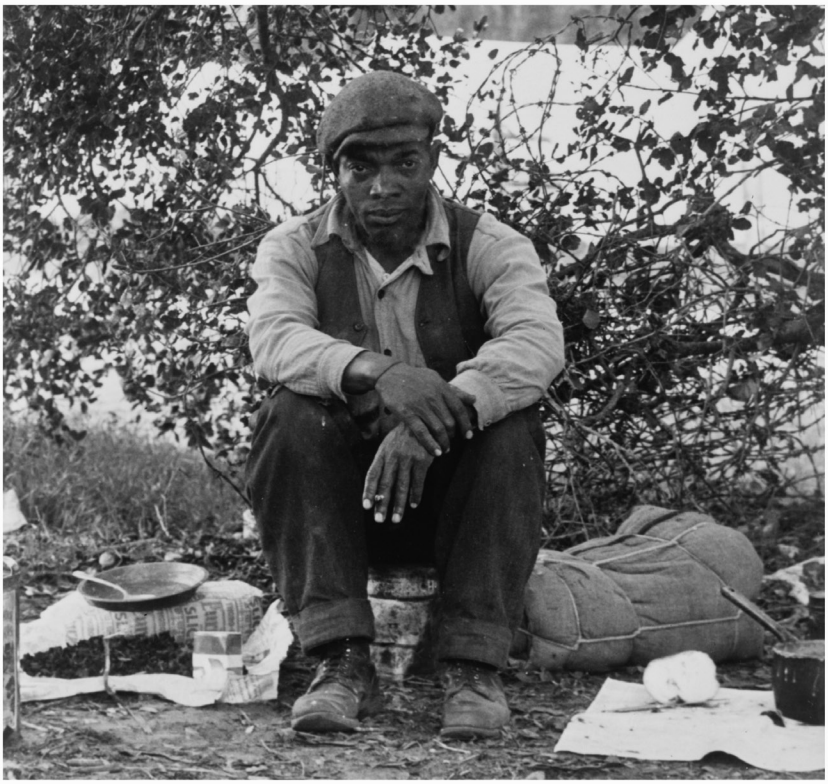
A Historical Context and Archaeological Research Design for Work Camp Properties in California

Caltrans

Labor is prior to, and independent of, capital. Capital is only the fruit of labor, and could never have existed if labor had not first existed. Labor is the superior of capital, and deserves much the higher consideration.

Abraham Lincoln (1861)



African American pea picker from Texas in the fields of California, 1935. Courtesy Library of Congress Prints and Photographs Division, Dorothea Lange Collection.

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WORK CAMPS: HISTORIC CONTEXT AND ARCHAEOLOGICAL RESEARCH DESIGN

Prepared for:
Cultural Studies Office
Division of Environmental Analysis
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Transportation Sacramento

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OTHER THEMATIC STUDIES BY CALTRANS

Water Conveyance Systems in California, Historic Context Development and Evaluation Procedures (2000)

A Historical Context and Archaeological Research Design for Agricultural Properties in California (2007)

A Historical Context and Archaeological Research Design for Mining Properties in California (2008)

A Historical Context and Archaeological Research Design for Townsite Properties in California (2010)

Tract Housing in California, 1945−1973: A Context for National Register Evaluation (August 2011)

These documents can be found at http://www.dot.ca.gov/ser/guidance.htm

MANAGEMENT SUMMARY

The California Department of Transportation (Caltrans), in cooperation with the Federal Highway Administration, California Division, and the California State Historic Preservation Officer (SHPO), prepared this thematic study to assist with evaluating the information potential of archaeological properties found in current and former work camps in California, that is, for their eligibility for the National Register of Historic Places under Criterion D. To be eligible under Criterion D, National Register guidance states that a property must have, or have had, information to contribute to our understanding of human history or prehistory, and the information must be considered important. While this study focuses solely on Criterion D, researchers should consider whether other National Register criteria apply to individual sites.

This document provides a framework for evaluating most types of work camp properties found in California, however it is not a comprehensive history of the state nor does it satisfy the requirements of site-specific research. This study is intended to serve as both an analytical tool and a methodological framework to interpret and evaluate properties associated with the work camps theme in terms of their ability to yield important information. An integral part of this study is the development of a research design. The archaeological research design explicitly demonstrates the connection between the information a property contains and important research issues or questions associated with a particular property.

The historic context presented here is a broad overview that addresses the major themes in California during the period from 1848 at the beginning of the California gold rush through 1941, at the beginning of World War II. Future researchers are encouraged to use this context as a starting point when assessing the National Register values of work camps.

Archaeological evidence collected during previous studies suggests that work camps properties have the potential to address the following research themes within a contextual or interpretive approach: camp function, design, and conditions; household composition and lifeways; labor organization and management policy; immigration and ethnicity; and technology. In addition, this document includes an implementation plan that advocates specific methods to follow when assessing the information value of work camp properties, in an effort to improve consistency and thereby facilitate better inter-site comparisons.

Any questions or comments on this study should be directed to the Chief, Cultural Studies Office, Division of Environmental Analysis, MS 27, P.O. Box 942874, Sacramento, CA 94274-0001.

ACKNOWLEDGEMENTS

This work camp study is the fourth in the Caltrans historical archaeology thematic studies series. The other studies discussed agricultural properties, mining properties, and townsite properties. The initial 2007 draft of this document was prepared by an interdisciplinary team of consultants consisting of Thad M. Van Bueren of the Caltrans Cultural Studies Office (CSO) and (in alphabetical order) consultants from the Anthropological Studies Center (ASC), Sonoma State University; JRP Historical Consulting LLC; and PAR Environmental Services. The ASC was the coordinating institution, with Mary Praetzellis acting as the project manager. The principal authors of the initial draft were (in alphabetical order) Meta Bunse, Adrian Praetzellis, Mary Praetzellis, Thad M. Van Bueren, and Mark Walker, with contributions by Cindy Baker and Mary L. Maniery. The study was prepared under the overall direction of Greg King and subsequently Anmarie Medin, successive CSO Chiefs, and project manager Julia Huddleson, Associate Environmental Planner. At FHWA, Stephanie Stoermer oversaw the first efforts to establish this thematic studies series and Gary Sweeten continued to provide management perspective. At the Office of Historic Preservation (OHP), former Deputy SHPO Steve Mikesell was involved from the project's inception, and staff members of the project review unit have provided valuable input throughout the process of compiling this set of thematic studies.

Because the originally contracted scope of work limited the breadth of the study, Statistical Research, Inc. (SRI), and Caltrans staff augmented the consultant-prepared 2007 report. Professional staff who expanded the document include Karen K. Swope and Scott Thompson from SRI, and Anmarie Medin, Dana Supernowicz, Kimberly Wooten, and Julia Huddleson, from Caltrans. Additionally, Nathan Wilson and Margo Nayyar, Sacramento State Public History program graduate students, contributed to the historic context and secured permission to use the historic photographs. Peer review of the expanded draft was provided by Cindy Baker, Meta Bunse, Dicken Everson, Marlesa Gray, Blossom Hamusek, Rand Herbert, Christina MacDonald, Mary L. Maniery, Adrian Praetzellis, Mary Praetzellis, Judith D. Tordoff, Thad M. Van Bueren, Mark Walker, and John Whitehouse.

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CHAPTER 1. INTRODUCTION

This volume is part of a series of statewide, thematic archaeological research designs developed by the California Department of Transportation (Caltrans). Other archaeological property types addressed in this series include agricultural properties (Caltrans 2007), mining properties (Caltrans 2008), and Townsite properties (Caltrans 2010). The purpose of the series is to provide guidance in assessing the importance of historic-era archaeological sites commonly encountered on Caltrans projects.

The series grew out of Caltrans' long-term efforts to improve the process of site-specific research and evaluation, along with the California State Historic Preservation Officer's recommendation that the agency should improve how historical archaeology is conducted in the context of Section 106 of the National Historic Preservation Act. This statute requires that federal agencies take into account the effects of undertakings on properties listed or eligible for listing in the National Register of Historic Places (NRHP).

The volumes in this series are concerned exclusively with NRHP Criterion D, under which properties may be eligible for listing if they have "yielded, or may be likely to yield, information important in prehistory or history" (Title 36, Part 60, Section 60.4[d], of the Code of Federal Regulations [36 CFR 60.4(d)]). Researchers should carefully consider which of the NRHP criteria, besides Criterion D, may be applicable to the property that they are evaluating. This research design may also be used in evaluating a property's eligibility for listing in the California Register of Historical Resources (CRHR) within the requirements of its implementing regulations (California Code of Regulations [CCR] Section 4850 et seq.).

The research design in the current volume presents an historic context for work camps in California dating from 1848, at the beginning of the California gold rush, through 1941, when the United States entered World War II. The beginning date, 1848, was chosen because of the massive influx of people and resources entering the region, creating a marked divergence from the settlement patterns and archaeological data that characterize the Spanish and Mexican periods. The selection of the end date of 1941 is based on changing settlement and economic patterns in California related to the involvement of the United States in World War II, including the establishment of new types of camps, such as military and internment camps, along with major improvements in sanitation.

This study does not cover military encampments, refugee camps, work camps associated with Japanese internment camps or prisoner-of-war camps active during World Wars I and II, company towns that later became permanent communities, or mining camps. Earlier volumes in this series (Caltrans 2008, 2010) addressed permanent communities and mining-related resources. For the purposes of this study, except in discussions of state-run prison labor camps, or when material is directly quoted or paraphrased from a government report or historical document, the term "work camp" has been chosen over "labor camp" because labor camps often are synonymous with internment camps, prisoner-of-war camps, or other camps operated solely by the military.

THE NATIONAL REGISTER EVALUATION PROCESS

Little et al. (2000:29) described five basic steps for evaluating an archaeological property's eligibility for listing in the NRHP under Criterion D, as summarized here:

1. Determine the property's structure, content, and classes of data that it may contain.
2. Identify the appropriate historic context by which to evaluate it.
3. Identify important research themes and questions that the data it contains may be able to address.
4. Determine whether the data it contains are of sufficient quality to address these important research issues.
5. Identify the important information that the property is likely to contain.

Archaeological properties are evaluated within an appropriate historic context defined by theme, place, and period. The historic context is linked to an individual site by *property types*: groupings of individual properties that have shared physical characteristics or associations. To make the connection between specific archaeological resources and the property types identified in the historic context, Hardesty (1988) developed the concept of the *feature system*: a cluster of archaeological features that are the products of an identifiable process or activity.

To be eligible for listing in the NRHP, a property must contain information considered *important* in contributing to our understanding of some aspect of human history. Archaeological facts are not intrinsically valuable; they achieve importance in relation to their ability to advance our understanding of human history. Reviews of current scholarship in disciplines such as history, geography, anthropology, and archaeology can define what constitutes important information. As change in research orientation is a normal part of social science, important issues are moving targets that must be reassessed frequently.

Archaeologists need to consider both the scientific and the humanistic contributions of the discipline as they design their research questions and conduct their work. Some questions, such as those designed to gather baseline information about structure, content, and integrity of a property, have definite answers. Questions designed to reveal large-scale historical and cultural processes have less conclusive or quantifiable answers. Individual properties often contribute answers to these questions by illustrating how these processes played out in specific contexts, broadening our understanding of their effects on Californians in the past.

To be eligible for listing in the NRHP, an archaeological site must be able to convey its significance to those for whom it has value. With respect to Criterion D, these individuals are scholars and others who may seek to use the information that the site contains. The ability of a property to convey this information is measured by assessing its integrity. The appraisal of integrity comes after an assessment of significance: significance + integrity = eligibility.

Applying the NRHP criteria for evaluation is a complex undertaking. It requires that researchers follow a set process and understand certain terms. The NRHP Bulletin series is an essential reference. Of particular importance are National Register Bulletin 15, *How to Apply the National Register Criteria for Evaluation* (National Park Service 2002), and National Register Bulletin 36, *Guidelines for Evaluating and Registering Archeological Properties* (Little et al. 2000). Both are

available online at http://www.cr.nps.gov/NR. *Assessing Site Significance: A Guide for Archaeologists and Historians* (Hardesty and Little 2009) offers practical advice and many informative case studies.

THE CALIFORNIA REGISTER OF HISTORICAL RESOURCES

The eligibility criteria for the CRHR are almost identical to those of the NRHP, although some properties that are not eligible for listing in the latter may qualify for listing in the CRHR (Office of Historic Preservation 2001:ii). The Caltrans series of thematic research designs can be the basis for evaluating a property's eligibility for listing in the CRHR within the requirements of its implementing regulations at CCR Section 4850 et seq.

CONTENTS OF THIS VOLUME

After Chapter 1, this document consists of four additional chapters and four appendices:

- Chapter 2 is the historic context, which outlines the significant broad patterns of development associated with work camps. It includes and a cross-disciplinary review of current scholarship that informs the archaeological research design in Chapter 4 in accordance with the Secretary of the Interior's Guidelines for Preservation Planning (48 FR 44742). This discussion provides the basis of a context statement for the evaluation of eligibility for listing properties in the NRHP but must be supplemented by property-specific research to provide the relevant detail and focus.
- Chapter 3 describes archaeological property types created by the people, industries, and processes presented in Chapter 2. These result in the features that archaeologists encounter in the field.
- Chapter 4 consists of a generalized archaeological research design for the property types presented in Chapter 3. It expands on the scholarly themes developed in Chapter 2 to create specific research questions and associated data requirements.
- Chapter 5 offers an implementation plan that presents standardized methods to enhance comparative research and to guide evaluation under Criterion D without hampering the creative process. It also explores the issue of integrity and its relationship to significance. The chapter concludes with the recognition that this document requires regular reconsideration.
- Appendix A is a list of acronyms and abbreviations used in this volume. Appendix B is a list of regulations from the 1920 publication *Rules for Labor Camps* (Commission of Immigration and Housing, State of California 1920). Appendix C lists California water projects undertaken between 1887 and 1949. Appendix D is a list of publications frequently used in the identification of historic-era artifacts.

INDEX OF PROPERTY TYPES

Table 1 provides an index of many of the property types that appear in the series of thematic-research designs produced by Caltrans. This table has been brought up to date as the volumes in

this series have been prepared. For example, in *A Historical Context and Archaeological Research Design for Townsite Properties in California* (Caltrans 2010), roads and trails were separated into three different property-type categories: private, within the site, and outside the site. In the current volume, roads and trails are listed as part of the infrastructure category of property types. A number one (1) in the table indicates the thematic study or studies where this property type is primarily discussed and the appropriate volume to turn to for research. A number two (2) indicates a secondary discourse, where a property type is discussed but to a lesser degree.

Table 1. Index of Property Types as Treated in Caltrans Thematic Research Designs

Property-Type Category	Property Type	Volume[a]			
		Agriculture	Mining	Townsites	Work Camps
Residential	house (e.g. basement, cellar)	1	2	1	2
	boarding house		2	1	2
	hotel		2	1	
	bunkhouse	1	2	1	1
	lean-to, tent platform/pads	2	2	1	1
	permanent or semi-permanent shelters (hut, shack, dugout)	2	2	1	1
	portable architecture (box car)	2	2	2	1
	landscaping	2	2	1	1
Support features	cookhouse	2	2	1	1
	mess hall	2	1		1
	food storage/procurement	2	2	1	1
	lavatories/privies	2	1	1	1
	showers/bathhouse	2	2	2	1
	commissary	2	2		1
	office	2	1	1	1
	medical clinic/hospital	2	2	1	1
	livestock facilities	1	1	1	1
	fire suppression		2	1	1
Infrastructure	drainage		2	1	1
	water/gas/sewer utility lines		2	1	1
	electrical utility lines		2	1	1
	power generation		1	1	1
	roads		1	1	1
	trails		1	1	1
	quarries		1		1
	railways		1	1	1
	communication-transmission lines		2	1	1

Property-Type Category	Property Type	Volume[a]			
		Agriculture	Mining	Townsites	Work Camps
Activity buildings/structures	line camp	1			1
	shed	1	2	1	1
	blacksmith shop	1	2	1	2
	barn	1	2	2	1
	corral	1	2	2	1
	stable	1	2	2	1
	bake oven/outdoor kitchen	1	1	2	2
Industrial	stable/corral	2	1	1	1
	blacksmith	2	1	1	1
	machine shop/equipment foundation and storage	2	1	1	1
	warehouse/storehouse	2	1	1	1
	work building	2	1	1	1
	quarry		1		1
	other industry-specific buildings and structures	2	1	1	1
	equipment mounts/foundations		1	1	1
	retaining walls/platforms		1	2	1
Industrial buildings/ structures	forge, casting floor		1	1	2
Industrial-processes by-products	waster, raw materials, refuse		2	1	2
Recreation	recreational areas		2	1	1
Refuse disposal	vertical interfaces, hollow-filled features: privy, pit, well	1	2	1	2
	horizontal interfaces, fill layers: sheet refuse	1	2	1	1
	refuse dumps (municipal or community, not household/activity specific)	1	1	1	1
Transportation	road, trail, railway	2	2	2	2
Water-conveyance systems, intrasite	ditch, drain	1	1	1	2
Mining	placer tailing piles		1		
	cut banks, channels, tailings		1		
	river diversions		1		

Property-Type Category	Property Type	Volume[a]			
		Agriculture	Mining	Townsites	Work Camps
	dredge tailings		1		
	headframes (collapsed)		1		
	adits and tailings		1		
	prospect pits and surface-vein working		1		
	waste-rock piles		1		
	shafts and adits		1		
	underground workings		1		
	open-pit mines		1		
	ore-processing industrial structures/ buildings: *arrastra*, foundation, pad, machine mount		1		
	ore-processing tailings		1		
	tramways/tracks		1		2
Public-infrastructure building	school, church, hospital	2	2	1	2
Townsite creation features	fill, levee, terrace, waterway			1	
Mercantile building and activities	shop, warehouse, merchandise/stock		2	1	
Service business building/ structure and by-products	laundry boiler/drying rack, laundry-boiler waste, food waste			1	

Key: Caltrans = California Department of Transportation
[a] "Volume" refers to the four Caltrans thematic studies as follows: Agriculture = Caltrans (2007); Mining = Caltrans (2008); Townsites = Caltrans (2010); Work Camps = this volume. A marker of "1" indicates that the property type receives primary treatment in that volume. A marker of "2" indicates secondary treatment. A blank cell indicates that the property type is not treated in that volume.

CHAPTER 2. HISTORIC CONTEXT

This historic context addresses California work camps established during the first few years of the California gold rush through 1941, at the beginning of U.S. involvement in World War II. Work camps created between 1848 and 1941 have the potential to contribute important archaeological information associated with camp function, design, and conditions, household composition and lifeways, labor organization and management policy, immigration and ethnicity, and technology, amongst other research domains. Work camps cover such a broad expanse of history in the state, subsuming virtually every industry, the descriptive and analytic narrative contained in this historic context is by no means comprehensive. Therefore, when encountering a work camp, the reader should engage in site-specific research.

Work camps, which varied from a handful to hundreds of workers, ranged from private or corporate-owned and corporate-managed camps to camps created by the state and federal governments. The specific industries or entities that sponsored work camps selected for this study include agriculture, charcoal production, government, logging and lumber, mining, oil and petroleum, railroad, water development and hydroelectric power, and whaling and fishing. Because transportation-related resources are closely associated with the previously mentioned industries, particularly logging and lumber, railroads, and government, they are not treated separately here. This context does not include military encampments; refugee camps, such as those created after the 1906 San Francisco earthquake; work camps associated with Japanese internment camps; or prisoner-of-war camps active during World Wars I and II. It also excludes work camps or company towns that were intended as permanent settlements or that later became incorporated cities or municipalities or unincorporated towns. Those property types were addressed in *A Historical Context and Archaeological Research Design for Townsite Properties in California* (Caltrans 2010). Although this historic context addresses mining camps, a more detailed discussion is included in *A Historical Context and Archaeological Research Design for Mining Properties in California* (Caltrans 2008). For the purposes of this historic context, the term "work camp" has been chosen in preference to "labor camp" because labor camps are often synonymous with internment camps, prisoner-of-war camps, or other camps operated solely by the military. "Labor camp" is used only in reference to state-run prison-labor camps, in direct quotes, or with respect to historical documents of the period (e.g., Labor Camp Act of 1915).

Most published accounts that address work camps in California focus on the state's agricultural industry. This somewhat narrow focus reflects the recent interest in immigration, minority, and labor history as it unfolded in California from the early 1900s through the 1940s. Published accounts of the state's agricultural industry date to the 19th century; among them were articles in *The California Farmer*, a serial publication that extolled the virtues of the state's soils and farms. Combined with social narratives by authors such as John Steinbeck, with newsreels of the 1930s, and, later, with feature-length films, the Great Depression of the 1930s brought the plight of Dust Bowl migrants to the attention of the general populace and stimulated more in-depth academic research regarding the challenges faced by the state's agricultural workforce. Consequently, this historic context relies on published and some unpublished studies that focus on work camps associated with the state's agricultural industries, particularly during the 1910s through the 1930s.

Notwithstanding their importance to the state's agricultural economy, work camps, perhaps better than any other property type, reflect the broader history of industrial labor in the American West during 19th and 20th centuries. Between 1848 and 1941, many of California's new immigrants participated in a work camp at some point in their lives. Individuals and families who occupied work camps represented a complex set of traditions from many regions and countries of origin.

The vast body of work camp research that historians and archaeologists have conducted to date has focused on properties of the post-1900s era, particularly those associated with agriculture, fisheries, logging, and water development. This focus is largely a result of (1) federally funded cultural resource studies for reclamation projects during the last three decades of the 20th century, (2) reports addressing work camps funded or sponsored by the government, (3) a general lack of documentary evidence regarding pre-1900 work camps, and (4) the fact that many work camps encountered in the field date to the period after 1900. Unfortunately, the personal stories of the men, women, and children who occupied many of California's work camps remain poorly documented.

