- 2) The San Luis Camp Adobe was built between 1860 and 1876, probably by Basques who are said to have constructed and remodeled other adobes in the area, including Centinela in 1862, during that period of time. No documented Basque-built adobes were located in the local area for comparative purposes, although the search for Basque adobes was limited due to other priorities.
- 3) The San Luis Camp Adobe was either constructed or extensively remodeled or repaired soon after 1874, at which time it appeared new to its observers.

At the present time there is insufficient information to support any one of these hypotheses.

The precise method of acquisition of the lands of the study area by Miller and Lux Corporation in the Early American period is unresolved. The land transactions of Miller and Lux, which fill several volumes in the Merced County Recorder's Office, have been the focus of a settlement geography study (Graham 1957). Through Graham's study of Miller's method of operation, we may infer the process of acquisition within the study area, but the actual unraveling of the changes of title in the 1860s and 1870s for 18,000 acres purchased a quarter section at a time was determined to be inefficient use of research time in terms of the objectives of the current project.

Certain data gaps exist for the modern period as well, including even the period of U.S. Fish and Wildlife Service management. For example, during the five year period from 1975 to 1980 no Annual Narratives were compiled by the Refuge Manager, leaving no documentary record of cultural resource concerns during that time. Also, within the Annual Narratives there are numerous references to prehistoric cultural resources or materials found during regular construction or maintenance operations, but no inventory, accession lists, memoranda, or other notices of their eventual disposition were included.

#### Lack of Information Pertaining to Ethnic Participation in the History of the Study Area

Although Graham's (1957) thesis and certain pioneer reminiscences collected by Ralph Milliken certainly indicate that the West Side enjoys a particularly rich ethnic heritage, very little information was located that specifically dealt with ethnic participation in the study area itself. It may be correctly stated that the study area, as lands held by Miller and Lux for stock grazing and therefore isolated from the development of the West Side, did not follow patterns of growth and settlement typical for the rest of Merced County. However, it is also true that ethnic groups from throughout the county would have been attracted to the study area for recreational and subsistence resources. The presence of Basque, Portuguese, and Chinese in particular has been noted in the Early American Period history in Chapter 5.

An enormous body of data on the people of the West Side lies unresearched in the Milliken archives of the Milliken Museum, in Los Banos. Serendipitous discoveries made while researching the indexed files give clear indications that much more information is hidden there, awaiting cataloguing and the compilation of a guide to the collection. Until that time, the following preliminary statements may be made about the ethnic history of the study area:

- 1) A settlement of "Mexicans," probably laborers employed by Henry Miller, was located at San Luis Camp during the early American period. (It is possible that this settlement included some individuals of Indian descent as well.)
- 2) Before Henry Miller's use of the lands, the only historic land use in the marshes of the study area was for summer hunting/gathering camps, again, according to Anglo informants, by "Mexicans."
- 3) It is believed by many persons that Basque sheepmen either constructed or completely remodeled the adobe building at San Luis Camp in the 1860s or early 1870s.
- 4) Chinese fishermen were known to be settled at Hill's Ferry during the period from 1876-1878, and at least one came up Salt Slough to San Luis Camp to fish there during that time.
- 5) The Portuguese are a dominant group in West Side history, and at least one, Alvaro Sousa, figured prominently in the acquisition of San Luis Refuge, and left his name on a land feature there (Sousa Marsh).

#### Potential Historical Site Types within the Study Area

The following general types of historic sites could reasonably be expected to have resulted from historical activities known or presumed to have taken place within the study area. This listing includes potential site types, and is not intended as a listing of known site types existing at the present time.

Following the definitions in federal regulations, the potential site types within the study area are divided into the following categories: district, building, structure, site, and object. Each of the following sections will begin with a definition of the term, and will include potential site types during the various temporal periods used in the overview of study area history contained in Chapter 5.

#### District

**Definition:** A district is a geographically definable area, urban or rural, possessing a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united by past events or aesthetically by plan or physical development. A district may also comprise individual elements separated geographically but linked by association or history (Federal Register, November 16, 1981:56188).