During most of the 19th century, neither the government nor private companies made any concerted effort to document the state's transient labor force or its work camps. Although work camps were a significant part of the state's cultural landscape during the 19th century, their design, construction, and period of occupation remained poorly documented until government regulations created standards for sanitation and other living conditions during the 20th century. In this regard, archaeology provides an important tool for interpreting work camp properties, particularly those of the 19th century, that have received only superficial documentary attention.

Disposal practices at work camps are the main source of artifacts and faunal remains that are the staples of archaeological research. However, the features themselves are also important. The spatial relationship of these features, including camp buildings, structures, and infrastructure such as water sources, sewage, and refuse disposal sites, is a significant factor in assessing health and sanitation practices at the various camps.

During the first two decades of the 20th century, the state began a concerted effort to legislate measures aimed at improving working conditions—in particular, sanitation for seasonal or migrant laborers. Throughout this study, reports from the Commission on Industrial Relations (CIR), established in 1912, and the California Commission of Immigration and Housing (CCIH), established in 1913, are used to describe conditions in California's work camps (see Appendix A for an acronym glossary).

The collapse of the stock market in October 1929 and the ensuing Great Depression overshadowed the progress made by state health officials to improve working conditions in the 1920s. The crash triggered an economic downward spiral, which resulted in the bankruptcy of thousands of banks and other companies, a rapid decline in U.S. manufacturing output, and an unprecedented increase in unemployment. By 1932, 12–15 million U.S. workers, equaling 25–30 percent of the total workforce, were unemployed. After their wage earners lost their jobs, many American families incurred huge debts, could not pay their mortgages or leases, and ultimately were reduced to living in poverty. In the southern part of the Great Plains, the social and economic crisis was aggravated by poor agricultural practices, as well as years of drought and incessant winds.

Language chosen to describe the migrants of the 1930s remains a sensitive subject for some, given that many participants in this mass migration, along with their descendants, still reside in various parts of California (Gregory 1995). After the publication of his historical novel *The Grapes of Wrath* (Steinbeck 1939), John Steinbeck himself was assailed for the way in which he presented his characters. For the purposes of this historic context, the term "Dust Bowl migrants" denotes individuals and families who crossed the North American continent in the 1930s to arrive in California. Pejorative terms such as "Okies" and "hoboes" are used only in the context of a specific reference (Figure 1).

Figure 1. Promotional billboard for the film* The Grapes of Wrath *along a California highway, 1940s. *(Courtesy of Library of Congress, Prints and Photographs Division, Washington, D.C., Image LC-HS503-6897.)*

DEFINING WORK CAMPS

Pulp fiction of the late 19th century, Wild West shows like those operated by William Frederick "Buffalo Bill" Cody, and western novels like *The Virginian: A Horseman of the Plains*, first published in 1902, shaped the popular image of the West. Though seminal in perpetuating a romantic but stereotypical vision, Owen Wister's (1929) *The Virginian* and its film adaptation contain a reference to a less familiar side of the American West: immigrant laborers. Today, even though the mythic West remains a powerful popular narrative, many historians and archaeologists are concerned, instead, with what has been called the "Counterclassic West" (Schwantes 1987): a region of immigrants, racial conflict, and class struggles.

For many years, traditional western history was dominated by Frederick Jackson Turner's concern with the settlement and development of the region by Anglo-Europeans and the forging

of unique elements of American identity on the frontier. During the 1960s, however, with the growth of the new social history, historians began to "mainstream" previously marginal people and aspects of western history, including the expansion of capitalism, immigration, environmental degradation, urbanization, gender, social inequality, labor, and class conflict (Deutsch 1987; Limerick 1987; Nash 1991; Robbins 1994; Cornford 1995).

Over the past two centuries, the exponential growth of the global economy has been predicated on a voracious appetite for the raw materials of an ever-expanding periphery (Wallerstein 1974, 1980). During the late 18th century the acquisition of furs, along with tallow and hides, spurred some of the first western work settlements. Later, industries devoted to mining, logging, water and transportation improvements, and a multitude of other pursuits, appeared as the premodern world economy was transformed by the industrial revolution. Although some work settlements did become durable communities, most had fleeting existences.

In the context of interconnected world systems, work camps can be viewed from the perspective of Immanuel Wallerstein (1974, 1979, 1980) and Terence K. Hopkins (Hopkins and Wallerstein 1982). Wallerstein (1974:233) commented that "the mark of the modern world is the imagination of its profiteers and the counter-assertiveness of the oppressed." His view is concordant with that of the exploitation of modern workers serving large corporations within a global economy. From this perspective, most work camps were integral parts of profit-driven enterprises and often were the direct result of large expenditures of capital and the expansion of regional, national, or global economic systems into hitherto undeveloped areas. For many researchers, the role of work camps within regional, national, and international flows of commodities, capital, and people is central to their role in the history of California and the American West.

Between the 19th and 20th centuries, work camps in the American West typically served as outposts for private companies, government agencies, and distant moneyed interests, who provided living quarters for the workers engaged in extracting raw materials or constructing the infrastructure needed for industrial and urban development. The economy of work camps involved the flow not only of capital and commodities but also of the workers themselves. The need for cheap labor was one of the main engines driving immigration to California and the American West as a whole. Another factor was land speculation that promoted settlement and offered other incentives to immigrants to relocate, some to new agricultural colonies.

Through their labor on the construction of roads, highways, and railroads, on irrigation and hydroelectric projects, and in agriculture, logging, and mining, these "cheap foreigners" were instrumental in building the infrastructure of the modern West (Figure 2). Unlike communities with more-permanent and more-diversified economies, a work camp had a backdrop of a unique set of relations among workers, employers, and the physical environment. Dialogue between workers and owners continued to evolve as the nation became industrialized, class relations were transformed, and resources were depleted.

Although work camps were widely scattered throughout California and the American West, they arose from common economic imperatives that influenced their longevity, development, and the nature of interactions among laborers and their employers. Those shared circumstances not only defined work settlements but also provided important reasons for examining life in such places throughout the American West.

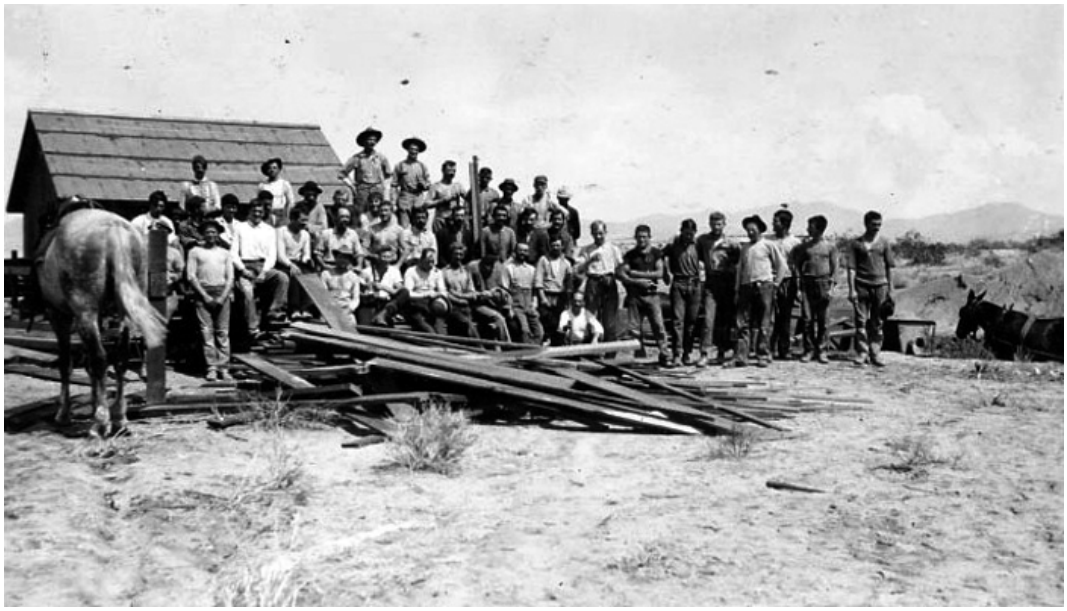

Figure 2. Los Angeles Aqueduct construction crew, 1909. *(Courtesy of the Water Resources Collections and Archives, University of California, Riverside, WRCA LIPP Box 78, Item 141, No. 415.)*

Work camps, unlike permanent communities or towns, provide an opportunity for archaeologists and historians to look at discrete data that can address questions related to ethnicity, assimilation, acculturation, rural life, immigration, labor, and socioeconomics. Within these research domains, archaeological and historical research can focus on themes such as consumption, leisure, recreation, and gender. Interpreting the working relationship between employers and temporary workers is central to this historic context, as are the broader issues that influenced the creation of work camps in concert with the economic and cultural history of a locale, a region, and the state (Figure 3).

Figure 3. Recreation at labor camps: watching a Sunday afternoon baseball game, Tulare Migrant Labor Camp, Visalia, 1940.
(Courtesy of Library of Congress, Prints and Photographs Division, Washington, D.C., Image LC-USF34-024294-D.)

For the purposes of this historic context, the characteristics of a work camp include the following (Van Bueren 2002a:2):

- a narrow economic focus,
- relative geographic isolation,
- impermanence, and
- connections with and dependence on regional, national, and, in some cases, global economies.

Work camps, also termed "peripheral work camps" by Van Bueren (2002a:2), generally were established for tasks associated with specific industries. These camps could be financed and operated by an individual investor or developer, company, corporation, or government agency. The geographic isolation of many work camps necessitated the importation of a labor force, which required the construction of housing and infrastructure to support the enterprise (Figure 4).

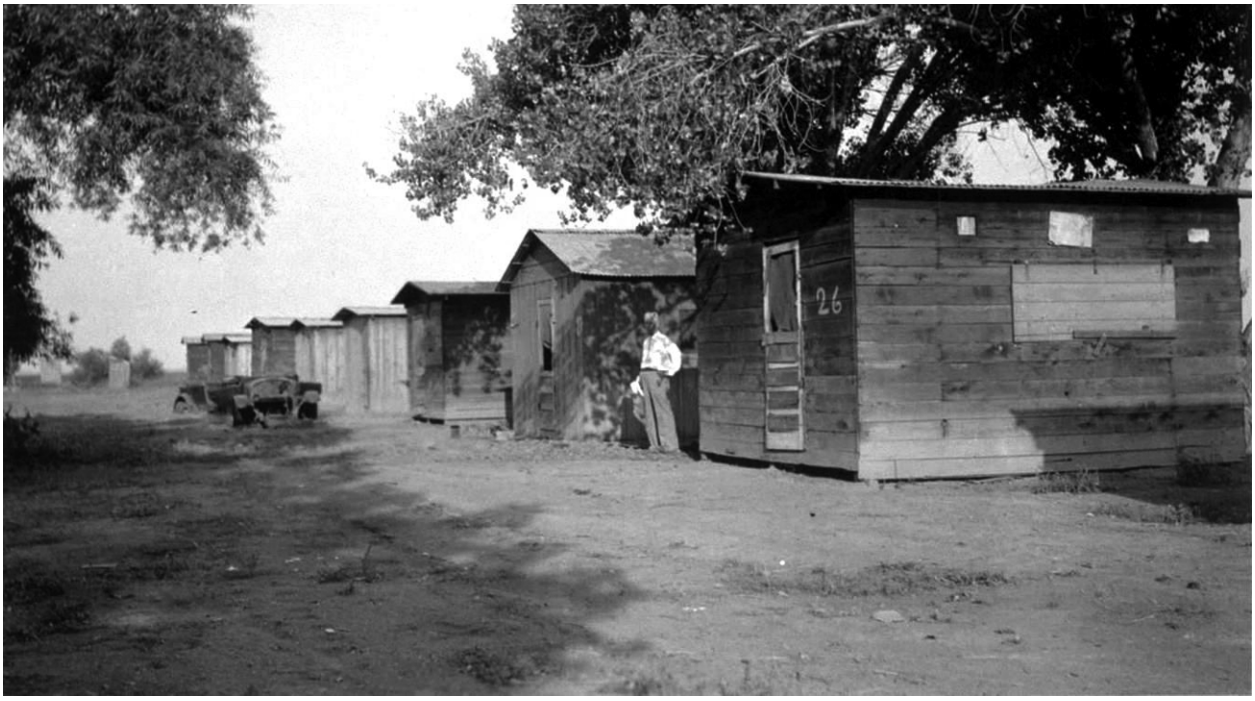

Figure 4. Kern County Work Camp, 1936. *Typical agricultural laborers' cabins with the deputy health officer of Kern County standing near one of the cabins. The camp does not appear to have been occupied when the photograph was taken; therefore, like many other camps, it may have been used seasonally during the harvest. (Courtesy of Bancroft Library, University of California, Berkeley, BANC PIC 1954.013:35-PIC.)*

Although impermanence was a defining feature of many work camps, the meaning of "impermanence" is subject to interpretation. Nearly all work camps were impermanent; many, such as agriculture camps, were occupied only during specific seasons of the year. Although some work camps survived and became incorporated or chartered towns, this was usually not the founder's intentions for the camp. Some agriculture camps were occupied seasonally for many decades, others for a single growing season. Some camps were mobile: that is, the camp, in part or in its entirety, was moved to another location depending on the season, the demands of the landowner or leaseholder, or the progress of the work. Work camps associated with mining and

logging were more permanent, requiring substantial capital outlay; many lasted decades. In other industries, the workforce generally turned over rapidly and required less-substantial infrastructure and capital investment. Some camps were reoccupied by other industries or government entities after they were vacated or abandoned. During the 1940s, some Civilian Conservation Corps (CCC) camps were reoccupied by conscientious objectors, and migrant work camps of the Great Depression were reoccupied by *braceros*, or Mexican laborers, brought into the United States to fill the gap created by U.S. citizens fighting in World War II (Figure 5).

In this historic context, impermanence is approached in relationship to both the work for which the camp was built and the architecture or infrastructure of the camp. Impermanence can range from seasonal work over a long period to temporary, task-specific work—for example, construction jobs such as those associated with water development and railroads. Defining work camps in terms of the nature of the work and the physical attributes of the camp is necessary to maintain the connection among the cultural resource, the underlying social relationships and behaviors, and the way in which these factors influenced housing, health services, and opportunities for leisure and recreation.

Figure 5. Mexican family in a State Emergency Relief Administration (SERA) camp, 1935. *(Courtesy of Bancroft Library, University of California, Berkeley, BANC PIC 1954.013:62-PIC.)*

Work camps have been described and defined in various published histories, such as Gregory's (1989) *American Exodus: The Dust Bowl Migration and Okie Culture in California*, which examines the lives of migrant laborers during the 1930s, and Woirol's (1992) *In the Floating Army: F. C. Mills on Itinerant Life in California, 1914*, a first-hand account of Frederick Cecil Mills's life in California's labor camps (Mills's term for these work camps) in 1914. Specific industries, such as fisheries and agriculture, have received much attention with respect to the experience of immigrants. For example, Nash (1973) provided a detailed account of the ethnic composition of the shrimp industry and the role played by the Chinese during the 19th and 20th

centuries. Morgan (2001) described how racist attitudes shaped the fishing industry in the Monterey region and influenced settlement patterns in the area's fish camps. Lydon (1985) focused on the Chinese on Monterey Bay, including the role that they played in shore fishing and in gathering shellfish, such as abalone and mussels. Noted California labor historian Carey McWilliams's (1939) bestseller *Factories in the Field* examined the lives of farm laborers in California and condemned the politics and consequences of large-scale agribusiness. In 1939, McWilliams accepted an offer from incoming Governor Culbert Olson to head California's Division of Immigration and Housing, where he focused on improving conditions for agricultural workers.

WORK CAMP CHARACTERISTICS

Documenting the characteristics of each work camp—particularly with respect to skills, ethnicity, and gender—is central to reconstructing the histories of these camps. Each industry, and indeed each work camp, had unique and distinctive features. These characteristics shaped the work camp experience, which varied among industries and regions within the state. Agricultural labor is central to interpreting California's rural labor history. Poor living and working conditions among agricultural workers sparked investigations into work camps by the State of California. In most situations, laborers had little influence in determining camp conditions and wages, at least until state legislation encouraged or forced companies to establish certain work-related standards. Labor camp legislation enacted because of these investigations during the second decade of the 20th century is discussed in more detail in the following sections.

The duration of a job influenced the character of interactions between workers and employers in ways that are likely to have been expressed in the built environment and, possibly, in the archaeological record. In many cases, temporary or seasonal workers may have had little choice but to accept lower wages and less desirable living and working conditions than those of skilled workers who negotiated longer-term positions or were permanently employed and perhaps salaried. Exceptions occurred when unions were involved in negotiations or when labor shortages existed during world wars.

Although most work camps have some research value, short-lived camps offer the most temporally discrete data. Deposits from camps occupied for longer periods can be more challenging to interpret because of overlapping archaeological deposits. On the other hand, camps occupied for longer periods are more apt to have surviving documentary evidence that can provide details of camp life and can substantiate archaeological data (Figure 6).

Temporary camps constructed near existing communities may have had more-rudimentary infrastructure and often featured portable structures and tents, rather than more-permanent facilities. These camps were generally less complex and had fewer amenities, but workers could visit town on days off to obtain goods and services not available in camp. With the exception of government work camps that had mandated services, isolated work camps often required more infrastructure, such as a company store, permanent or semipermanent housing, and recreational opportunities, given that the remoteness of the camp often precluded access to goods and services. In certain situations, satellite work camps were formed at specific job sites, and ancillary camps that provided goods and services were established near work camps.

Temporary or seasonal workers were less likely to bring their families along, at least before the Great Depression. Transient laborers also took on temporary jobs that placed them in confrontational situations with long-term or more-permanent workers, as was true in the 1930s during agricultural labor strikes in California's Central and Imperial valleys. Employers exploited those differences during strikes and fostered divisiveness in the workforce as a way to suppress wage increases. Examples of this situation occurred in northern California and the Imperial Valley, where workers for large company- or corporate-owned hop and cotton operations were paid exceedingly low wages and were forced to live under harsh conditions (Parker 1914:110; Gregory 1989:89,155–157) (Figure 7).

Figure 6. Debris at migrant (squatters') labor camp in Kern County, 1935. *Refuse strewn across the former camp of migrant laborers. (Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Image LC-DIG-ppmsca-19156.)*

Although work camps were often organized into specific spatial configurations, that included segregated housing for single workers and those with families, caution should be exercised before applying the term "community" to many of the temporary work camps discussed in this historic context. The two most common descriptors of community are (1) social land use (sharing a common residence within specific geographic boundaries) and (2) social identity (identifying with one another regardless of shared land use). Shared land use without common social identity generally is insufficient to define a community, whereas shared identity generally is sufficient. Murdock (1949) provided one of the earliest definitions of community: social land use is combined with social identity as ''groups of people who normally reside together in face-to-face association"—that is, community consists of both place and identity. A third descriptor of community is social identity through temporal periods: that is, community consists of a social identity unfolding through time (Murdock 1949; Arensberg and Kimball 1965). The archaeological studies of Hardesty (1988, 2010) and Lawrence (2000:12–16) address this view of community.

Figure 7. Kern County migrant labor camp in the winter under harsh living conditions, 1939. *(Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Image LC-USF34-018824-E.)*

In the modern world, globalization has stretched this concept to include social scales varying from households to the entire planet (McKechnie 1979). Yet even if we restrict our use of the term to Murdock's (1949) definition, settlements—in this case, work camps—that owe their existence to a particular construction project or resource-extraction venture clearly differ from many permanent communities.

One of the most obvious differences stems from the forces prompting the creation of the work camp (Van Bueren 2002a:2). Unlike communities with more diversified and sustainable economic foundations, such as shipping and manufacturing centers, work camps typically were created for a specific and, often, limited purpose. That raison d'être in turn dictated their development, duration, and demise. For communities dependent on a particular resource, variations in demand, combined with resource depletion or the impracticality of further extraction, prompted cycles of boom and bust. Other single-focus work communities, such as construction camps for railroads, water projects, and highways, lasted only as long as the completion of a given project, particularly those that were government sponsored. Although such task-specific temporary deployments are not unique to capitalistic social formations, their articulation with the larger economy is a distinctive product of the modern world.

Narrow economic focus, geographic isolation, impermanence, and dependence on the global economy influenced the trajectory of social relations among work camp members. Far more often, the narrow economic focus of work camps contributed to their impermanence and dependence on outside markets. Consequently, foodstuffs, supplies, and personal items may have been procured at the camp itself, at a nearby store or storehouse, or through mail order, if such a service was available at the camp. The range of commodities available for purchase may have been limited by the location of the work camp with respect to transportation systems and by the desire of the company or corporation to keep costs in check.

The transience of work camps is, of course, implicit, but camps tied to extractive industries, such as logging and mining, were often unstable because of their dependence on regional, national, or

world markets. Although a philosophy of seeming endless abundance and opportunity fueled western expansion, in actual practice even the most-renewable resources often were depleted or were found to have recognizable limits. The vagaries of market fluctuations also contributed to the instability and short duration of work camps.

The temporary nature of many work camps, in turn, limited the amount of investment. Most work camps were never intended to be complete, full-service communities. The amount of infrastructure built at work camps was often contingent on their anticipated duration, size, and demographic composition. Although the level of infrastructure varied considerably, most work camps remained inherently simple, if not intentionally incomplete. Settlements occupied for longer periods, particularly those with higher proportions of families, generally developed a wider array of amenities, social activities, and institutions than those used for shorter periods and occupied largely or solely by men. As of the late 19th century, settlements controlled by corporations and government entities also attempted to quash potentially disruptive activities such as alcohol consumption and labor unrest (Rogge et al. 1995). That trend mirrored the corporate paternalism documented in industrial centers such as the textile manufacturing concerns at the Boott Mills in Massachusetts (Mrozowski et al. 1996). Intended to promote moral and efficient work habits (Gutman 1976), such prohibitions were often ineffective. Ancillary settlements, on occasion, developed independently to provide certain services prohibited in camps. Buckles (1983:217) referred to these ancillary settlements as both "symbiotic" and "parasitic." At one 1912 Southern Pacific Railroad (SPRR) construction camp in Nevada, formal brothels were constructed on land adjoining the camp, leading to a quick transfer of land title to SPRR and removal of the squatters (Orsi 2007:246–247).

During the late 19th century in the industrial Northeast, 50 percent of the workers remained with an employer for less than six months (Thernstrom 1964; Katz et al. 1982). Similarly, in the West, most of the residents of work camps were sojourners, or individuals who remained temporarily and or resided in the same place for a brief period. Often their only recourse was to look out for their own interests by "voting with their feet," like other workers at the bottom of the economic scale (Wurst 1999:15). The multiethnic composition of many work camps also posed challenges for social cohesion. That many recent immigrants spoke little or no English often compounded differences in background.

Work settlements often lacked more than just physical amenities. For example, their populations were disproportionately male. Before World War I, women and children were uncommon or completely absent in many work camps, although exceptions existed (Hardesty 1994; Rogge et al. 1995; Van Bueren et al. 1999). During the 20th century, more stability and social integration eventually took place in work camps where gender became more balanced. For example, during the 1920s and 1930s, many families returned year after year to the railroad logging camps of the Sugar Pine Railway in Tuolumne County, leading to long-term relationships and continuity in social activities (Conners 1997). For example, in many railroad logging camps, despite harsh conditions and remote work locations, the potential to earn a wage higher than what could be earned in their home country attracted many immigrants as well as disadvantaged men born in the United States.

One of the defining characteristics of many, but not all, work camps was their remote location. Many work camps were established in rural areas lacking infrastructure, such as roads and communication facilities. That isolation had several important implications. Getting people, equipment, and supplies in and out of the camps was often expensive. Often, workers were

expected to pay their own travel expenses, fees for employment agents or contractors, and room and board (Bradwin 1928). Although real wages in the West averaged 20 to 25 percent more than national averages during the late 19th century (Atack and Passell 1994), disposable income could be significantly reduced by travel and living expenses. Nevertheless, higher prevailing wages in a variety of industries, such as railroads, mining, and logging, attracted many workers to California, despite excessive costs for travel and subsistence.

The remoteness of many work camps limited interactions between the larger society and the camp workers. Gender imbalances, minimal amenities, and the remoteness of many work camps contributed to the insularity of the experience. Only after labor agitation or strikes, or when the indigent and unemployed labor pool became large enough to be a potential burden on society, did work camp conditions come to the attention of the general public. Local communities benefited from having work camps located nearby. During their off-duty hours, workers frequented local businesses and, on occasion, spent the night in towns at boarding houses and hotels (Figure 8).

Figure 8. Boulder Peak, Los Angeles Aqueduct remote construction work camp, 1909.
(Courtesy of the Water Resources Collections and Archives, University of California, Riverside, WRCA LIPP Box 78, Item 141, No. 385.)

LABOR AND IMMIGRATION

As was true for the rest of the United States, California's rural industries drew upon European immigrants as a labor force, but a strongly circum-Pacific orientation gave California immigrant history some distinctive features that influenced nativist discourse during the 19th and 20th centuries. Rather than Irish or southern and eastern European, the immigrants who were felt to threaten the American way of life in California and much of the western United States were Asian, Mexican, and Central American. Nativist anxieties in California revolved around ideologies of racial, and not just cultural, differences—although the two are not necessarily easily separated. The prevalent racial and nativist ideologies in different periods and toward

different ethnic groups may be reflected in the spatial organization and infrastructure of work camps.

After the initial Spanish and Mexican colonization of California, the first great wave of immigration into California took place during the gold rush. The Argonauts, or gold seekers, came from all over the world, but as the surface placer gold mines were depleted, nativist sentiments emerged through the Foreign Miner's Tax and the deployment of mobs to drive out competing nationalities and racial/ethnic groups—particularly Native Americans, Mexicans, and Chinese. Some tax collectors were corrupt and took bribes to supplement their income, thus allowing foreign miners to continue working in particular locations. Whether tax monies were illegally levied against Chinese miners by corrupt county officials or not, by the 1860s the Chinese had become an important part of many industries in the state. Most Chinese received proportionately lower wages and performed dangerous jobs, such as building flumes and canals and blasting rock, most often in rural areas, then their counterpart Anglo-European workers.

In contrast to the industrial centers of the northeastern United States where immigrants funneled into factory work and other urban trades, the driving economic engine behind immigration in California was the need for unskilled manual labor in rural industries. The industries most significant in drawing immigrant labor were agriculture, mining, logging, reclamation projects (levee construction), and railroad construction (McWilliams 1971; Mitchell 1996; Driscoll 1999; Street 2004). Rural industries generally were isolated from population centers and seasonal, required large amounts of temporary labor, and had little available preexisting infrastructure for the housing of workers. The work also tended to be labor-intensive, manual, and poorly paid, although exceptions existed, particularly in the mining, logging, and certain construction industries that required more highly skilled laborers.

Obviously, not all rural labor was migrant labor, and not all immigrants had the same needs and skills. Scandinavian loggers and Chinese railroad workers followed different patterns of immigration and immigrated for different reasons. Some sought to make enough money to return home and to buy their own land, whereas others followed the more "classic" pattern of establishing new roots in the United States. Others immigrated out of necessity, because of work shortages in their home countries, economic declines, political unrest, or wars.

When economic times were good and the labor market was tight, immigrant labor could make up the shortfall. Particularly during periods of nativist and anti-immigrant sentiment, immigrant labor—unskilled labor, especially—was considered exploitable and thus cheaper than labor by other groups. In general, however, the attractiveness of immigrant labor lay in the ability to procure such workers in sufficient numbers at specific times. Usually, this was accomplished by intermediaries or labor contractors familiar with the immigrant community. Labor contractors supplied the company's labor requirements and payroll and, often, the workers' housing and food. Ideally, through their contacts and access to information, contractors arranged a long-term cycle of work for their compatriots, thus keeping these workers employed and moving them elsewhere when the job was done. These intermediaries or labor contractors had an advantage over others in that they often were multilingual. This system of contract labor was the basis for most immigrant labor in the United States during the 19th and early 20th centuries (Peck 1998, 2000). Patterns of migration, arrangements of labor contractors, and racial stereotypes of American employers all contributed to the concentration of particular groups in certain industries and jobs within those industries (Figure 9).

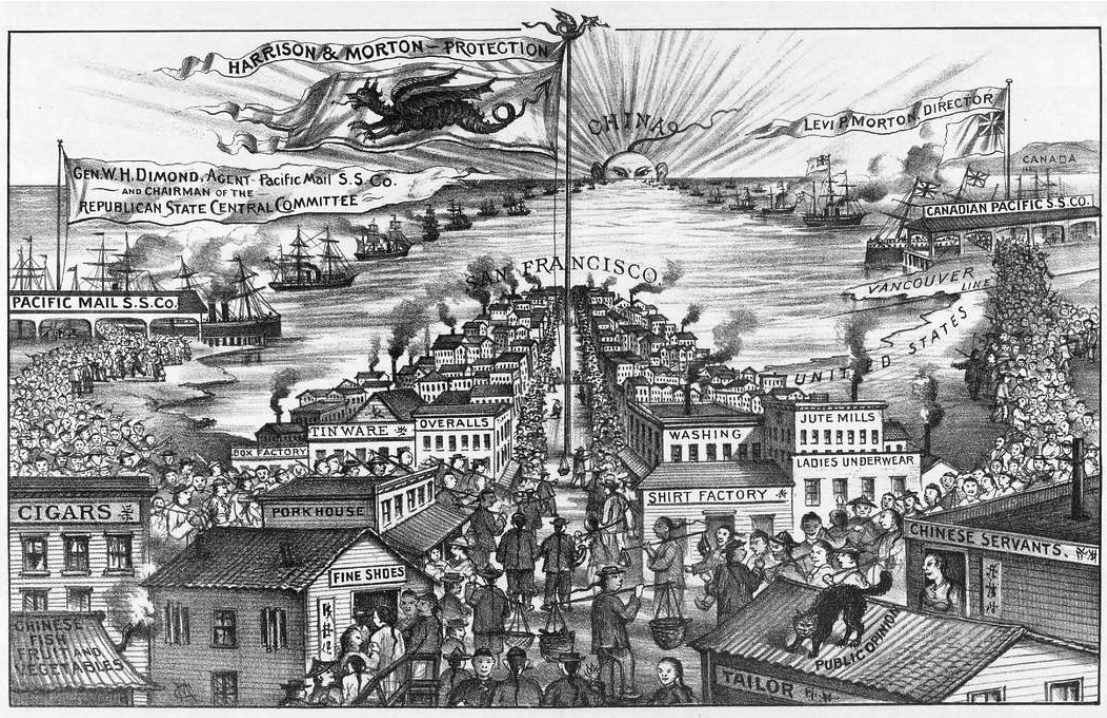

Figure 9. Idealized illustration of immigrant Chinese entering San Francisco. *San Francisco's Chinatown, with streets crowded with men and lined with businesses. (Courtesy of Bancroft Library, University of California, Berkeley, BANC PIC 1963.002:1477-C.)*

The period from 1848 to 1941 was characterized by several waves of immigration to the United States. For many, the desire to migrate evolved from lack of employment and an opportunity to own fee title to land, which for many Europeans was nearly impossible in their home countries.

As Charles Tilly (1990:84), a sociologist who studied large-scale migration, explained:

> To put it simply: networks migrate; categories stay put; and networks create new categories. By and large, the effective units of migration were (and are) neither individuals nor households but sets of people linked by acquaintance, kinship, and work experience who somehow incorporated American destinations into the mobility alternatives they considered when they reached critical decision points in their individual or collective lives.

That is, most people tended to immigrate through networks. In general, the departure from their home country, their travel, and their assigned work were arranged by labor contractors or through family members or acquaintances. Referred to today as networking, this process of cultural exchange resulted in the channeling of immigrant groups into certain regions and industries. Decisions about where to migrate and what work to seek often were not rational in the classical economic sense of the word but were constrained by the network and by the information and opportunities available through that network. The greater the risks and costs of the journey, the greater the reliance on preexisting ties (Tilly 1990:84). In other situations, societal organizations, clans, and companies controlled immigration in various countries and in the United States.

Reasons for migration also had an impact on immigrants' strategies for living in California. Intentions to stay or to return, to acculturate, to accumulate possessions in the United States, to save to return home and buy land, or to send money home all had a material impact on their life in California. Tilly (1990:88–89) constructed a typology of five types of immigration, each of which led to different material strategies:

1. *Colonizing migration*: the expansion of the geographic range of a population, often at the expense of another population. The movement of European farmers on the American frontier is an obvious example.
2. *Coerced migration*: forced migration. The migrants have little or no choice about their destination or even about whether to migrate. The forced removal of Native American groups falls into this type of migration.
3. *Circular migration*: a regular circuit of work in the destination country, in which the migrants retain their claims and contacts in the home country, returning there regularly. Many Mexican immigrant workers in the United States fit this pattern.
4. *Chain migration*: movement of sets of related individuals or households who migrate through a set of social arrangements, and for whom a preexisting and known community is present at the destination.
5. *Career migration*: movement of individuals or households in response to conditions within larger structures, such as corporations or professional labor markets. Middle-class professional migration took this form.

These five forms of migration, as Tilly noted, clearly overlap. Career migration may take on elements of chain migration, for example, as job opportunities are made available or known through family networks. Individuals and households within the same migrant network may have different intentions, some planning to stay, others to return. One type of migration may evolve into another: for example, circular migration may evolve into chain migration. Sometimes the plans to return may never come to fruition, as the migrants remain trapped in a cycle of poverty or, conversely, capital intended for investment in the home country is found to be just as easily invested in the destination locale. The typology provides a baseline classification against which to understand the different strategies that migrants pursued and has implications for understanding the documentary and material record of these migrants.

Circular migrations are characterized by the movement of individuals rather than households and draw disproportionately on one sex, generally male. The migrant is likely to accumulate few material goods, to have inexpensive and collective living arrangements, and to have minimal contact with the population of the destination country (Tilly 1990:89). Colonizing, chain, and career migrations involve the movement of households as well as individuals, when the move is intended to be permanent. Household goods are generally transported from the place of origin to the destination, at least for migrants within the United States, such as those during the Dust Bowl migration of the 1930s. The following sections provide a brief overview of the various immigrant groups that formed the backbone of California's work camp labor market from the mid-19th through the mid-20th century.

CHINESE IMMIGRATION

Overseas Chinese immigrants were among the first and, ultimately, largest sources of labor in the creation of California's work camps during the 19th century. After the gold rush, agriculture

became the largest sector of the California economy, and the Central Valley became one of the most productive agricultural regions in the United States. The creation of farmland through cultivation, along with massive reclamation and irrigation projects, was accomplished with immigrant labor, primarily Chinese. Chinese immigration into California has been the subject of considerable historical study (Jafa 1901; Heizer and Almquist 1971; Wey 1988; Chan 1990, 2000) and archaeological study because of the distinctiveness of the material culture of Chinese immigrants (Felton et al. 1984; The Great Basin Foundation 1987; Praetzellis et al. 1987; Costello and Maniery 1988; Wegars 1993; Greenwood 1996; PAR Environmental Services 1996; Allen and Hylkema 2002, Van Bueren 2008).

After the first wave of Chinese immigrants entered California during the gold rush, many Chinese chose or were forced to work more-marginal gold-bearing deposits. Chinese also found work as skilled and unskilled wage laborers, primarily in building levees and in agriculture. The next wave of Chinese immigration was driven by railroad construction and the expansion of California agriculture in other areas of the state besides the Central Valley (Street 2004; National Park Service 2011:172). By the last quarter of the 19th century, Chinese laborers included some who had been born, but not necessarily naturalized, in the United States.

Because of the combination of remote construction sites and a tight labor market, both skilled and unskilled labor for railroad construction was in short supply. During the late 1860s, the California Pacific Railroad (CPRR), which ran from Sacramento to Vallejo, transported 50 Chinese workers from the Pacific Northwest; shortly thereafter, it began to bring Chinese laborers directly from Canton (Driscoll 1999:15). The CPRR's largest employment of Chinese workers took place during the construction of the Transcontinental Railroad, from 1862 to 1869 (Chan 1990). In his 1865 report on the progress of the work, Leland Stanford (1865:7–8) expounded on the advantages of Chinese labor, including the important role of contractors and Chinese organizations:

> More prudent and economical [than Anglo-European laborers], they are contented with less wages. We find them organized into societies for mutual aid and assistance. These societies, that count their numbers by thousands, are conducted by shrewd, intelligent businessmen, who promptly advise their subordinates where employment can be found on the most favorable terms.
>
> No system similar to slavery, serfdom or peonage prevails among these laborers. Their wages, which are always paid in coin, at the end of each month, are divided among them by their agents, who attend to their business, in proportion to the labor done by each person. These agents are generally American or Chinese merchants, who give them their supplies of food, the value of which they deduct from their monthly pay.

Chinese laborers also worked in fishing, squid, abalone, and shrimping camps and had a prominent role in mining, agriculture, and railroad construction. They were less conspicuous in logging, although exceptions included the numerous logging camps around Truckee and surrounding Lake Tahoe (Wey 1988). In the Lake Tahoe Basin, Chinese were hired to gather cordwood and for other tasks related to the Comstock logging industry. Chinese worked in gangs in the Lake Tahoe Basin during the late spring through the fall and wintered in Carson City, Genoa, and Reno. Chinese camps in the Lake Tahoe Basin generally consisted of one to five

cabins built of logs. Most of the camps were seasonal, lasting from one to several years (Carson and Tahoe Lumber and Fluming Company 1873–1947).

Chinese who immigrated to the United States were not a monolithic group. Observers noted the divisions and tensions among different groups of Chinese workers, especially when they resulted in violence. Chinese immigrants came from different region of China, and the "push and pull" factors that led groups to immigrate varied from region to region. Conflicts such as the Taiping Rebellion and the Punti-Hakka feuds of the Pearl River Delta played an important role in persuading rural Chinese to emigrate. Other factors involved the expansion of commercial agriculture in their homeland, as China fell under the influence of colonial powers. Many, if not most, of the Chinese who immigrated into the Mother Lode region during the first few years of the gold rush sought to accumulate enough wealth to return home. Many were refugees from war, land dispossession, debt peonage, or natural disasters (Figure 10).

Figure 10. Chinese laborers at the Hercules Dynamite Factory in Contra Costa County, ca. 1900.
(Courtesy of California Historical Society, San Francisco, Image FN-24945.)

Anti-immigrant and nativist feelings ran strong in 19th- and early-20th-century America (Saxton 1971; Moses and Focht 1991). With the onset of a long-term economic depression in the 1870s, some members of organized labor and other European American workers began a program of anti-Chinese agitation. Increasing pressure in the form of political targeting, boycotts and violence against employers of Chinese labor, and local programs against the Chinese themselves eventually resulted in the passage of the Chinese Exclusion Act of 1882 (Saxton 1971; Chan 1990, 2000; Street 2004). This law was the first congressional attempt to bar immigration based on race or color. Before the passage of the Chinese Exclusion Act, the California legislature and local governments passed a series of discriminatory laws and ordinances that were targeted at Chinese. These included the Foreign Miner's Tax, bans on certain types of fishing net (only the sort used by Chinese fishermen), and, in San Francisco, prohibitions on laundries in wooden buildings (Chan 1990:64). Local ordinances, to a lesser degree, imposed similar restrictions targeting Chinese businesses and individuals (Figure 11).

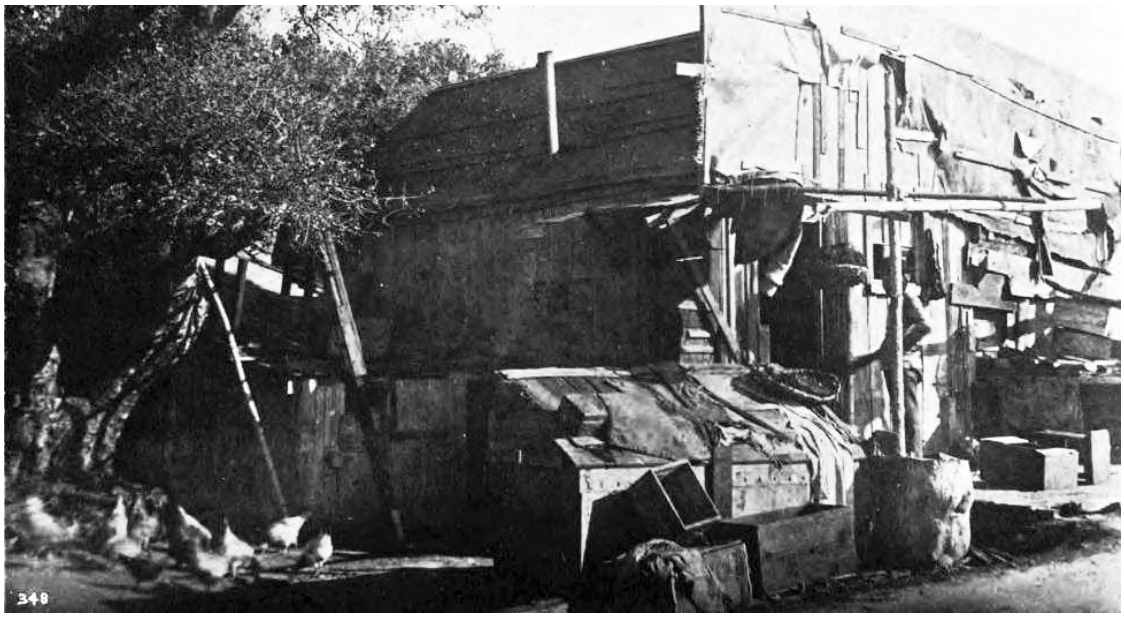

Figure 11. Photograph of Chinese fishing village at Stillwater Cove, present-day Pebble Beach, ca. 1900. *(Courtesy of Monterey County Free Library, Monterey, Image CSALCL-188.)*

In 1888, Congress passed two additional laws that barred the reentry of any Chinese laborers who were outside the country, effectively stranding roughly 20,000 who had left for visits (Heizer and Almquist 1971:158,198). The 1882 law was renewed in 1892, in 1902, and in 1904. The Chinese Exclusion Act was not repealed until 1943, after the entry of the United States into World War II (Chan 1990:62). Despite exclusionary laws, California's Chinese prevailed and today form an important part of the state's cultural and economic history.

JAPANESE IMMIGRATION

After the Chinese Exclusion Act of 1882, the owners and operators of rural industries, particularly agriculture, sought to make up the labor shortfall by drawing on other immigrant groups, the first of which was the Japanese (National Park Service 2011:172). Japanese began to enter California as early as the 1860s, though Japan did not allow its citizens to emigrate as contract workers until the 1880s (Heizer and Almquist 1971:178; Waugh et al. 1988:161–162). The initial flow of Japanese workers was to Hawaii for work on sugar plantations. The reasons for Japanese emigration are probably related to the practice of primogeniture and an economic shift from tenant-based to larger-scale commercial agriculture. As was true for the Chinese, many of the Japanese workers emigrated in order to send remittances home. Others intended to relocate permanently and to purchase land in California (Chan 1990:47–48). The Japanese filled an important niche left by the Chinese: namely, in agriculture and California's fishing industry (Driscoll 1999:16) (Figure 12).