**Hispanic Period:** Clustered associations of sites, forming a contiguous or non-contiguous district, may have resulted from the location of Indian rancherías whose inhabitants provided the labor force on the two Hispanic Period ranchos partially contained within the study area.

Early American Period: Concentrated or scattered clusters of hunting, fishing, and herding camps (consisting of fire rings, blinds, and shelters of stone, wood, adobe, fibre, skin, textiles, and natural or manipulated landscape features with associated artifact clusters) may have resulted during the Early American period.

Later American Period: Clustered associations of sites forming a contiguous or non-contiguous district may have resulted from increased use of the study area for hunting activities during the Later American period. General recognition of San Luis Island, a district physically enclosed by Salt Slough and the San Joaquin River, as a unique migratory waterfowl area worthy of preservation also occurred during this period. The system of canals known as "San Luis Island Canal" was recorded on San Luis Refuge early in this period.

Modern Period: Clustered associations of sites, structures or buildings forming a contiguous or non-contiguous district may have resulted from activities related to stock-raising, agriculture, and recreational shooting or conservation use during this period. Such associations might include ranchstead headquarters, special use areas such as outlying corrals, watering or feeding areas, hunting blinds or shelters, canal networks, and converted marshland or agricultural land for wildlife management purposes as well as headquarters, equipment/maintenance areas or remote stations associated with wildlife management.

### Building

Definition: A building is a structure created to shelter any form of human activity, such as house, barn, church, hotel, or similar structure. Building may refer to a historically related complex such as a courthouse and jail or a house and barn (Federal Register, November 16, 1981:56188).

Hispanic Period: Buildings of adobe brick, stone, wood, palisade, or tule such as a house, barn, barracks, or shed may have resulted from domestic, commercial, and industrial activities on the ranchos of the study area.

Early American Period: Use, and possibly construction, of the San Luis Camp Adobe and its associated additions, attachments, and outbuildings of adobe, wood, stone, brick, glass, and metal can be attributed to the Early American period.

Later American Period: Improvements or new constructions of wood, stone, concrete, or metal for domestic, industrial, agricultural, or service uses may have resulted from general stockraising, ranch management and maintenance activities during the Later American Period.

Modern Period: A broad range of building types may have resulted from known and presumed activities during the Modern Period. These might include vernacular architectural types (see the references to Lewis 1975, Kniffen 1965, and Kniffen and Glassie 1966 in the Annotated Bibliography) typical of the San Joaquin Valley, or architectural types developed from federal government specifications, intended for domestic use, barracks/bunkhouses, service outbuildings, barns, sheds, hunter check stations, gun club headquarters, wildlife management headquarters, and service areas associated with refuge management.

## Structure

**Definition:** A structure is a work made up of interdependent and interrelated parts in a definite pattern of organization. Constructed by man, it is often an engineering project large in scale (Federal Register, November 16, 1981:56189).

**Hispanic Period:** Structures of earth, adobe brick, stone, tile, wood or forged metal such as fences, ovens, mills, wells, corrals, landings, dams, gates, levees, canals, ditches and bridges, etc., may have resulted from land use associated with domestic functions, subsistence agriculture, mixed farming, or the hide and tallow trade.

**Early American Period:** Canals, dams, gates, levees, excavations, windmills, wells, bridges, bridge piers, landings, docks, cable anchorages, ovens, hunting blinds, corrals, fences and pens constructed of earth, adobe, stone, wood, metal, concrete, composites, brush, and poles, may have resulted from the use of study area lands for agricultural, stockraising, domestic, subsistence, recreational, and irrigation purposes during the Early American period.

**Later American Period:** Improvements and maintenance of the canal systems during the Later American Period may have resulted in structures including gates, dams, and levees of earth, wood, concrete, and metal; bridges and piers of stone, concrete, wood and metal may also date from this period. Other irrigation and water management structures including windmills, tanks, pumps, and associated equipment may date from this period, as may stock fencing of wood, metal, concrete, stone, or brush.