Japanese immigrant workers generally dealt with American employers through a system of independent labor contractors, known as *keiyaku-nin*. As was true of Chinese intermediaries or labor contractors, they settled disputes, negotiated wages, distributed food, and provided housing. The efficiency of the *keiyaku-nin* and their willingness to gain labor monopolies by underbidding other groups won American employers over to Japanese labor. Employers were less pleased once the labor monopoly had been achieved and some Japanese workers initiated or

joined labor strikes, generally for higher wages and improved living conditions (McWilliams 1971; Daniel 1981; Mitchell 1996; Street 2004). The organization and solidarity of Japanese workers sometimes had the grudging respect of American workers (Walsh and Manly 1916:4947; Heizer and Almquist 1971:190,260) but led to a desire on the part of some agriculturists to end their reliance on Japanese labor.

Anti-Japanese sentiment grew in the United States during the first three decades of the 20th century, "eventually escalating to violence" (Heizer and Almquist 1971:180–182,256–257). By the time Japanese labor was viewed as a potential problem, Japan had established itself as a formidable military presence in the Pacific. Although Japan was not necessarily a military threat to the United States at this time, attempts to bar Japanese immigration were more cautious and diplomatic than those used to bar the Chinese. President Theodore Roosevelt worked out the unwritten "Gentlemen's Agreement" with Japan in 1907 (Waugh et al. 1988:162): Japan would cease issuing passports to Japanese laborers and would recognize U.S. interests in the Philippines; in return, the United States guaranteed noninterference in Japanese actions in Korea (Chan 1990:62). Roosevelt also sealed off secondary immigration by prohibiting Japanese in Hawaii, Mexico, and Canada from entering the continental United States.

In 1913, California passed the Alien Land Law, which forbade aliens ineligible for citizenship from buying land or leasing it for more than three years. Although not naming them, this law was targeted specifically at the Japanese. A final loophole was closed with the 1924 Immigration Act, which, among other things, forbade the immigration of any Japanese—regardless of work status—into the United States. This was intended to stop the flow of "picture brides" and thus to prevent Japanese American men from marrying Japanese women (Chan 1990:64). Japanese, many of them second- and third-generation descendants of immigrants, remained a formidable part of California's agricultural industry until 1941, when Pearl Harbor was attacked, and the U.S. entered a new phase of excluding the Japanese, culminating in the creation of internment camps.

Figure 12. Japanese American farm women, 1915. *(Courtesy of California State University, Sacramento, Image JC28F:10-ark:/13030/kt8779q6rb.)*

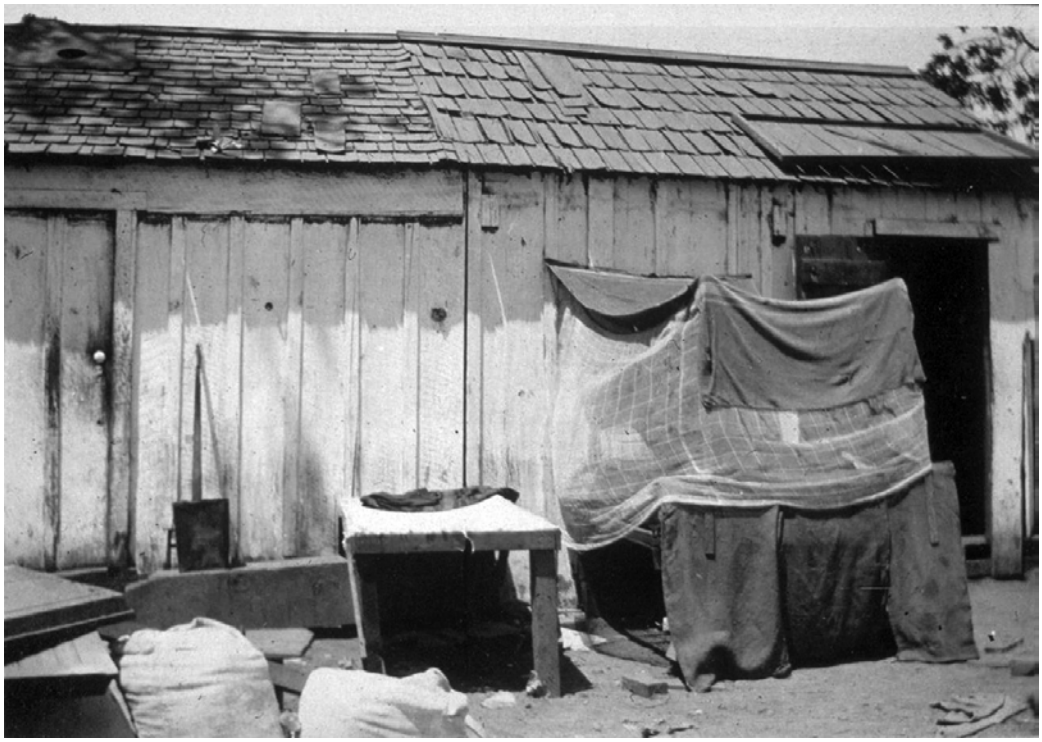

Figure 13. Hindu combination shelter and bed, ca. 1915. *(Courtesy of Bancroft Library, University of California, Berkeley, BANC PIC 1905.02716-PIC.)*

EAST INDIAN IMMIGRATION

East Indians, primarily Sikhs from the Punjab region of India, constituted the next wave of immigrants. As was true for the Japanese, their labor was concentrated primarily in agriculture (Hess 1974; Gonzales 1986). This wave of immigration began with Indian laborers coming in from British Columbia in 1904 and legally ended with the Immigration Act of 1917, which designated an "Asiatic Barred Zone," limiting immigration from Saudi Arabia, western and southern Asia, and most of the Pacific Islands and eastern Asia (China was already separately excluded). East Indians posed a problem within the racial ideologies of the time because they technically were Caucasians. The Immigration Act of 1917 barred Asian immigrants based on their geographic origin (Chan 1990:65). During the first two decades of the 20th century, East Indian immigrants had become an important part of the Central Valley's agricultural labor pool. Descendants of East Indian immigrants continue to live and farm in the Central Valley, particularly in communities such as Lodi and Yuba City (Figure 13).

FILIPINO IMMIGRATION

Filipinos were the last Asian group to immigrate to California in significant numbers as laborers. At the close of the 19th century, they worked on Hawaiian plantations, but not until the 1920s did they begin to immigrate in large numbers to the U.S. mainland. In 1920, 2,000 documented Filipinos reportedly were present in California; by 1930, that population was 30,000, of which only 1,800 were women (Boyd 1971). These workers were brought in to replace Japanese workers after 1924 and filled the gap for unskilled agricultural work (Melendy 1974:520–521). By the 1920s, Filipino laborers were active throughout Monterey and Santa Cruz counties and worked sporadically throughout the Sacramento and San Joaquin valleys (Figure 14).

Figure 14. Filipinos harvesting lettuce near Westmorland in the Imperial Valley, 1931. *(Courtesy of Library of Congress, Prints and Photographs Division, Washington, D.C., Image LC-USF34-019079-E.)*

The Great Depression of the 1930s intensified nativist antagonism toward Filipinos. Nevertheless, Filipinos were U.S. nationals (because the Philippines were a U.S. territory at the time) and carried U.S. passports; therefore, legal means of exclusion were not easily enforced. Outbreaks of violence against Filipino agricultural laborers occurred in various communities within California's Central Valley and the Central Coast, particularly Monterey County (*Los Angeles Times* 1930:4). Some Filipino laborers established their own camps and provided their own guards to protect camp members; elsewhere, work camps were run by labor contractors and were protected by employees hired by these intermediaries. Eventually, the 1934 Tydings–McDuffie Act achieved a compromise in which, in return for eventual independence, the Philippines limited emigration to 50 people per year (Chan 1990:64). Despite the hardships faced by Filipino agricultural laborers during the early 20th century, by the 1930s they had become an important part of the state's workforce.

MEXICAN IMMIGRATION

One of the largest and best-documented immigrant groups in California's work camps was Mexicans (Pitti et al. 1988). Mexican labor has long been a feature of California history, and numerous outbreaks of nativist feeling toward Mexicans occurred in the 19th century, particularly in the gold fields (Garcilazo 1995; Fernandez 2001).

Mexican labor was already well established in railroad construction, agriculture, and charcoal production during the latter part of the 19th century. Many of the men who worked as charcoal burners in the 1870s Coso Mountain charcoal camps were from Mexico (Ruby 2005:176). After the completion of the Transcontinental Railroad in 1869, railroad companies expanded their networks in the southwestern United States, an effort that was in high gear by the 1880s (Driscoll 1999:17), when the railroad companies systematically recruited Mexican workers. The border region contained a ready-made pool of such workers fresh from the construction of railroads in the northern Mexican states. McWilliams (1968:186) estimated that from 1900 to 1940, 60 to 90 percent of the railroad workers on 18 railroads in the United States that he examined were Mexican laborers (Figure 15).

Figure 15. Mexican agricultural labor camp, Imperial Valley, 1937. *(Courtesy of Library of Congress, Prints and Photographs Division, FSA/OWI Collection, Washington, D.C. Image LC-USF34-9058-C.)*

The 1917 Immigration Act resulted in a significant drop in Mexican immigration; however, various exemptions were made for Mexicans who worked in the railroad and agricultural industries (Driscoll 1999:40–42). With the full-scale recruitment of Mexican and Filipino workers in the 1920s, California's rural labor once again acquired a multiethnic dimension. Mexican labor became the dominant agricultural labor force from the 1930s onward.

A series of high-profile strikes in the early 1930s led to temporary improvements in wages and conditions for Mexican workers, but these accomplishments were soon undercut by the influx of destitute migrants from the Great Plains of the United States. Despite the influx of Dust Bowl migrants into California, Mexican migrants remain an important part of California's skilled and unskilled labor force, evidenced by the thousands of day laborers who are a ubiquitous presence in the state's agricultural fields (Figure 16).

EUROPEAN AND AMERICAN MIGRANTS

The relationship of specific immigrant groups and industries is complex. For example, the Chinese and the Japanese dominated specific agricultural regions, but the extent of their predominance is subject to debate and revision in the light of further research; as one cultural group declined, another rose to prominence (McWilliams 1971; Street 2004). In essence, the dominance of one cultural group vs. another was subject to immigration policy, local politics, racial attitudes of the dominant group, and the variable cost of labor at any one time.

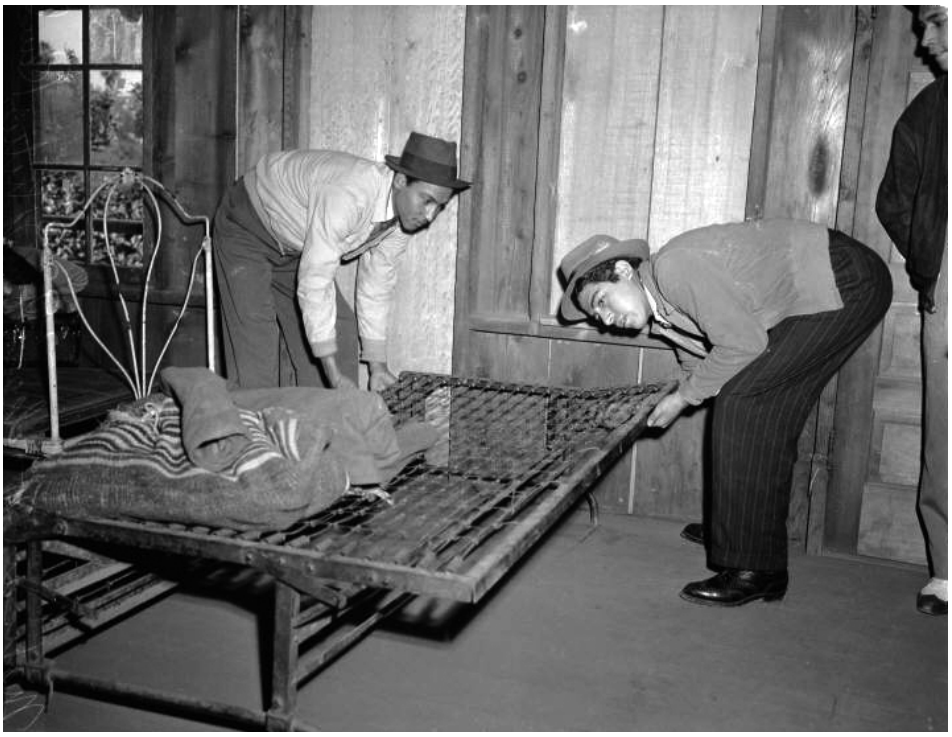

Figure 16. Mexican work camp laborers setting up folding cots in a bunkhouse, 1943. *(Courtesy of Department of Special Collections, Charles E. Young Research Library, University of California, Los Angeles, Image uclamss_1387_b61_29233.)*

European immigrants and native-born U.S. citizens had a continual presence in almost all of the state's industries, but the nature and extent of this presence varied by industry and time. Although Europeans of various nationalities did not experience the extremes of racial prejudice that Asians did, they were often discriminated against, and quasiracial and cultural prejudices were part of their experience (Figure 17).

Native peoples also bore extreme hardship and discrimination, in part because of An Act for the Government and Protection of Indians, which was enacted by the California state legislature in 1850. Under the act, city officials could "pick up Indians as vagrants. These officials would then turn the Indians over to ranchers" and others who required laborers (Santa Barbara Indian Center and Dutschke 1988:10). In 1860, the act was amended "to state that Indian children and any vagrant Indian could be put under the custody of whites for the purpose of employment and training." Under the law, the service of Indians could be retained until the men were 40 years of age and the women 35. This upheld the practice of Indian slavery and legalized retaining Indians for a much longer period and taking them at a younger age. The act was repealed in 1866, in compliance with the 14th Amendment of the United States Constitution, which provided that no state should infringe on any citizen's "privileges or immunities," "deprive any person of life, liberty, or property without due process of law," or deny to any person "the equal protection of the law" (Santa Barbara Indian Center and Dutschke 1988:10).

Native Americans worked as choppers, burners, and haulers in the Coso charcoal camps, despite the fact that the industry was depleting an important traditional food resource (Brooks et al. 1979; Ruby 2005:177). Reportedly, they were told, "as long as the mines were running, they could get food from the white men and did not need the pine-nut trees" (Roberts 1931:149) (Figure 18).

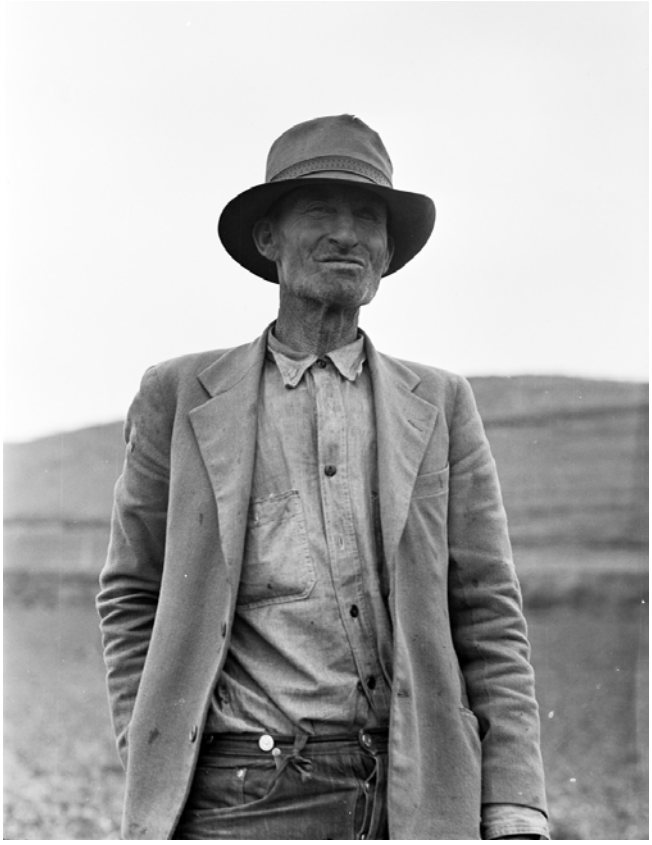

Figure 17. Labor contractor, San Luis Obispo County, 1936. *(Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Item No. LC-USF34-009002-C.)*

African Americans also played an important part in California's rural labor force, particularly for agriculture. Some black agricultural labor in the San Joaquin and Imperial valleys was recruited at the end of the 19th century, but Blacks never became a dominant workforce in California agriculture during that period, possibly because of a reluctance to accept the status as field hands when other opportunities existed. A more aggressive recruitment occurred from World War I through the 1920s, largely within the Imperial Valley. By the 1920s, Blacks had become an important part of the region's agricultural workforce, mainly picking cotton.

During the 1920s, Blacks with previous experience in the lumber industry were recruited in Plumas and Siskiyou counties, particularly in Quincy and Weed, where Louisiana-based companies had established sawmills (Ramsey and Lewis 1988). They began to settle in the small mountainous community of Weed (technically not a work camp), founded in 1900 by Abner E. Weed, a lumber-mill owner from Maine. They were drawn to this community by a promise of jobs from the Long-Bell Lumber Company, which had closed two of its mills in Louisiana. They were even offered advance money, which they repaid, for train fare. Word spread quickly as employment scouts crisscrossed through the South, recruiting young Black laborers. Although no record exists of how many Blacks settled in Weed during the 1920s, approximately 1,000 are estimated to have lived primarily in the northwest corner of the town when Weed's population topped 6,000. Many crowded into boardinghouses or camped in tents until the company provided housing, and streets in the community took on names such as Texas, Alabama, Louisiana, and Dixie (Simmons 2004). The Red River Lumber Company in Westwood, Lassen County, also employed Black mill workers (Maniery and Baker 1997) (Figure 19).

Figure 18. California Indian laborers, ca. 1920s. *The photograph depicts Ray Ortez, Sr., in a bean field in the Santa Ana or Irvine area of Orange County, California. Ray Ortez, Sr., is seated at the far right side of the group of farm workers, in the front row. (Courtesy of Anaheim Public Library, Photograph Collection on Anaheim Local History, Anaheim, California.)*

Figure 19. African American pea picker from Texas in the fields of California, 1935. *(Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Item No. LC-USZ62-137429.)*

Two groups of largely European and American-born workers had a significant impact on California's migrant labor force as a whole. The first of these groups consisted of the transient rural laborers known during the 19th century as "bindlestiffs." These migrants were a ubiquitous feature of the state's rural labor force and were especially dominant after the Chinese Exclusion

Act of 1882. Bindlestiffs, later more commonly referred to as "hoboes," were widespread throughout the rural United States, particularly in states with economies that depended on the agricultural industry (Higbie 2003). Bindlestiffs were a diverse group. For some, "tramping" was a stage of life before settling down. For others, it was a cycle from which they were unable to escape: the result was life on the streets when they were too old or disabled to work. "In a sample of 100 transient workers active in the 1910s, only 58 bindlestiffs were American born, while the remaining 42 represented a diverse range of nationalities: seven Irish; six Swedes; five each of Italians, English, and French; four Germans; three Russians; and one each of Finnish, Danish, Mexicans, Bohemians, and Portuguese (Walsh and Manly 1916:4933) (Figure 20).

In his examination of demographics among the western labor force during the late 19th century, Schwantes (1985:42) described work camps as

> temporary communities of migratory muscle, represented by men who harvested grain and produce and graded new railway lines and then dispersed only to recollect on other jobs or to winter in the cheap hotels, soup kitchens, bars, socialist clubs, and hiring halls of the West's larger cities.

Figure 20. Bindlestiff in the Napa Valley, 1938. *"More than twenty-five years a bindle-stiff. Walks from the mines to the lumber camps to the farms. The type that formed the backbone of the Industrial Workers of the World (IWW) in California before the war. Subject of Carleton Parker's Studies on IWW" (from the original caption). (Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Image LC-DIG-fsa-8b32870.)*

Schwantes (1987) proposed the concept of the "wageworkers' frontier." He observed that western labor was stratified, noting two identifiable communities of wage labor: sedentary "home guards" and migratory "bindlestiffs." As Schwantes (1987:44) noted, after the 1880s,

> the home guards [many of whom were skilled laborers] put down roots, raised families, and, if unionized ... accepted to some degree the conservative outlook of the American Federation of Labor or the railway brotherhoods. From their enclaves on the other hand the mobile industry rather than craft oriented

> bindlestiffs nurtured a tradition of all-inclusive unionism and a spirit of militance that extended from the Knights of Labor to the radical Industrial Workers of the World three decades later.

The "home guard" actually had long-term residences and were often enumerated in censuses and directories, unlike migratory laborers, and their archaeological remains may be associated with identifiable households, making them far more easily studied (Walker 2004).

The second-most-populous group of European American migrant laborers in the United States consisted of southwestern migrants, commonly known as "Okies" or Dust Bowl migrants, who came to California during the Great Depression. Bindlestiffs and, later, Dust Bowl migrants remained at the bottom of the social ladder, to the extent that they constituted a distinct class of workers. In the early 20th century, migrant laborers were the subject of reformers, such as Carleton Parker (1915) and F. C. Mills (Woirol 1992), who sought to determine what biological or environmental factors led to their lack of stable membership in society. Workers who occupied more skilled or privileged positions on the same jobs and in the same work camps often looked down on migrant workers, particularly during the Great Depression, when long-term jobs were very difficult to find (Woirol 1992:58–59; Higbie 2003:100) (Figure 21).

Figure 21. Dust Bowl migrant pea pickers living out of their car, 1936.
(Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Image LC USF34-001804-C.)

Despite their hardships, migrant laborers from the 19th through the mid-20th centuries played an important role in the economic expansion of California's various industries, particularly in the rural portions of the state. Historic documents, particularly company records, also make clear that not all industries treated their workforces equally, and some labor contractors and owners of companies had a more paternalistic response to the treatment of the migrant workforce. In addition, not all of the transient or migrant laborers were passive in their response to unfair labor practices. A small minority of the transient workforce was militant and engaged in confrontations with owners and managers through strikes or walkouts. Often, this militancy was submerged and

individualistic, expressed, for example, through sabotage, such as burning the barns and ricks of farmers who attracted their ire, or through high turnover rates on jobs. At other times, their militancy was coordinated, achieving levels that authorities considered serious and even dangerous. These episodes brought them to the attention of the federal government, state agencies, social scientists, and the media, propelling them briefly into the historical record (Figure 22).

Figure 22. Striking cotton pickers south of Tulare, 1933. *(Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Image LC USF344-007484-ZB.)*

LABOR CONDITIONS AND WORK CAMPS

Before the 1910s, labor conditions in most work camps rarely reached the media, let alone California politicians. Work camp employees were a relatively silent sector of the state's overall workforce, yet they were becoming a key part of the state's efforts to industrialize. Along with industrialization came the formation of the state's first labor organizations.

One of the earliest labor organizations that galvanized unskilled laborers was the International Workers of the World (IWW), also known as the "Wobblies." The organization was founded in Chicago in June 1905, at a convention of 200 socialists, anarchists, and radical trade unionists from all over the United States (mainly the Western Federation of Miners) who were opposed to the policies of the American Federation of Labor (AFL). Founded in 1886, the AFL consisted predominantly of craft unions, many of whom had fled the Knights of Labor, which emphasized improving economic conditions for workers rather than eliminating or fundamentally transforming industrial capitalism. Although the national organization of the AFL claimed to

represent all workers, many constituent unions were exclusionary in practice and were made up primarily of skilled, white male workers (Figure 23).

The most radical goal of the IWW was to promote worker solidarity in the revolutionary struggle to overthrow the employing class. Kelly's Industrial Army was one of a number of militant "industrial armies," born out of the panic of 1893 that pressed the federal government to help the unemployed. During the 1890s, Californian Charles T. Kelly rallied 1,500 men, many out of work, to this cause. In the spring of 1894, Kelly's followers boarded railroad boxcars bound for Washington, D.C. They planned to join Jacob S. Coxey's army, which had recently captured national headlines by marching from Ohio to the nation's capital. At Council Bluffs, Iowa, the railroad ejected Kelly's army. Many of Kelly's supporters, however, continued their journey on foot and eventually joined Coxey's army in Washington (McMurry 1929; Schwantes 1985).

Figure 23. IWW "Wobblies" marching in San Francisco, ca. 1904. *(Courtesy of Bancroft Library, University of California, Berkeley, BANC PIC 1982.069:22—ALB.)*

The reaction of state and national authorities to organizations such as the IWW and to labor strikes, such as the 1913 Wheatland Hop Riot (see below), led to an important series of documents as investigators sought to diagnose the reason for these social tensions. The Wheatland Hop Riot itself was instrumental in the creation of some of the first legislation in California providing rights to wage laborers, particularly those working in agriculture. Likewise, the migration of tenant farmers from the southeastern and southwestern United States during the 1930s sparked a series of investigations that led to further labor legislation.

The difficulty of characterizing rural labor is exacerbated by the nature of rural labor itself. Although reminiscences, oral histories, and testimony to investigators has provided information on the movement of individual workers, the sources that historians use for demographic information, such as the U.S. population census, have only limited use in reconstructing the composition of the rural labor force. Transient laborers were frequently missed in local censuses

or other government-organized methods of enumerating working individuals (Peck 2000:2; Higbie 2003). As Higbie (2003:100) explained:

> The conclusions we draw about laborers depend very much on where we find them in the historical record. But in the course of a working life—even in the course of a few days—a laborer might be a lumberjack, a railroad worker, a farm laborer, a beggar, or a miner.

To address the situation of immigration, housing, and seasonal labor in California, the CCIH was created in 1913. Based upon the 1910 U.S. census, the commission estimated that 175,000 California workers were "casual" or transient and about 75,000 were in work camps (Parker 1915). Of particular interest to the CCIH commission members were the working conditions in California's hop fields that employed hundreds, if not thousands, of migrant laborers during the harvest season. Work in California's hop fields was one of the most strenuous, most poorly paid and time-consuming forms of labor that a worker could undertake during the early 20th century. The maximum pay that pickers received was $1.90 for a 12-hour workday, which began at 4 a.m., $1.00 of which was included by the employer as an incentive if the worker in question stayed until the end of the harvest season.

At the Durst Ranch, the largest employer of agricultural workers in California at the time, the camp

> comprised a motley collection of tents, timber stockades called "bullpens," gunnysacks stretched over fences, and camp wagons … a great number [of workers and families] had no blankets and slept on piles of straw thrown on to the tent floors. These tents were rented from D[urst] at 75¢ a week, though some of the old tents were donated by him free of charge. Before these and other accommodations were ready, men slept in the fields. One group of 45 men, women, and children slept packed together on a single pile of straw [Parker and Hubbell 1920:173,181–182].

In addition, the camp had only five wells, most of which ran dry early in the morning. Those that did not were quickly polluted with human and animal waste. Only 8–11 pit toilets were dug for the workers, and most of these were filthy or in disrepair even before the workers started to arrive. Other than the pumps at the wells, no bathing or showering facilities were available. Not surprisingly, dysentery and typhoid became a problem (Mitchell 1996:37). The deplorable conditions ultimately led IWW representatives to call for a strike. On August 3, 1913, before organized action could be taken, a violent outburst—the Wheatland Hop Riot—took the lives of four persons. The event resulted in the enactment of short-lived reforms and government investigations into working conditions (see below) (Parker 1915; Whitten 1948; Wheatland Historical Society 2009). The CCIH investigated the cause of the riot and discovered substandard living conditions, including inadequate housing, and recommended adoption of laws that provided for additional housing and sanitation requirements for labor camps. The California state legislature responded to the commission's recommendations by passing the Labor Camp Act of 1915. On July 29, 1927, enforcement responsibility for the act was transferred from the CCIH to the California Department of Industrial Relations, Division of Housing. In 1937, the legislature established the California Labor Code, which included the provisions of the Labor Camp Act (California Department of Housing and Community Development 2011) (Figure 24).

Figure 24. Seasonal hop workers boarding the train in Wheatland following the Hop Riot, 1913. *(Courtesy of Yuba County Library, Marysville, California, Image yd-090.)*

For many, if not most, Americans in the late 19th and early 20th centuries, a full-time year-round job was a rarity. Instead, they worked in seasonal occupations with the hope of accumulating enough money to survive the period when work was scarce or nonexistent (Higbie 2003:2). The Labor Camp Act of 1915 proved difficult to enforce. Despite efforts by labor reform organizations, conditions in many work camps through the first three decades of the 20th century were marginal at best.

SEASONALITY AND MOBILITY OF WORK CAMP LABORERS

One of the hallmarks of most work camps was seasonality related to the mobility of workers moving from camp to camp and to the nature of the industry itself. In the 1910s, nearly all of the state's dominant rural industries were seasonal, with peak employment in summer and autumn and limited opportunities in winter and spring (Parker 1915; Walsh and Manly 1916; Street 2004:533). The CCIH recognized that a highly mobile labor force was essential to the rural industries of the state—not just agriculture but also mining, lumbering, and construction. Schwantes (1988:40) noted that

> The average job duration among laborers of the West Coast in 1914 was fifteen to thirty days in lumber camps, sixty days in mining, thirty days in canning, ten days in construction work, and seven days in harvesting. In extreme cases, an itinerant laborer might remain on the job for as few as three hours before walking off.

The 1913 Wheatland Hop Riot exposed the migratory labor system and contributed to the feeling that the huge numbers of migratory workers were becoming not only a social danger but also a thorn in the side of large growers (Mitchell 1996:58). California agriculture set the pattern for

seasonality and mobility. Huge landholdings, in conjunction with regional specialization and monocrop agriculture, required a large, mobile workforce for short, very intensive bursts of work at harvest time as different crops matured in different regions up and down the state. The seasonality of the work and capitalization costs for cultivating many crops also demanded a cheap workforce (Mitchell 1996:58–59). An investigation by the CCIH found that the average job for casual laborers in the state's harvest lasted only 7–10 days. If men could get jobs (often reserved for women) in canneries during and after the harvest, they might work as long as 30 days (Mitchell 1996:59).

During the late autumn and early winter, agricultural work in the state practically ceased, although slack employment continued until April. Workers had to live on whatever they had managed to save. Different groups of workers had different strategies for getting through the winter months. In general, if workers didn't leave the state or, in the case of Mexican migrant workers, the country, surviving the winter commonly meant seeking cheap lodging in a large town or city or taking employment in other industries, such as mining, that generally ran year-round. In 1916, Carleton Parker, the head of the CCIH, reported during the CIR hearings that 35,000–40,000 men wintered in San Francisco, working at odd jobs or rooming with family and friends (Walsh and Manly 1916:4934).

California Labor Commissioner John McLaughlin remarked, "the same thing can be said of the mills and of the woods": very little logging was done in the country during the winter months. As a result, from the middle of November until the first of April seasonal laborers drifted throughout the state seeking other employment or remained where they were until work improved (Walsh and Manly 1916:5053–5054). The season for logging was longer than that for agriculture and was driven by weather and market cycles rather than by the ripening of crops. In the Humboldt County redwood-logging industry, the typical logger or mill hand worked approximately eight months of the year (Cornford 1987:23) (Figure 25). Humboldt County loggers used a variety of means to get through the winter months. Some performed odd jobs, such as riving shingles, whereas others lived off their accumulated wages. Although some retained lodging with their families, many single individuals lived in boardinghouses. A significant number left the county altogether to seek work elsewhere, such as San Francisco to pursue casual labor (Cornford 1987:23).

Paul Scharrenberg, a San Francisco labor leader, noted that work in the fisheries and in construction industries also was seasonal and described the problem that this seasonality posed for California cities (Walsh and Manly 1916:5041). Often, workers cycled among different industries to take up the slack time, and many workers extended their cycles geographically, migrating seasonally to different states. Records gathered by the Military Intelligence Division during World War I (Mitchell 1996:61) show that many white male workers migrated between the agricultural fields of California, the lumber camps of the Pacific Northwest, and the copper mines of Alaska. This pattern of seasonal movement was actually occurring well before World War I, because of the cyclical nature of many California industries.

LABOR STRATIFICATION

During the 19th century, the industrial workforce consisted mainly of a disproportionate number of poorly paid unskilled laborers. Ranked above these unskilled laborers was a better-paid and more privileged group of skilled workers. A third group consisted of managers, supervisors,

administrative personnel, and skilled professionals, such as engineers and surveyors. Even within a single industry, the workforce was often divided into multiple technical specializations. Some of these jobs were skilled, requiring workers with experience and training, whereas others were regarded as unskilled, simply requiring "a strong back." The number of skilled vs. unskilled laborers varied from industry to industry by specific conditions and tasks. For example, logging crews tended to have more skilled workers than did agricultural crews. What was defined as "skilled work" was often a matter of social convention; nearly every job required some degree of skill.

Figure 25. Redwood logging, Humboldt County, ca. 1890s. *(Courtesy of Humboldt State University, Ericson Photograph Collection, Arcata, California, No. 1999.02.0255.)*

The division between skilled and unskilled workers in the 19th and 20th centuries is well documented in labor history. Skilled workers were able to gain a certain amount of control over the labor process and their wages through their monopoly of skill, often organizing into exclusive and powerful craft-based unions. In the 19th and early 20th centuries, the AFL intended to defend the interests of craft unions and had little interest in organizing workers perceived as unskilled. The reluctance of the mainstream labor movement to organize rural labor is a recurrent theme in labor history.

Even the status of skilled workers was not necessarily a given. A desire to break the power of skilled workers was a central part of the drive toward "deskilling" jobs through mechanization or through breaking the labor process down into components that could be performed by easily replaceable workers, thus ending the skilled workers' monopoly of the craft and, often, increasing profitability. Several studies (Braverman 1974; Burawoy 1979; Pfaffenberger 1992; Shackel 1996) refer to this process and the workplace struggles that accompanied it. Deskilling

has potential material and archaeological correlates in workplace layout, in machinery construction, and, as real wages declined, in workers' lives. In *The Principles of Scientific Management*, Frederick Winslow Taylor (1911) codified principles for making industrial work less reliant on the skills of workers. He studied workers in action and attempted to break their work down into discrete repetitive motions that could be performed by a series of unskilled workers. His management approach has been dubbed "Taylorism."

The bulk of the rural work force was classed as unskilled—noted as "laborers," "casual workers," or some similar term in the census and other official documentation (Parker 1915). These workers performed physical labor that required little formal training, although performing the work efficiently, or even surviving it, could, in fact, take considerable skill. Firsthand accounts relate the fear experienced and the determination, luck, and skill necessary for successful work in railroad construction. Because of the reluctance of the AFL to organize unskilled workers, more-radical organizations, such as the IWW and the communist Cannery and Agricultural Workers Industrial Union (CAWIU), gained a foothold in the state's labor market during the early 20th century (Figure 26).

Figure 26. Women cannery workers in the "cutting room" at the George E. Hyde & Company plant, Santa Clara Valley, 1920. *(Courtesy of Bancroft Library, University of California, Berkeley, BANC PIC 1982.069:25—ALB.)*

The proportions of workers who were classed as skilled or unskilled varied from industry to industry. An agricultural operation, for example, might involve only a few skilled workers, who might work year round, and many unskilled temporary workers hired for the harvest. As noted

earlier, logging appears to have required the greatest number of skilled workers, although this also depended on the type of logging (Cornford 1987:24).

In 1914, economist Frederick Mills, an early 20th-century investigator of migrant labor conditions, worked briefly in a logging camp in the Sierra Nevada as part of a commission from the CCIH. He estimated that 70 percent of the work required "some skill or experience" and that most of the men who performed this work stayed the full season and came back year after year. In his final estimate, about half the workers were stable employees and the other half belonged to the "floating class." A small proportion of the skilled men and nearly all those in unskilled work stayed for a short while in the logging camp and then moved on. Many observers and historians have noted that the high turnover in logging camps was a feature of the industry, but this turnover may have been concentrated in certain segments of the workforce (Woirol 1992:58). In his field notes taken at the logging site, Mills described the distinction he saw between the skilled and unskilled workers in the camp. Although his comparison of skilled and unskilled workers is reflective of middle-class attitudes, the general observations are informative, highlighting the craft pride and exclusiveness of the skilled workers, as well as the different tasks that each group performed (Woirol 1992:58–59).

A second and interrelated form of labor stratification was rooted in social attitudes toward race and ethnicity. Stratifications by skill, race, and ethnicity cannot easily be separated. Workers from certain nationalities found themselves channeled into specific industries and jobs, and often into living conditions very different from those experienced by other groups. In part, this stratification was due to the labor market itself and to racial assumptions about the capabilities and the desirability of different ethnic groups. Even when Europeans or Americans of European descent predominated in the unskilled rural labor force, their presence in this workforce was cast in quasi-racial and biological terms (Stein 1973; Higbie 2003; Street 2004), particularly when social Darwinist theories of social stratification were in vogue.

Questions of labor stratification rooted in race, ethnicity, and occupational skills are complex. Economic conditions played an important part in influencing the degree to which labor stratification occurred and how it affected specific cultural groups. Work camps, as discreet entities, are a microcosm in which to study the broader patterns of labor stratification in California.

CONTRACT LABOR AND HIRING PRACTICES FOR IMMIGRANTS

Many immigrants were hired as either indentured or contract laborers. As discussed previously, the contract labor system was widespread in the Western Hemisphere by the mid-19th century. The demand for manual labor was particularly acute in tropical or semitropical regions, particularly Hawaii. Nominally free, many of the laborers served under contracts of indenture that generally required them to work for a specified period, usually 5–7 years, in return for their travel expenses and housing. An alternative to the indenture system of labor was the "credit ticket system." In this situation, a broker contractor advanced the cost of passage and laborers repaid the loan plus interest out of their earnings. The credit ticket system was widely used by Chinese immigrants coming into the United States. Beginning in the 1840s, about 380,000 Chinese laborers migrated to the U.S. mainland and 46,000 to Hawaii. Between 1885 and 1924, some 200,000 Japanese workers went to Hawaii and 180,000 to the U.S. mainland. Between 1830 and 1920, roughly 1.5 million indentured laborers were recruited from India,

1 million from Japan, and 0.5 million from China. Tens of thousands of free Africans and Pacific Islanders also served as indentured workers (Mintz 2007).

For most immigrant laborers in California, the owners or managers of work camps found it more convenient and cheaper to deal with a single intermediary or contractor who could deliver a large labor force, could provide for that force, and, in the case of foreign labor forces, could communicate with them. These intermediaries also took a slice of the workers' wages. Chinese and, later, Japanese, Filipino, and Mexican contractors were able to monopolize certain industries or at least to control them enough to eventually negotiate higher wage rates and better living conditions for their workers (Street 2004:258–285,407–439). The services of ethnic intermediaries, such as the Chinese contractors, the Japanese *keiyaku-nin*, and the *padrones* and *patrones* among Mexican and southern European laborers (Peck 1998, 2000; Street 2004), were central to immigration and labor in the late-19th- and early-20th-century United States (Yans-McLaughlin 1990). Multilingual intermediaries or contractors sometimes assisted growers who hired a variety of ethnic groups. Labor contractors were essential for work camps, as living arrangements were often the contractor's responsibility, rather than that of the contracting company. Contractors were also exempt from legislation, such as the 1915 Labor Camp Act, which established sanitation standards for work camps, and therefore were even more attractive for companies (Mitchell 1996:99). These exemptions reduced their expenses and enabled them to supply cheaper labor.

Exclusionary laws passed in the late 19th century precluded many Chinese from working at certain jobs and dramatically reduced the number of Chinese immigrating to the United States, particularly into San Francisco. The reduction in the numbers of Chinese available to work created a vacuum that was quickly filled by Japanese immigrants, who became important day laborers at the close of the 19th century.

Like the Chinese in the 19th century, Mexican laborers were hired in large numbers during the 20th century to work in mining and railroad construction, later expanding to other sectors of rural industry, particularly agriculture. In California, however, the predominance of Mexican labor on 20th-century railroad gangs was a result less of ethnically based labor contracting than of the proximity of a large pool of skilled and unskilled laborers who had formerly worked on railroad projects in northern Mexico and Arizona (Driscoll 1999) (Figure 27).

In testimony before the CIR, one investigator of camps in Montana noted the distinction between living on a "white man's basis," in which the workers received board from a commissary company, and the way in which foreign workers lived. At one railroad camp in Montana, the 25 American workers purchased their board from the commissary company, whereas the 46 foreign workers (43 Bulgarians and three Russians) shared the cost of staples such as potatoes, bread, and coffee and bought more-expensive items like eggs and meat individually. At another camp in South Dakota, the inhabitants (seven Greeks and seven Romanians) all lived in six old boxcars and bought all their food communally, each chipping in 30 cents per day and buying their food in town (Higbie 2003:106). Another investigator, summarizing in 1915 the findings of his investigation for the CIR, noted that

> The term white man (also white hobo) … applies to Native or old-time immigrant laborers, who are boarded by the employers in the camps, or who individually prepare their own meals. In contrast, "Foreigners" or members of a "Foreign gang" means chiefly newly arrived immigrants organized into their own boarding

> gang on a cooperative basis, having their own cook, who prepares the meals according to their national customs and tastes [Higbie 2003:106].

Higbie's observations reflect the changing demographics associated with different waves of immigration. In California, these waves may have lasted years or even decades. The contrast between the old and new immigrants in California lay largely in race, class, and industry. Language and customs were perceived differently, particularly among skilled and unskilled laborers. For example, although Chinese, Japanese, and Filipino farm laborers shared common goals, their different languages and traditions imposed barriers that were reflected in hiring practices, wages, and, ultimately, stability as part of the workforce.

Before the United States entered World War II, contract labor formed the chief mechanism for hiring seasonal laborers in California. The contractors themselves were somewhat constrained by the owners of the work area or the work camp itself. Most contractors either spoke the language of the primary workforce or were bilingual; this ability benefited a multiracial workforce. This system of contract labor continued after World War II with the advent of the Bracero Program in California, associated with the mass importation of Mexican workers, particularly in agriculture (Figure 28).