**Modern Period:** Structures that may have resulted from known and presumed activities during the Modern Period could be expected to include canals, levees, gates, dams, bridges, ponds, windmills, wells, raised roads, fences, storage tanks, pumps, hunting blinds, shelters, docks, signs, and platforms.

## Site

**Definition:** A site is the location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself maintains historical or archaeological value regardless of the value of any existing structure (Federal Register, November 16, 1981:56188).

**Hispanic Period:** Sites of certain activities with no associated structures may have resulted from land use related to exploratory routes, wagon roads, temporary hunting and fishing camps, slaughtering and branding activities, or trail drives. In addition, structures or buildings which are no longer standing may have resulted in the formation of historical archaeological sites, such as foundations of stone, adobe brick, or wood, and accumulations of discards (trash) in excavated pits or natural ravines.

**Early American Period:** Sites of land use and of constructions now vanished that are associated with any of the types of structures, buildings, and districts discussed earlier may be attributed to the Early American period. Such archaeological resources might include foundations of stone, adobe brick, concrete, or timber; accumulation of discards in excavated pits or natural ravines; excavated privies which might also be used as trash pits either before or after abandonment; excavated wells and associated shoring materials or brick, stone, or timber, as well as fill material after abandonment; abandoned canal trenches that may be filled; remnants of canal water structures of

stone, timber, concrete, or metal, or buried posts and pier remnants associated with river and slough crossings. In addition, sites of activities which might be expected to produce little or nothing in the way of above-ground resources (such as low-water roads, high-water road markers, fords, outdoor hay storage, selected grazing sites, domestic gardens, and feed grain fields) may have resulted from activities of the Early American period.

Later American Period: Sites of activities that produced little or no above-ground evidence, such as those described for the Early American Period, as well as sites of structures and buildings no longer existing, may have resulted from transportation, agriculture, stockraising, hunting, and domestic purposes. Such archaeological resources might include buried canal structures such as gates or other water control devices of wood, stone, concrete, or metal; excavated wells, their shoring materials of brick, stone, concrete, or timber and their abandonment fill material; foundations of brick, stone, adobe, concrete, or timber; buried posts and piers associated with river and slough crossings; excavated trash pits and privies; and later fill trash accumulations in natural depressions or against once existing barriers; filled trenches or other excavations such as abandoned canals, foundation trenches, or postholes remaining from abandoned fencelines or corrals.

Modern Period: Sites of activities that could be expected to leave little or no above-ground resources may have resulted from activities during the Modern Period. Such sites might include those of trails, low water roads, temporary hunting and fishing camps, and experimental cereal plots or other vegetation introduced for wildlife management purposes. Other sites of buildings and structures previously described but no longer standing might have left a broad range of archaeological resources, including: foundations of brick, stone, concrete, or timber; excavated wells and the materials used in their construction and post-abandonment fill; collected or disassociated debris from demolition activities; water control structures of timber, concrete, or metal; privies; trash pits or accumulations; vestiges of fencelines, corrals, impoundments, and canals; fill used in raising or otherwise altering landscape features; and underground storage tanks or pipelines associated with early refuge preparation activities.

## Object

Definition: An object is a material thing of functional, aesthetic, cultural, historical, or scientific value that may be, by nature or design, movable yet related to a specific setting or environment (Federal Register, November 16, 1981:56188).

Hispanic Period: Naturalized growth of domesticated functional or food plants may have resulted from domestic and agricultural activities, which might include cactus fence-lines, grain and seed plants, windbreaks, or boundary markers. Water related transportation activities may have left moveable objects such as platform barges.

Early American Period: Moveable objects such as platform barges, as well as landscape features such as eucalyptus groves and river or slough crossing marker trees may have resulted from activities of the Early American period.

Later American Period: Moveable farm machinery used in the construction and maintenance of agricultural systems and stockraising may have resulted from those activities during the Later American Period.

Modern Period: Moveable objects or those that relate to a larger setting or specific environment may have resulted from known or presumed activities of the Modern Period. Such objects might include barges, grading or other maintenance equipment, and mobile offices or stations.