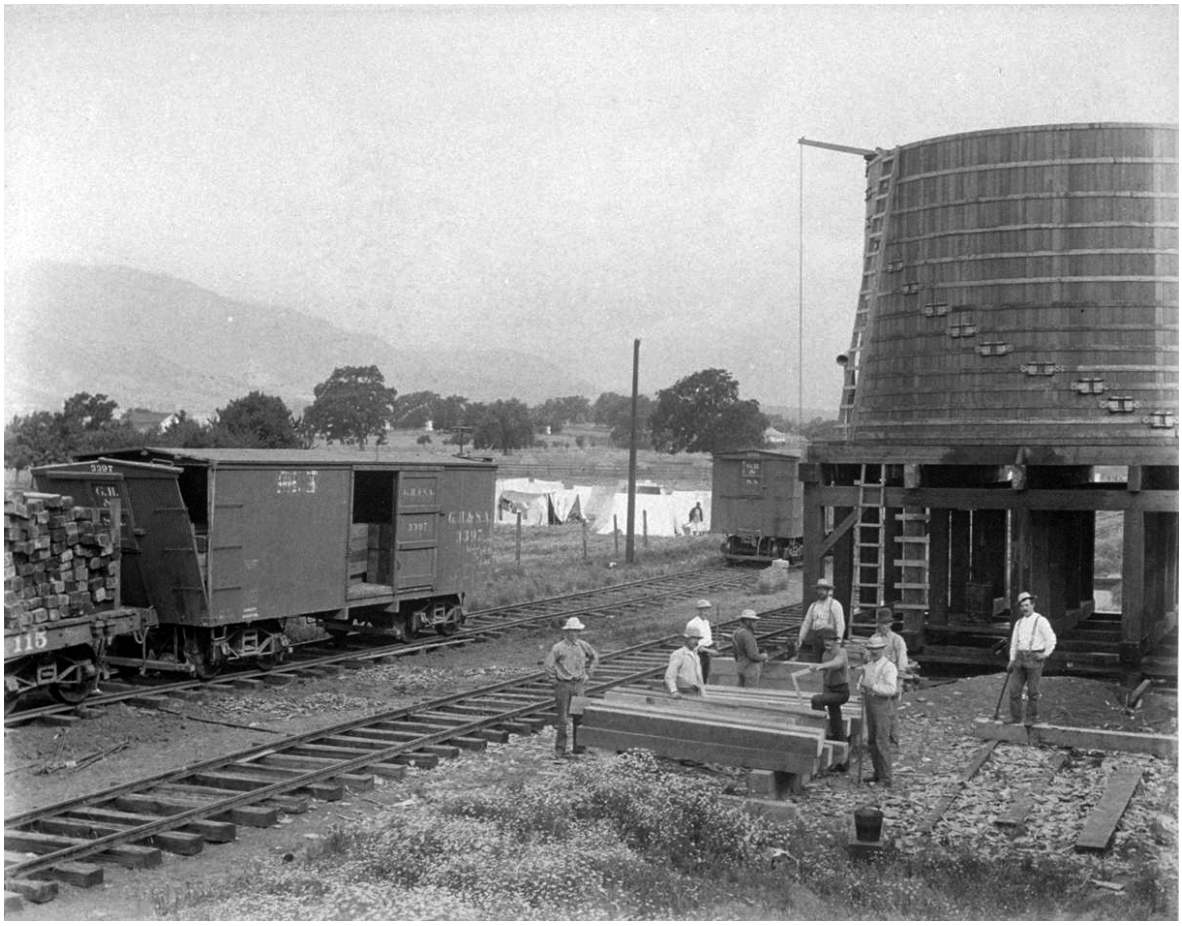

Figure 27. El Verano water tank near Sonoma, with temporary railroad-construction tent camp in the background, ca. 1900. *(Courtesy of Bancroft Library, University of California, Berkeley, BANC PIC 1974.019:36—ALB.)*

LABOR ORGANIZATION, LEGISLATION, AND UNREST

Labor history as an academic field was initially focused on the economics of labor and labor organizations. In the last decades of the 20th century, with the growth of social history, labor history branched out beyond its initial institutional focus to encompass unorganized workers, women, issues of gender and family, working-class culture, and immigration history. Labor history as social history overlaps with anthropology in many ways, and its concepts—such as the construction of gender, ethnicity, and culture—will be familiar to archaeologists. However, archaeologists are probably less familiar with the institutional or political side of labor history.

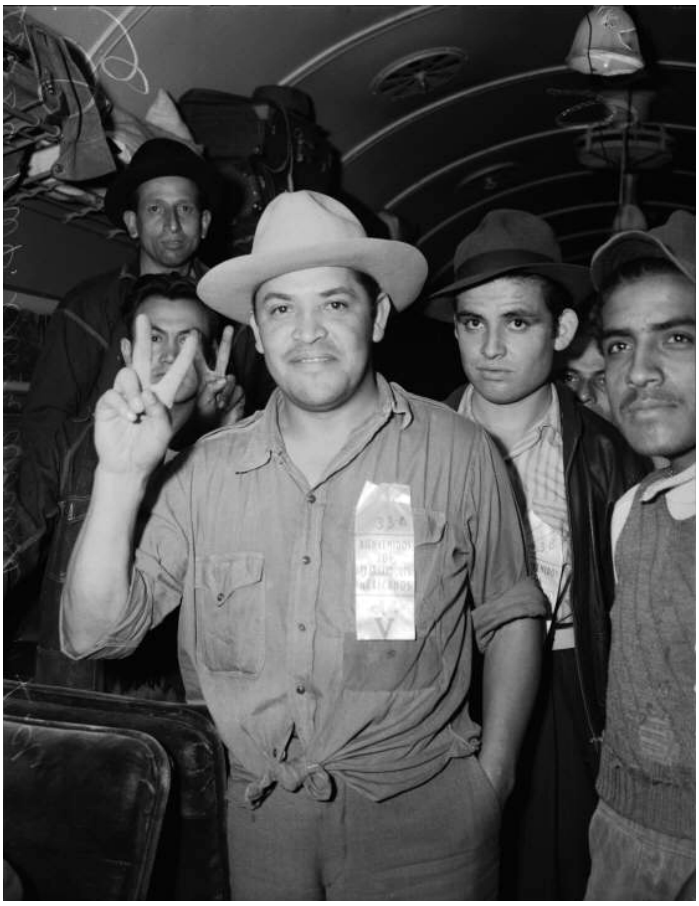

Figure 28. Mexican braceros on a bus headed to the United States, 1942. *(Courtesy of University of California, Los Angeles,* Los Angeles Daily News*, Special Collections, Charles E. Young Research Library, Image No. clamss_1387_b60_28737-4.)*

Economics, labor struggle, the Progressive Movement, rural labor, and the Great Depression had a profound influence on conditions associated with California's work camps and, consequently, influenced the morphology of camps and their archaeological signature. An understanding of this aspect of California's labor history is therefore, imperative if work camps are to be viewed in an appropriate historic context.

Economic conditions, such as industrialization and, later, urbanization, were important factors in encouraging the spread of cheap labor and the development of a rural workforce and work camps. Industry-specific economic cycles, such as the seasonal harvesting of certain crops, were also important factors in the creation of work camps and their design and conditions. Work camp conditions generally improved when the labor market was tight and degraded during a labor surplus. The Great Depression of the 1930s is a familiar example, but national depressions and

recessions also characterized the periods 1873–1878, 1884–1886, and 1893–1897 (Licht 1995:181), and a recession immediately after World War I lasted until the early 1920s.

Localized economic conditions, such as business cycles and boom/busts within industries, should also be considered for their impact on work and living conditions. Periods of declining demand or oversupply of commodities, such as lumber, could affect not only the number of workers employed but also the capital invested in camps and even the living conditions. Other events, such as the completion of the Transcontinental Railroad, had the short-term impact of throwing thousands of workers onto the labor market. A longer-term impact was the reduction of California workers' wages as the railroad ended California's relative isolation from the national labor market.

A final factor in determining economic vitality in California was long- and short-term climate change. Floods, fires, droughts, and disease together had a significant effect on various industries, such as agriculture and lumber. During most of the 19th and early 20th centuries, agriculturists were at the mercy of changing climatic conditions. Severe frosts and heat waves often destroyed entire harvests, and pests frequently caused disease among a variety of species until disease-resistant plants were propagated and were made commercially available. Marine and inland fisheries were particularly susceptible to changing climatic conditions and to alterations of the state's rivers and streams through industries, such as hydraulic gold mining.

Both documentary evidence and archaeology can make a significant contribution to understanding the impact of labor organization and legislation on the conditions of work camps, as well as how those conditions contributed to labor organizing, walkouts, and strikes. Incidents such as the Triangle Shirtwaist Factory fire in New York City on March 25, 1911—the deadliest industrial disaster in the history of the city of New York—led to significant labor reform (McEvoy 1995). In California, the Wheatland Hop Riot of 1913 resulted in the creation of legislation directed toward improving living conditions in work camps.

Most strikes were local events that attempted to address wages, housing, and work conditions, but especially in the 20th century, periods and individual episodes of labor struggle had widespread, even national importance. Because of the short duration of most labor strikes, little or no archaeological evidence may have survived. Exceptions include the strike camp at Ludlow, Colorado (Ludlow Collective 2001), and the earthworks of Blair Mountain, West Virginia (Smith and Orr 2002). To date, no archaeological studies of labor strikes have been documented in California, yet strike camps did exist, including the 1933 Corcoran strike camp and the 1913 Wheatland strike camp in Yuba County. The National Park Service (2011) has prepared an historic context and a description of property types to be considered in the evaluation of material remains associated with labor and labor activism of the agricultural industry in the American West. Although the document is still a draft, researchers are referred to that guidance for additional information (Figure 29).

The industry most prone to large-scale strikes was agriculture. In 1884, Chinese hop pickers in Kern County struck for higher pay (National Park Service 2011:7,174). Another form of labor militancy during the 19th century was anti-Chinese agitation by white workingmen. Politically, this was expressed through the formation, in 1877, of the Workingman's Party of California, which had Chinese exclusion as one of its key platforms (Saxton 1971).

The logging industry was, relatively speaking, less subject to large-scale labor actions, although a number of significant events took place. One example is the 1909 strike in McCloud, Shasta County, at the site of the McCloud River Lumber Company's sawmill. The strike involved armed immigrant workers, seizure of the town's power supply, the use of dynamite, enforcement attempts by the state militia, a detective agency, and, ultimately, successful mediation by a diplomat from a foreign country. Unlike work camp strikes, the strike of 1909 involved workers within a company-owned town, although many of the issues that the strikers proclaimed were similar to those experienced in work camps, particularly by immigrant workers (Pruitt and Pruitt 2009:26–27).

Strike events or their outcomes may be identified archaeologically, especially if the demands by workers included housing, diet, or sanitation. Chinese and Japanese labor contractors used strikes, although much less frequently then did other immigrant groups, to improve wages and profits. For example, in 1903, Japanese and Mexican laborers working in the agricultural fields of Oxnard formed the Japanese-Mexican Labor Association (JMLA) in response to labor grievances (Acuña 1981:198–199; Pitti et al. 1988:256; Cornford 1995:183–207). Overcoming language barriers, they immediately elected officers to represent both constituencies; two main figures were recognized labor contractors. They stood in opposition to the Western Agricultural Contracting Company (WACC) because of artificially suppressed wages, a subcontracting system that forced workers to pay double commissions, and requirements that workers must purchase goods at the company store at inflated prices. The JMLA membership declared a strike at a precarious time in the sugar beet season. Sugar beets were the staple crop of Oxnard plain agriculture, and the strike essentially brought the industry to a standstill. Violence ensued; although responsibility was never verified, one Mexican laborer was killed. With the highly negative press reaction to the incident, the WACC conceded to most of the laborers' demands. The strike was the first attempt in California to forge a multiethnic alliance (National Park Service 2011:7,174); it showcased the potential effectiveness of a multiracial labor front and proved that class, not race, could be the unifier in labor organization. Nevertheless, the JMLA later lost authority when they were denied an AFL charter because of their large Japanese membership (Figure 30).

The Wheatland Hop Riot, the extralegal repression that followed, and the involvement of the IWW marked a turning point in the history of California rural labor. The plight of the hop pickers at Wheatland paved the way for later mass organizing efforts by thousands of agricultural workers, particularly migrant farm workers who helped propel the IWW into the spotlight of the general public. Today, the site of the Wheatland Hop Riot of 1913 is marked by California State Landmark No. 1003.

The presence of the IWW was also an impetus behind the spate of investigations of rural working-class life at the turn of the century. In general, rural labor was unskilled and transient and therefore of little interest to the craft-based AFL. The large presence of generally unskilled transient Asian workers in this workforce ensured the AFL's antagonistic attitude toward it. In fact, Samuel Gompers, the AFL's formidable founder and president, participated actively in anti-Asian politics. Because of the AFL's lack of interest, the IWW was for many years the only union that actively organized transient or seasonal laborers, such as those in agriculture (Higbie 2003:8). The IWW perceived the need for a cross-industry union in the case of transient workers. The IWW secretary-general noted in 1906 that lumberjacks and sawmill workers "should conceive that their own condition will be jeopardized if the IWW failed to organize the workers

in the fields in which they seek and secure employment during the remainder of the year; that is mostly in agricultural occupations" (Higbie 2003:137). The IWW's belief in "One Big Union"—a single union for all workers—and their rhetoric of revolution and sabotage were seen by many Americans, including other unions, as a significant threat to the social order. The Red Scare of the 1920s was largely the manifestation of systematic repression of the IWW by state and federal agencies as well as vigilantes.

Figure 29. Corcoran cotton pickers' camp, 1930. *(Courtesy of Kings County Library, San Joaquin Valley Library System, Hanford, California, Image No. kia0012.)*

Figure 30. Mexican laborers in an Oxnard beet field, ca. 1924. *(Courtesy of University of California, Santa Barbara, Cheadle Center for Biodiversity and Ecological Restoration, Image No. ccber-005.)*

The nationwide outburst of strikes, the growing influence of the IWW, and the indiscriminate use of violence by corporations resulted in increased awareness of the plight of the working class by local and state government officials, as well as the public. The result was a general shift by many industries from outright confrontation to co-optation, through which they improved work conditions sufficiently to make independent organization unattractive for their workers (Figure 31).

Figure 31. Mexican cotton pickers' strike camp, Corcoran, 1933. *(Courtesy of Library of Congress, Prints and Photographs Division, Washington, D.C., Image No. LC-USF344-007487-ZB.)*

The large-scale episodes of labor struggle, however, had the widest impact and attracted the greatest public and governmental attention; these are the events that are most likely to be seen in the archaeological record. The years 1910–1915, in particular, stand out as a period of extraordinary violence (Adams 1966), with the bombing of the *Los Angeles Times* Building in 1910, followed by the Lawrence, Massachusetts, "Bread and Roses" strike (1912); the Paint Creek–Cabin Creek strike in West Virginia (1912); the Paterson, New Jersey, silk strike (1913); the Wheatland Hop Riot (1913); and the Ludlow Massacre in Colorado (1914).

THE PROGRESSIVE ERA AND WORK CAMP REFORMS

The CCIH and the CIR, as well as other Progressive-era reforms, grew out of the public awareness that working conditions and resulting tensions posed an important economic and social problem. Numerous investigations sought to define the precise nature of this problem. The middle-class professionals who constituted the reforming committees had perhaps the least understanding of the problem with respect to transient laborers, the bread and butter of IWW organizing. Therefore, they undertook some extraordinary measures: in particular, a series of "participant observations" in which investigators went undercover as "hobo" workers in order to experience and identify day-to-day conditions of migrant and work camp life.

Before the Wheatland Hop Riot, the prevailing attitude toward work camp housing, especially among agriculturists, could be described as laissez-faire at best. A leading 1903 textbook, *Farm Management*, advised that good housing was a waste of capital, as harvest workers were

"unappreciative of attempts to provide livable surroundings" and were "best cared for with some cheap shelter where they can flop" (quoted in Street 2004:503). Notable exceptions included citrus growers, who required a more skilled workforce (Mitchell 1996:97–98). For example, in 1906, the Limoneira Company near Santa Paula, California, sought to stabilize its workforce through improved housing that involved the construction of two dormitories for its single Japanese workers and six small houses for families, along with a large bathhouse with a concrete bathing tank. This effort was so successful that similar improvements were made at other citrus farms throughout southern California (Street 2004:501). The Sacramento Valley Sugar Company

also implemented a program of reform at its Hamilton City plant to create a stable workforce and thus to undermine the Japanese labor contractors. The sugar company replaced its contaminated water supplies, near absence of toilet facilities, and vermin-infested, unscreened shacks with a network of tent camps, complete with fresh water and toilets. The company also added a trained physician, a staff of cooks, and a series of gardens to provide fresh produce. Nevertheless, the improvements did not attract enough labor to replace the Japanese, and the sugar company continued to rely on the *keiyaku-nin*, or Japanese labor contractors (Street 2004:492–495).

Conditions in other industries, such as logging, probably were marginally better—when constructing roads or railroads or when logging in the Sierra Nevada, for example, a workforce cannot just "flop." Logging camps generally required more substantial infrastructure and better working conditions, including diet, in part, because logging work camps often included families and more-skilled workers, and were located farther from urban centers (Cornford 1987; Brashler 1991; Franzen 1992; Higbie 2003). In his notes of his 1914 logging camp stay, Frederick Mills noted that the workers lived four to a tent or cabin and that no toilets were present, "the hill-sides nearby being used." The water was piped from a distance, a method that Mills referred to as unclean (Woirol 1992:55–56). In contrast to the conditions that Mills reported, both historical and archaeological studies have verified the existence of privies or outdoor toilets at numerous logging camps, along with spring-fed potable supplies of domestic water (Conners 1997). Clearly, not all logging camps had the same level of infrastructure, but as a whole, logging camps had better health and sanitation facilities than other types of work camps except government-sponsored camps.

Residents of other types of work camps were not necessarily so fortunate. In the crowded and often unhygienic conditions of many of these camps, facilities for washing and bathing were a real luxury. Provisions for bathing varied among camps and industries. The CCIH recommended several measures to improve living and sanitation conditions in work camps, including heated water, at least one shower per 15 people, and separate facilities for men and women (Commission of Immigration and Housing, State of California 1919; see Appendix D). In their investigations, however, the CCIH found camp facilities were wholly inadequate, often having only a community well and an open irrigation ditch. Some camps for Filipino workers incorporated bathhouses to accommodate cultural values regarding cleanliness and perhaps to discourage any discourse about poor living conditions (Figure 32).

In testimony before the CIR in 1916, George Speed, one of the field investigators, described conditions on irrigation-related wing-dam construction camps on the Sacramento River: "Well, I have been in camps where there has been four to 500 men packed together in a camp in tiers, four tiers high, with only an alleyway of about two feet between them, and then boards put on the rafters for the men to sleep on there" (Walsh and Manly 1916:4937). An example of government-sponsored or government-recommended sanitation practices is, the CCIH's

suggestion of one outhouse per 15 persons, "the deposits within them … to be regularly covered with crude oil, lime, or ashes" (Mitchell 1996:52). The CCIH was particularly proud of the development of cheap, portable sanitary toilets. Unlike that at more-permanent settlements, refuse disposal at work camps was often communal (Figure 33).

In addition to sanitation, diet was another element of work camp life that received attention during the early 20th century. Most transient farm workers had a regimented diet (Street 2004:553). Because the largest of all expenditures was typically for meat, workers usually received meat in a stew rather than as whole cuts. This practice allowed employers to use the bones and other unsavory parts that could be easily disguised in gravy, which was sopped up with bread. At the Milepost 14 Camp, a railroad construction camp on the Death Valley Railway (Sutton 1986:39), rationing was imposed when supplies ran short. In some camps, workers also ate meat substitutes like eggs, milk, and dried fruit as well as packinghouse by-products like hog jowls, oxtails, pigs' feet, sausages, "the lesser cuts," and lamb tongue (Street 2004:553). Lumber workers appear to have had better diets than did workers in other industries (Cornford 1987:24; Franzen 1992; Higbie 2003:39).

Figure 32. Camp for migratory cotton pickers, San Joaquin Valley, 1936. *Workers often washed and bathed from community wells near the camps. (Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Image No. LC-USF34-016002-E.)*

Lack of refrigeration was blamed for the poor quality of food provided to desert crews working on the Los Angeles Aqueduct (commonly known as the LA Aqueduct):

> Meat spoiled, bread became infested with weevils, and most of the fare was restricted to simple imperishables. Many times the boisterous workmen were infuriated to riot by the "grub" placed before them. Tables were knocked over and the food thrown on the floor and walls. Sometimes the mess tents were torn down and the cooks chased out of camp [Nadeau 1974:40].

Figure 33. Migrant workers' camp, outskirts of Marysville, 1935*. "The new migratory camps now being built by the Resettlement Administration will remove people from unsatisfactory living conditions such as these and substitute at least the minimum of comfort and sanitation" (from the original caption). (Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Image LC-USF34- 001733-ZC.)*

Diet, as previously noted, could also vary by ethnicity and individual arrangements by workers. Reportedly, Mexican agricultural workers often demanded and received Mexican cooks (Fisher 1953:71). On occasion, camp workers or laborers also grew their own vegetables in small garden plots and bartered for foodstuffs from off-site vendors and merchants, a common pursuit among both Chinese and Japanese. Chinese laborers who desired fish or seafood products were fortunate, because dried fish could be packaged and delivered to remote locations. Chinese workers who lived near towns or modes of transportation such as railroads had access to purveyors of Chinese foodstuffs, either through direct purchase or through intermediaries. Chinese agricultural laborers living and working near Oakland and Berkeley may have maintained a more traditional diet supplemented by food products procured locally. Compared to laborers in more remote or isolated locations in the state, Chinese laborers in the eastern side of the San Francisco Bay area had the advantage of being located near a large city that offered a

more diverse range of foodstuffs (Jaffa 1901). Rice, also a staple for Chinese, also may have been provided to laborers through various means at distant work camps (Jaffa 1901).

The CCIH investigations included work camps occupied by a wide range of nationalities. In 1915, Carleton Parker summarized the findings of the CCIH investigations. The commission investigated 876 labor camps in California; these contained 60,813 workers and included lumber, construction, hop, berry, and highway-construction camps. Of the 876 camps, conditions at 297 (34 percent) were "good," 316 (36 percent) were "fair," and 263 (30 percent) were "bad." By "bad," Parker meant that no toilet or bathing facilities were present (some camps contained

nearly 100 women and children). The camps also "violated the state law with regard to the sleeping accommodations—the cubic air law that there should be 500 cubic feet of air for every sleeper." The kitchens and dining rooms were unscreened, and bunkhouses had no flooring (Walsh and Manly 1916:4935). Using the presence of toilets as a measure of sanitation at the camps, Parker listed the percentage of camps with unsanitary conditions by industry (Table 2). Parker (1915:119) attributed the relatively good sanitation of the railway and highway camps to their operation by large companies, corporations, or government entities.

The report noted that toilets were nonexistent at 13 percent, filthy at 41 percent, fairly sanitary at 20.4 percent, and sanitary and fly-screened at 23.4 percent of the 876 camps. Forty percent of the camps had no bathing facilities, 39 percent had tubs or showers, and 25 percent had no garbage disposal and allowed kitchen refuse to accumulate indefinitely (see Table 2). Substantially more than half of the camps (527) had horses; of these, 47 percent allowed manure to accumulate around the kitchen and mess tent (Parker 1915:119–120). Parker also observed that a "good deal of the unrest which has convulsed California's agricultural workers was due to the careless, indifferent housing of migratory casual laborers" (Walsh and Manly 1916:4935).

Table 2. Percentage of Camps with Unsanitary Conditions

Camp Type	"Filthy" Toilets (%)
Grape	69
Fruit	68
Ranch	61
Hop	52
Lumber	42
Mining	37
Highway	38
Railway	24
Oil	27

Source: Parker (1915)

Early Progressive-era legislation made an effort to forestall the looming threat of class conflict in the early 20th century through the implementation of selected reforms, as well as through an acknowledgment that a policy of open repression was not necessarily the best response to labor agitation (Adams 1966; Gitelman 1988). These reforms were also intended as a form of social

engineering. Mitchell (1996) discussed this aspect of Progressive-era reforms in reference to California farm worker camps and the CCIH.

The findings of these investigations were framed within the researchers' class backgrounds, expectations, and political agendas and showed a mix of prevailing ideological representations of the working classes. Within social Darwinist models, transient workers were the losers in social competition, compelled to the margins of society by their own inadequacies. Racial models dwelled on the biological characteristics of the different ethnic groups that rural laborers represented. Some Progressive-era researchers thought that the attitudes and worldview of transient workers rationalized laziness (Higbie 2003:3). Carleton Parker was strongly influenced by the then-modern field of psychology, arguing that the mindset of migratory workers reflected psychological abnormalities caused by environmental conditions—that their "states of conventional willfulness such as laziness, inefficiency, destructiveness in strikes, etc., [represented] ordinary mental disease of a functional kind, a sort of industrial psychosis" (Higbie 2003:88). According to this view, the psychological strains experienced by migrant workers, the separation of men from the stabilizing influence of women and family, laborers' transience, and the degrading conditions in which they lived and worked, combined with their frustration at being unable to enjoy the "high-end social and economic life of the American middle class" (Higbie 2003:87), led to their propensity to engage in strikes and, sometimes, sabotage within the industries for which they worked. For Parker, social upheavals such as the Wheatland Hop Riot of 1913 were not reactions to power, exploitation, and economics but psychological disturbances brought about by environmental conditions (Mitchell 1996:52). He believed that reforming these brutalizing environments would eliminate the source of the pathologies and thus eliminate strikes and other forms of labor agitation (Mitchell 1996:51).

The philosophy expressed by Parker and the CCIH reformers mirrored the broader social attitudes of middle-class Americans in the 19th and early 20th century. Among these was the idea of environmental determinism: unpleasant working conditions bred unpleasant people, and vice versa. Many domestic reformers thus saw working-class agitation as the result of pathologies brought about by the domestic environments in which working-class people lived and felt that class tensions could be resolved by reforming working-class home life and thereby eliminating the source of the pathologies that led to strikes and criminal behavior.

The work camp program became the most important part of the CCIH's activities. In 1915, as previously noted, CCIH recommendations led to the Labor Camp Act of 1915. Based on Parker's analysis, the CCIH produced a set of standardized work camp plans (Commission of Immigration and Housing, State of California 1919), in essence starting a program of environmental fixes to the places that, in their view, produced psychological disturbances. J. J. Rosenthal, a sanitary engineer, developed the plans with the input of a board of prominent public-health authorities. The plans incorporated innovative approaches to sanitary engineering—pioneering, for example, up-to-date sanitary toilets. The guidelines produced by the CCIH, *Advisory Pamphlet on Sanitation and Housing* (Commission of Immigration and Housing, State of California 1919), form an important baseline for the archaeological study of work camps during the first few decades of the 20th century. The guidelines provide a sense of socially acceptable norms for work camps, such as the number of people per tent, proper sanitation, construction, and other facilities. The degree to which employers conformed to or deviated from the guidelines is also an important topic for research (Maniery 2002).

A significant part of the CCIH program was an effort to assimilate and "Americanize" the workforce. In studies of 19th- and 20th-century immigration, historians and archaeologists have noted that notions of "Americanism" included strong ideas about standards of living and public display. These could be expressed through material culture, such as architecture, diet, table settings, furnishings, and children's toys (St. Clair and Dobkin 2006:169,177; Cohen 1986; Jameson 1998; Praetzellis and Praetzellis 2001). Many Americans saw immigrants as threats to the dominant culture's values and cultural expression, and thus as potentially destabilizing elements. Social tensions resulting from industrialization were often blamed on immigrants and their introduction of foreign ideologies, such as Marxism and anarchism. Assimilation of immigrants and bringing them to an understanding of the "American way of life" was a central theme of many among the middle classes during this period.

An explicit part of the CCIH program was to reform the camps so that they conformed to an American standard of living. This program was intended to achieve assimilation of some nationalities. In 1926, for example, the CCIH commended the Italian Vineyard Company for its improved standards for camp construction in Cucamonga:

> It is worth the trip to Guasti to see just how some of the Mexican families can be elevated … the kitchens of this new camp are piped for gas. The Guasti Co. sells gas to the occupants for so much a month same as installment houses. I assure you that it was a pleasure for me to look into these Mexican kitchens and see the Mexican women instead of being smoked out with an old-Dutch oven, standing by gas stoves like noble Anglo-Saxons [Mitchell 1996:105].

The material improvements, such as piped gas, described here were more than simple amenities to make workers' lives easier. They reflected the paternalistic relationship between camp owners and workers and attempts to impose "American" values on immigrants, who made up the bulk of the workforce at Guasti during the 1920s.

In contrast, the 1924 annual report of the CCIH included a statement from an agent in Placer County who was instructing fruit growers on the construction of camps that were suitable for the housing of American workers; most of the current camps were of the "Oriental type" (which the CCIH report did not define) (Mitchell 1996:99). The purpose of the growers in this case was to break the grip of the Japanese who controlled the picking and packing by attracting American workers. The same annual report noted that its "campaign for sanitary camps and adequate housing will eventually conclude in the Americanization of the Oriental Delta district" (Mitchell 1996:99). The CCIH work camp program began to decline in importance in the late 1910s, when postwar conditions, resurgent nativism, and a lull in labor activism led to a gradual dismantling and bureaucratization of the CCIH's functions (Mitchell 1996:52). As noted earlier, responsibility for the enforcement of the Labor Camp Act was transferred to the California Department of Industrial Relations in 1927.

Except for a brief recession after World War I, the 1920s were a period of economic expansion. For many workers, they were a time of steady employment, rising real wages, and the establishment of the modern consumer society, as well as a time of industrial peace relative to the previous decade. The IWW had been suppressed, by both legal and extralegal means, and was no longer considered a serious threat. Union membership had declined. The Progressive ideal of a harmony of interests between labor and capital was still important, though hardly

universal, during the 1920s. California rural industry started to draw once again on a transnational migrant workforce, recruiting workers from the Philippines and Mexico.

In contrast to the pattern for the overall economy, the 1920s were a period of contraction and instability in agriculture; they also marked a transition to mechanization and scientific farming methods that required considerable investment of capital in machinery. This had an impact on work camp conditions. Agriculturists sought to lower their costs and to invest scarce capital in camp buildings and infrastructure by using contract laborers. California courts exempted growers from culpability for contractor violations and exempted contractors from the provisions of the 1915 Labor Camp Act (Mitchell 1996:111–119).

By the 1920s, in part by borrowing money, agriculturists began to purchase more mechanized equipment, as well as trucks. Development of improved transportation, such as trucking, was one of the most important forces spurring California's agricultural development (Olmstead and Rhode 1990). New highways facilitated the transport of farm products, connecting distribution points and increasing market outlets (Caltrans 2007:99) (Figure 34).

Figure 34. Valencia Orange Growers Association truck hauling oranges to market, Orange, ca. 1915.
(Courtesy of Orange Public Library, Orange, California, Image No. OPL2368-10511258.)

By the 1930s, the rural workforce was far more mobile, and the distance from residence to workplace could be much greater. This mobility provided a greater opportunity for families to move into the seasonal labor cycle. In many industries, satellite camps could be dispensed with in favor of a daily commute, and when striking, workers could assemble quickly at various locations in a manner of days. In agriculture, with the proliferation of the automobile and the growth of the trucking industry, growers no longer needed to invest as much capital in individual

work camps on their own property. Instead, laborers gathered in auto camps throughout the state, awaiting word from growers or labor contractors about when they would be hired. Government-sponsored auto camps generally arose out of the 1915 Labor Camp Act, and campers often lived there for extended periods and enjoying the sanitary conditions (Mitchell 1996, 1998) (Figure 35).

THE GREAT DEPRESSION AND THE DUST BOWL MIGRANTS

In many ways, California's rural labor force and its work camps came to symbolize the Dust Bowl migrants and the Great Depression of the 1930s in the national imagination. Temporary work and rural camp life, largely agricultural, became the norm for thousands of Americans during this period. The concept of "work camp" grades indistinguishably into that of state and federal relief camps and CCC camps, squatter settlements, ditch camps, auto camps, and "Hoovervilles"—the large settlements of homeless people on the fringes of urban areas.

Figure 35. Tennessee family living at the American River migrant camp, Sacramento, 1936. *(Courtesy of Library of Congress, Prints and Photographs Division, Washington, D.C., Image LC-USF34-009904-E.).*

As Mitchell (1989:32–33) explained:

> Since the 1920s California had been linked to the Southwest by a well-traveled highway. … U.S. Route 66 cut straight across Missouri, Oklahoma, and north Texas on its way to Los Angeles—a direct, modern, and inviting pathway west. … Ease of transportation was the key both to the volume of migration and to the special frame of mind with which the newcomers began their California stay. The automobile gave these and other twentieth-century migrants a flexibility that cross-country … migrants of earlier eras did not share. … In a good car families could make it to California in as little as three days.

Certainly, improved transportation routes and the automobile together provided the mechanism for Dust Bowl migrants to cross the American Southwest and to enter California in search of jobs. Expectations ran high about work and improved living conditions despite stories of the hardships that other migrants faced enroute to California (Figure 36).

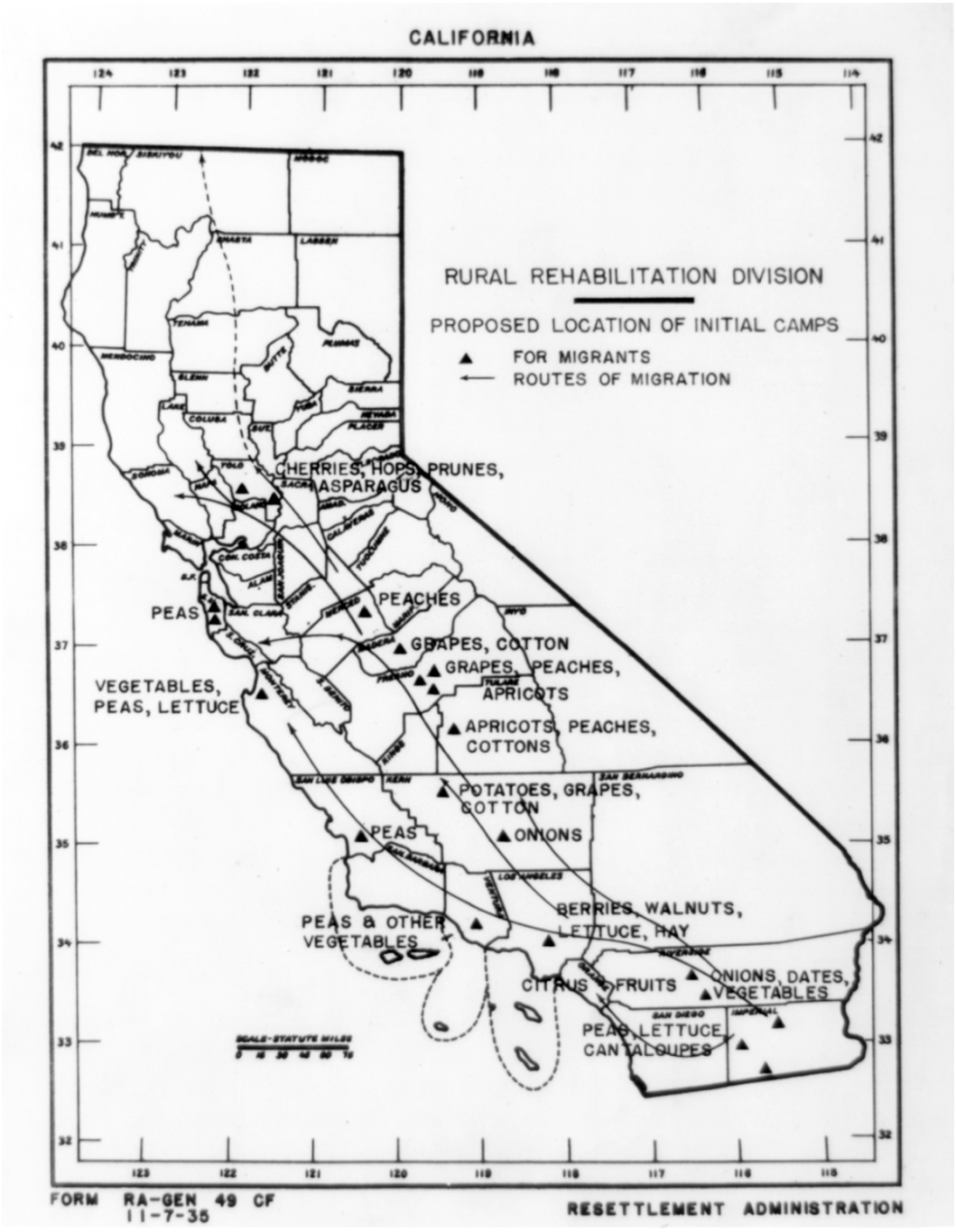

Figure 36. Map illustrating agricultural areas in California and proposed locations of migrant camps scattered throughout the state, ca. 1935. *(Courtesy of Library of Congress, Prints and Photographs Division, Washington, D.C., LOT 898 [item] [P&P].)*

Beginning in the late 1920s, the immense labor surplus, the growth of informal auto camps, and the shifting of the cost of housing and board to labor contractors resulted in a proliferation of work camps throughout the state. In the state's agricultural areas, squatter settlements, "hobo jungles," and auto camps acted as centralized local labor markets. Farmers no longer needed to build work camps—their workers housed themselves. However, this change was a double-edged sword. The independent camps were free of surveillance and made communication among workers on different farms far easier. These "free spaces" probably assisted in creating and, to some degree, maintaining the solidarity of agricultural workers (Mitchell 1996:130–155).

The 1930s were also a period of persistent labor strife throughout the United States. In California's rural industries, the largest Depression-era strikes occurred in 1933 and 1934 among Mexican agricultural workers in the Imperial Valley. These strikes were organized by the CAWIU. With the renewed surge in labor activism, the CAWIU picked up where the IWW had left off and concentrated on organizing workers ignored by the conservative AFL leadership. Organization of agricultural and cannery workers was not an isolated effort but part of a growing movement in the country. The limited number of large strikes by agricultural workforces resulted in part from the ethnic diversity of field laborers, many of whom not only held different values but also spoke different languages.

Probably the best-documented and best-photographed strike by rural workers was the Corcoran cotton pickers' strike of 1933, which involved the establishment of a large strike camp as a safe base for organizing and picketing the surrounding farms (Mitchell 1996:130–155). Although this strike and a series of other similar strikes, such as those in the Imperial Valley, achieved some modest gains for the farm workers, these were soon undercut by the influx of destitute farming families who had recently emigrated from Oklahoma, Texas, Missouri, and Arkansas.

The election of Franklin Delano Roosevelt in 1933 marked the beginning of large-scale federal public-relief efforts known as the New Deal. With respect to the study of work camps, the central impact of Roosevelt's efforts was the implementation of federal policies that resulted in the construction of state and federal relief camps and the establishment of the CCC (Piper 1999) (Figure 37).

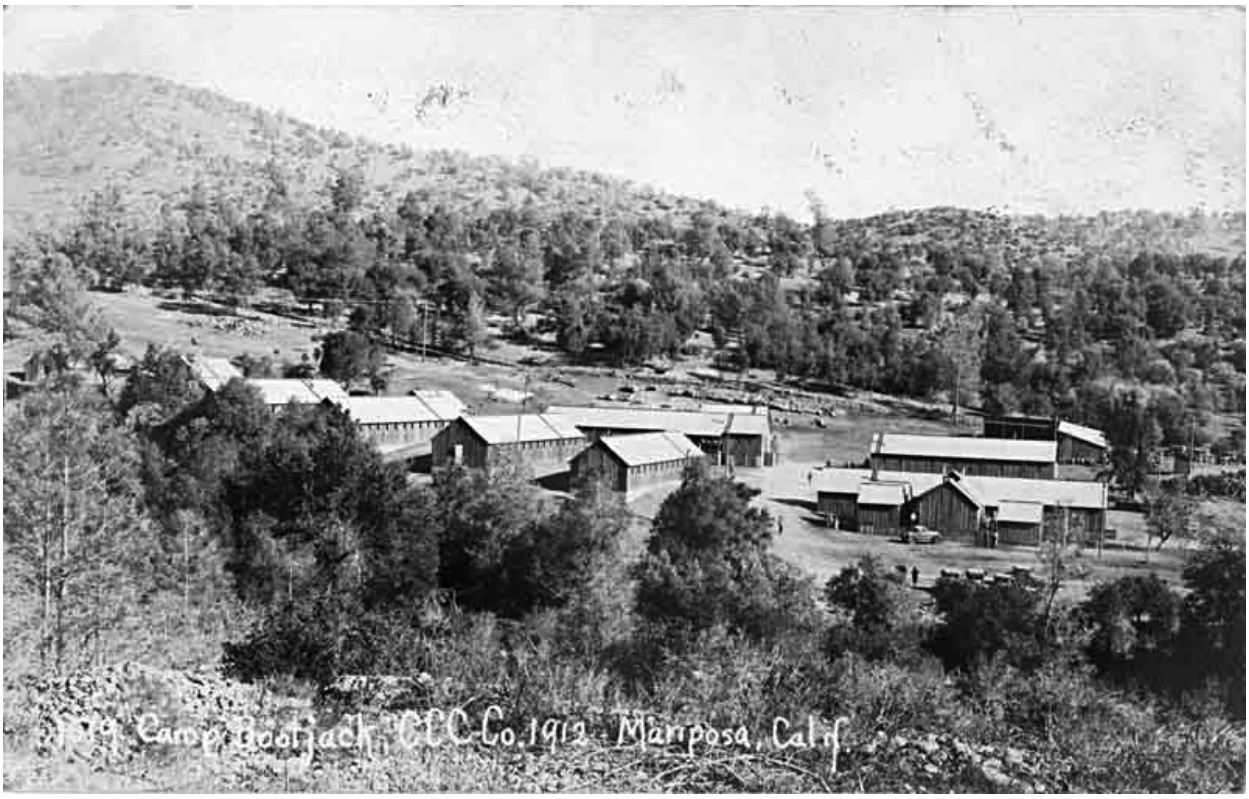

Figure 37. CCC Camp Bootjack, Company 1912, Mariposa County, ca. 1933. *(Courtesy of Mariposa Museum and History Center, Mariposa, California, Image No. mpg-0011.)*

The Depression-era, or Dust Bowl, migrants of the 1930s from the southwestern United States have become one of the most studied migrant groups during the 20th century. Dorothea Lange's Farm Security Administration (FSA) photographs, such as "The Migrant Mother," have given these migrants an iconic status in American memory (Figure 38). The Dust Bowl migrants of the 1930s, also referred to as "Okies," were popularized in movies, such as *The Grapes of Wrath*, adapted from Steinbeck's (1939) novel; through numerous publications during the last 20 years; and in magazine articles that included candid photographs of the hardships faced by migrants searching for work in California. For the most part, these migrants were former tenant farmers who had lost their farms scattered throughout Oklahoma, Texas, Missouri, and Arkansas through a combination of drought (and the Dust Bowl in the Plains), loss of fertile soil through over-cultivation, debt, and the transition by landowners from sharecropping to larger mechanized farms. Laborers had been migrating to California from these areas in significant numbers since the 1920s, but the immigration became a flood with the onset of the Great Depression. Approximately 400,000 migrants entered California in the 1930s, half of whom came between 1935 and 1937 (Stein 1973:44–45) (Figure 39).

Figure 38. Dorothea Lange with her "Woody" and camera photographing California Dust Bowl migrants, 1936. *Lange was the official Resettlement Administration photographer for the federal government. (Courtesy of Library of Congress, Prints and Photographs Division, Washington, D.C., Image No. LC-USF34- 002392-E.)*

During the 1930s, Dust Bowl migrants selected California as a destination for several reasons. The best known is widespread advertising for workers by California agriculturists seeking to drop wage levels among farmworkers in the wake of the 1933 strikes, as well as to make up potential shortfalls in labor due to the repatriation of Mexican labor. Another reason was that many families may have started on the migration trail for the cotton harvest in Arizona and then proceeded to California. Possibly the most important factor was chain migration—letters and rumors from friends and relatives in California, as well as the desire to move where acquaintances were already working (Stein 1973:1–27). Some migrants had been introduced to parts of California through years—sometimes generations—of seasonal labor for the railroad and were simply returning to an area where they had previously found a market for their labor.

Figure 39. Dust Bowl migrants at temporary camp near Calipatria while awaiting work, 1937.
(Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Image No. LC-USF34- 016109-E [P&P] LOT 0345.)

During the Great Depression, California acquired a vast transient workforce consisting largely of recently unemployed Americans as well as immigrants from Mexico and the Philippines. The Dust Bowl migration was unusual in that it was more akin to a colonizing movement than to the circular pattern common for immigrant groups. Entire households moved with their possessions. Most intended to settle permanently in California. Unlike Mexican or Filipino workers, most Dust Bowl migrants had no home to return to and therefore were refugees. The usual networks of community and patronage that immigrants drew upon for information, support, and work were not fully in place for these newcomers. This lack of a network affected the growers as well. As Stein (1973:41) characterized it:

> Agriculture had become so accustomed to the "fluid Mexican workers who miraculously appeared on harvest day" that an efficient method of recruiting and transporting labor to the exact point when and where it was needed had never developed.

In spite of—indeed, because of—their lack of an established network, and because of agriculturists' reservations about hiring a labor force that might disappear elsewhere at the end of the harvest, the Dust Bowl migrants displaced Mexicans and Filipinos in the fields. Penniless, desperate, and not eligible for relief for a year after arriving in California, they easily underbid other ethnic groups for work (Stein 1973:41–44) (Figure 40).

Figure 40. Mexican agricultural labor camp at present-day Hollywood Riviera, Los Angeles County, 1925. *(Courtesy of Palos Verdes Library District, Palos Verdes, California, Image PV_157 32102.)*

The migrants generally arrived with families, had nowhere to go when the work was over, and were concentrated within the agricultural districts throughout the San Joaquin, Sacramento, and Imperial valleys. Their desperate financial and housing situation severely burdened the minimal relief structure in those counties. Their shanties, ditch-bank settlements, and auto camps were visible reminders of their presence. The efforts to alleviate the housing problem for the immigrants through the construction of relief camps met with resistance, both from growers, who had grave suspicions about the effect of relief on wage levels and labor availability, and from local communities, who wished the immigrants gone and suspected the federal relief camps as a form of subsidy for large growers.

Migrants who could not get into relief camps formed semipermanent settlements outside cities such as Bakersfield, Fresno, Sacramento, Stockton, and Modesto or camped along irrigation ditches and rivers where potable water was available. Some agriculturists, particularly those with family-owned farms, allowed migrant-labor camps to form on their property and offered food and provisions to those needing assistance in the camp. From these camps, workers dispersed in automobiles to the nearby harvests or assisted the owners with the rigors of working their farms (Figure 41). Ultimately, the entry of the United States into World War II alleviated the Dust Bowl migrants' situation, as many found work in California's booming shipbuilding and defense industries.

Of particular importance in the context of Dust Bowl migrants and the Great Depression is the massive photographic collection of Dorothea Lange (born 1895, died 1965), which is accessible from the Library of Congress in Washington, D.C, and from the Oakland Public Library and the Oakland Museum in Oakland, California. Lange's work is widely recognized for its artistic

beauty and for her ability to capture life in the migrant camps during the height of the Great Depression. Many, if not most, of her photos of Dust Bowl migrants were taken for the FSA. Although they are not as well known and are often in private hands or county museums, other photograph collections also provide a rare glimpse of life in California's work camps during the Great Depression. Together, photographs, oral histories, historical maps, published histories, and archaeological studies provide the tools to piece together the story of work camps.

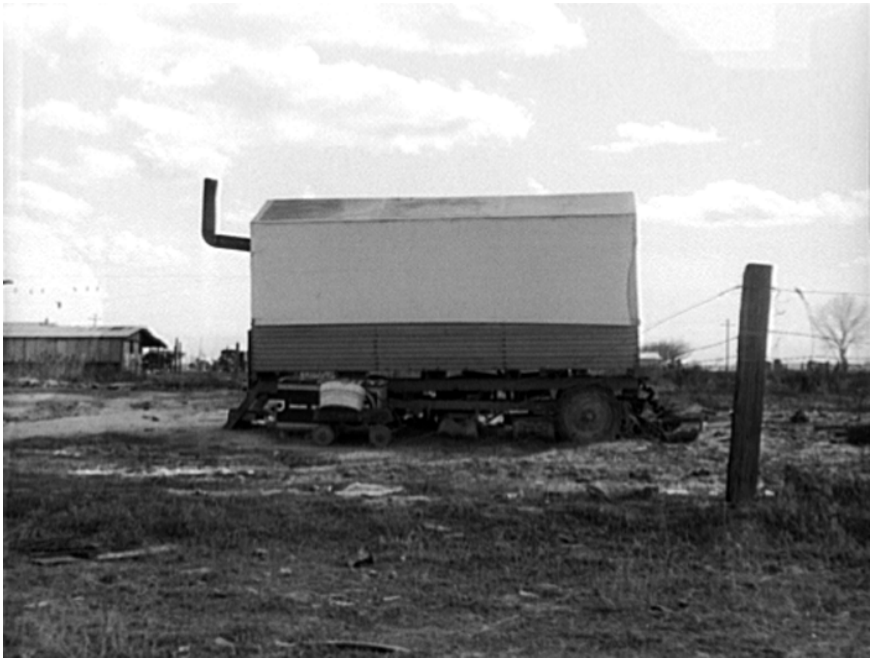

Figure 41. Dust Bowl migrant shelter on wheels, 1936. *(Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Image No. LC-USF34- 001664-C [P&P] LOT 344.)*

GENDER IN WORK CAMPS

White and Beaudry (2009:210) pointed out that gender, race, and class shape and are shaped by individual lives, and that the study of these demographic variables thereby contributes to an increased understanding of activities and archaeological signatures:

> Gender, race/ethnicity, status/class, and age have been pursued most rigorously by historical archaeologists, though additional forms of identity—nationality, sexual preference, religion, marital status, familial ties, and any other number of possible groupings—provide intriguing possibilities for investigation.

Demographic factors (for example, race, ethnicity, nationality, socioeconomic status, educational level, age, or religion) typically played a role in the treatment, opportunities, and success of individuals and groups in work camps. Often, these defining factors caused management or fellow workers to label people (or sets of people), to limit expectations, or to prescribe roles.

The study of gender has its intellectual roots in feminist theory. Gender studies are not applicable only to the study of women, however, and the absence or rarity of women in work camps does not mean that the study of gender is not relevant (Figure 42). For this study gender is defined as the social construction of female and male roles; and thus gender is the construction of not only femaleness but also maleness.

Ideas about gender were, and are, intertwined with notions of working-class masculinity. Gendered ideas influence modern views of the past. Even today, for example, lumberjacks are popular paragons of exaggerated masculinity. Concepts of appropriate manly behavior were subject to conflicting interpretations and change through time. In the late 19th and early 20th centuries, middle-class and Victorian notions of masculinity were rooted in ideas of individuality, nativist ideas of Anglo-Saxon virility, and the virtues of physical labor. Working-class men, particularly white working-class men, were often seen as typifying these virtues (Dabakis 1999). Many of the descriptions by reformers of certain kinds of camps reflect these attitudes.

Working-class notions of gender and masculinity varied by both ethnicity and subculture. Skilled and unionized workers often drew on middle-class ideas of gender in making their claims to social respectability and wages (Jameson 1998). The Victorian ideal of the family supported by a single male head of household was a crucial element in workingmen's arguments for a "family wage" with which they could support their families in a respectable American manner. White working-class men also incorporated ideologies of Anglo-Saxon virility and working-class respectability into nativist campaigns against immigrant labor.

Figure 42. Young mother at Westley FSA migrant camp, 1939. *(Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Image No. LC-USF34- 019495-E [P&P] LOT 347.)*

The role of gendered labor in work camp life depended on the industry and the nature of the work camp. Until the middle of the 20th century, most work camps were less likely to employ women workers except in certain trades, such as fruit packing. Other industries and jobs were almost completely closed to women as wageworkers, although married women sometimes did odd jobs or assigned tasks in the camps as part of their family's household economy.

As quoted by McBane and Winegarden (1979:179), a woman living in a Central Valley Delta migrant camp in the 1930s introduced herself by stating that

> I am an agricultural working woman. I came to this camp with my husband and baby. I have to get up before the men get up. I feed my baby and then I am suppose to help in the kitchen. If I don't help in the kitchen people will say "what kind of woman is she?" Although there is a paid cook I am suppose to help. I have to go out to work with the men at the same time, taking my baby with me. When we finish work at suppertime, I have to do the cooking and wash the dishes. At night, when the baby cries, I have to be extremely careful because we live in a rooming house and the partition has thin walls. Sometimes I have to take the baby outside in order to quiet it. I am suffering doubly.

The woman's remarks reflect the conditions that thousands of other women faced during the Great Depression.

Besides undertaking certain conventional occupations open to women in work camps, some women worked as prostitutes. For example, according to oral interviews, during the 1920s construction on the El Dorado Hydroelectric Project in the San Francisco Bay area, prostitutes served camp workers from permanent quarters in established towns and through payday visits to tent camps (McLean 1993:56–59; Walker et al. 2007:57). During the 1930s, Dr. Sidney R. Garfield, cofounder of Kaiser Permanente, operated the 12-bed Contractors General Hospital at Desert Center in the Mojave Desert. The facility was located at a construction camp that housed 5,000 workers engaged in building the California Aqueduct from the Colorado Desert to Los Angeles. Initially, Dr. Garfield expected to treat on-the-job injuries that would have been covered by workers' compensation, but he also found it necessary to treat illnesses such as venereal disease "from prostitutes who also set up shop near the work camps" (Debley 2009:3).

Gendered labor in work camps extended beyond wage labor: if women and families were present in the camp, their work often went unpaid. In families, the domestic economy was generally in the hands of wives. Archaeological remains of food, drink, and other amenities are often the reflection of careful and sometimes necessary decisions balancing a household's budget and necessities. The remains may also reflect the limited range of material goods available at remote work camps and the control that camp bosses or company policy placed on the acquisition of material goods. This control was particularly true for prison labor camps, where a very rigid set of rules applied to purchases at camps scattered throughout the state.

Ideas about gender are also important in distinguishing single men from married men. Single men and bachelors, particularly transient workers, were often viewed as "unstable and possibly dangerous" in the popular imagination at the best of times (Courtwright 1996). Within the dominant middle-class Victorian worldview, married men were subject to the civilizing and moral influence of a woman, and unmarried men were not. With the expanding influence of

psychological theory in the early 20th century, Victorian conceptions of bachelor "rowdiness" sometimes were combined with vaguely Freudian ideas of repressed sexuality and psychological deviance. These notions drove many of Carleton Parker's reforms and investigations (Parker 1920; Mitchell 1998).

The suspected nonconformity of transient workers with prevalent norms of gender deeply concerned middle-class investigators. CCIH investigations among transient workers and loggers reported widespread homosexuality, describing it as a "social danger that was considered a greater menace than malnutrition and lack of sanitation" (Parker 1915:118).Whether homosexuality was pervasive in the camps or not, the CCIH labor camp reforms were intended, in part, to create an environment in which gender norms could be reestablished.

In certain work camps, camp owners and superintendents preferred to hire married men, separating housing based on marital status. Managers saw married men as more stable and reliable (Pappas 2004). In some cases, married men may indeed have been more reliable because they had to consider the impact of workplace resistance or lack of work on their respective families. Steinbeck's (1939) novel *The Grapes of Wrath* and the 1940 movie that it inspired explored the relationship between the family and the struggle to adequately provide for the family while making personal sacrifices and, at times, endangering one's own life. Extended families sometimes traveled from camp to camp in groups (Figure 43).

Figure 43. Dust Bowl family camped near Holtville, Imperial County, 1937. *Note the refuse dump in the drainage ditch. (Courtesy of Library of Congress, Prints and Photographs Division, Washington, D.C., Image No. LC-USF34- 016247-C [P&P].)*

Some companies and government agencies had a genuine paternalistic concern for the families in their employ, investing in infrastructure and housing considered unnecessary for single men. Others may have calculated that workers with families were less mobile and that cheaper or free labor would be available in the form of the worker's wife and children (Mitchell 1996:101). "Voting with their feet," the only recourse for many rural workers, was much more difficult if they had families with them. One worker, George Speed, who testified at the CIR hearings, commented that

> They want your family there now in fact. If a man goes into a camp single, as I have, and asks for work the first question they would ask me was, have you got a wife, and how many children. If I didn't have a wife I couldn't get a job: but if I had a wife and family I would have got a job, but would never have got out of the place unless I walked out. They would take everything back from me in the prices of food, rent, and so forth [Walsh and Manly 1916:4938].

During the first few decades of the 20th century, although certain industries gave preferential hiring to families, they often took advantage of families by increasing the costs of necessities such as food and shelter. The relationship between laborers and employers was also complex. While many adopted a paternalistic attitude towards their workers, others interacted infrequently and relied almost solely on contractors to engage workers on and off the job.

The presence of families in camp sometimes was dependent on the workers' status: for example, in some hydroelectric and lumber camps (Maniery et al. 1996), company doctors, foremen, or managers had families in camp, but general laborers did not. This difference probably was a result of the limited availability of adequate housing for families at remote work camps. In other situations, camp workers spent days, weeks, and even months working outside the camp itself. Leaving families in the camp may have been viewed as deleterious to their well-being, or perhaps the absence of male workers for long periods compromised the balance of gender roles in the camp.

The complex relationship between workers and managers and the role of gender and family in work camps during the early 20th century are worthy of further study. Historical documents make clear that camp composition, with respect to gender and ethnicity, varied markedly from the l9th through the 20th centuries. During the 19th century, except in agriculture, most work camps were occupied by males, most of whom were unmarried immigrants. Although this trend continued into the 20th century, certain industries recognized the value of allowing families to live at work camps; at many camps, particularly in agriculture, family members worked side by side. In other situations, work camp laborers, predominantly male, visited their families, who lived in nearby communities. As a whole, the social order within the work camps was strictly controlled for the benefit of the company or corporation. Created during the Great Depression, government-sponsored work camps were the exception where family housing was encouraged and other subsidies supporting nuclear and extended families were provided.

WORK CAMPS AND SPECIFIC INDUSTRIES

The previous sections provide a broad historic context in which to interpret work camps in California. The following discussion focuses on specific industries and associated work camps

that dominated the state's landscape from 1848 to 1941. Treated in alphabetical order are work camps for agriculture, charcoal and lime production, government work projects, logging and lumber, mining, oil and petroleum, railroad construction and maintenance, water development and hydroelectric power, and whaling and fishing.

The place of work was far distant from some camps but immediately adjacent to others. For example, unlike mining towns, mining work camps usually developed on or near the work site or the central place of operations. The proximity of the camp promoted both efficiency and security for valuable commodities, the claim itself, and the equipment. During the 20th century, work camps were often located in settings that provided adequate shelter, transportation, and other basic needs; with the advent of the automobile, laborers living at these camps could be transported easily for long distances to and from the job site. In other locations, such as in the Mojave or Colorado deserts, some work camps were miles from any transportation system or town with the necessities for life.

During the 19th and early 20th centuries, the three principal forms of labor in California were a partnership or company, employee-based labor, and contract labor. Most work camps were populated by contract laborers, largely because work camps were temporary and the type and intensity of work varied from season to season.

Because of the state's rich diversity of minerals, plants, and animals, various industries emerged during and after the gold rush. Besides mining and agriculture, California's vast timber reserves were exploited in the Sierra Nevada, the central and northern Coast Ranges, and, to a lesser extent, the Transverse Ranges in the southern part of the state. Logging required substantial human labor, both to fell the timber and to render it for transportation to sawmills, some located many miles from the actual harvest areas. Work camps sprang up within the logging regions of California, characterized by specific technologies and demands placed on the workers to support the growing industry.

Besides the logging railroads, common carrier railroads, which typically transport people and goods, were built throughout California; the first was the Sacramento Valley Railroad in the mid-1850s. Construction of the common carrier railroads generally ended upon completion of the line, whereas logging railroads often were built over a much longer period as the rails pushed farther into the forests to exploit the timber reserves.

In California's Delta region and surrounding the state's inland rivers, overseas Chinese laborers were employed to build a system of dikes and levees to hold back river courses and to drain tule lands once inundated by seasonal flooding. Using hand tools, Chinese contract laborers worked in extremely harsh conditions to build the system of levees that exists today throughout the Delta and surrounding cities, such as Stockton, Sacramento, and Marysville. Overseas Chinese also established fishing camps in the San Joaquin Delta region, along the California coast (for example, in Monterey and Pacific Grove), and around San Pablo Bay.

During the 20th century, hydroelectric and reservoir projects necessitated contracting with skilled and unskilled laborers, most of whom lived in work camps adjacent to the job site. From a regulatory standpoint, both state and federal governments played a role in labor relations and in setting standards for health and sanitation. Before the 1910s, however, private enterprise dictated work camp conditions across the state. As state-mandated regulations came into being in the

1910s, modest improvements occurred at various work camps, although regulators were poorly staffed and, consequently, health standards were not enforced at most work camps.

AGRICULTURAL WORK CAMPS

The discussion in this section focuses on specific cultural groups that formed the backbone of the state's agricultural industry and whose members occupied most of the region's work camps from the 1850s onward. It also treats the physical characteristics of agricultural camps. *A Historical Context and Archaeological Research Design for Agricultural Properties in California* (Caltrans 2007) offers a broader and more detailed discussion of the evolution of agriculture in California.

Before large-scale commercial agriculture, most farms and ranches in California relied on local workers or family members to fill the labor pool. During the 1850s, Native Americans were coerced into working for ranch families in various parts of the state. Californios were also enlisted to assist in agricultural work, particularly in the unskilled jobs that required arduous manual labor. As small family-owned farms developed into large-scale farms, particularly with the expansion of the wheat industry after 1860, the need for a large labor force became more acute. Growers found much of this labor among the vast numbers of immigrants who were arriving daily in port cities such as San Francisco.

Between 1860 and 1900, two principal immigrant groups—Chinese and Mexicans—constituted most of the state's agricultural labor force. After 1900, Japanese and, later, Indian and Pakistani immigrants filled the gap left by Chinese when laws passed in the 1880s both limited the numbers of Chinese who could immigrate to the United States and restricted Chinese employment. The Immigration and Naturalization Service's San Francisco District Office collected information about Chinese and Chinese-American merchants and merchant firms to enforce the Chinese Exclusion Act of 1882, repealed in 1943 (National Archives and Record Administration 1884–1955). These business-partnership files contain names of the active and silent partners as well as information about the incorporation of the firm, total investment, and stability of the business. Included are partnership lists, statements, and occasional directories and street maps (Figure 44).

Figure 44. Hindu laborers in a farm field in the Central Valley, ca. 1910s. *(Courtesy of Bancroft Library, University of California, Berkeley, BANC PIC 1905.02720-PIC.)*

Besides pooled labor, individual or independent laborers moved from one job to another. Most of these laborers were European Americans, many from the British Isles, who had a broad range of experience and skills, having worked, in their home countries and throughout the United States, in diverse industries that included agriculture, mining, logging, and fisheries.

Work camps were associated with nearly every agricultural industry throughout the state. The seasonality of agriculture and the lack of requirements for specific skills lent themselves to migrant or transient labor. Women and children were generally paid a lower wage than their older male counterparts.

The Central Valley has been California's most important region for agricultural production and, consequently, a significant attractor of migrant labor. Within the Central Valley, the San Joaquin Delta was the focus of one of the state's premier experiments in agricultural reclamation. This experiment offers an example of the complex interplay of enterprise, immigration, living conditions, and government regulation in agricultural work camps.

From the late 1850s through the early 1900s, agriculturists, capitalists, and entrepreneurs recognized the potential that the Delta afforded for sustained agriculture. Delta lands were being offered for sale at bargain prices—as little as $3–$5 per acre. The Swamp Land Act of 1850 allowed settlers and agriculturists to acquire vast acreages of overflow and tule lands throughout the Delta (Caltrans 2007:43,141) (Figure 45).

Figure 45. Improvements to the Yuba River Levee near Marysville, 1913. *(Courtesy of the Water Resources Collections and Archives, University of California, Riverside, WRCA LIPP Box 79, Item 142, #650m.)*

The reclamation of Delta lands would not have been possible without the large immigrant labor pool that was available during the 1850s and 1860s. During the first three decades following statehood, the burden of Delta reclamation was placed squarely on the backs of overseas Chinese laborers. Historian Sylvia Sun Minnick (1988), a native of Stockton, described the ordeal that Chinese laborers faced while they worked in gangs in the Delta region under extremely harsh

conditions. Historians Peter C. Y. Leung and L. Eve Armentrout (Leung 1984) focused on the small Chinese Delta community of Locke.

One individual of particular importance to the reclamation and development of agriculture in the Delta region was George Shima, known as the Potato King (Hata and Hata 1986:55–63). Shima, born Kinji Ushijima, immigrated to the United States in 1889, when California's Japanese population was small. Shima recognized the Delta region's potential for sustained agriculture. He was well aware of the scarcity of Chinese laborers after the Exclusion Act of 1882 and gained a reputation as a hard worker, later achieving status as a labor contractor around Stockton. In 1899, Shima and his associates began to experiment with planting potatoes in the Delta near Stockton, especially at Bradford Island. After 1900, Shima was able to convince investors to provide him with enough capital to acquire additional Delta lands and to begin a massive effort of constructing dikes and levees and installing pumps to reclaim seasonally inundated lands (Figure 46). Later, he leased additional lands under his name and as a joint tenant with the Rindge Farm holdings (see below). Shima's initial work at reclamation and, later, farming required a large labor force. In 1913, his camps were visited by Kaizo Naka, a University of California, Berkeley, graduate student. According to Naka, Shima employed 600 workers, 50 percent of whom were Japanese, 30 percent East Indian, and 20 percent Mexican or of other nationalities (Naka 1913). In a 1917 interview given to the *San Francisco Examiner*, Shima stated that he started his business by employing Chinese workers but could no longer get any. He had then hired his own compatriots, but most struck out on their own after a while. After that, he had tried Hindus but in 1917 largely was employing Mexicans (*San Francisco Examiner* 1917:2).

By 1902, Shima had developed a lasting partnership with Lee Phillips, who had acquired ownership of land known as the Rindge Farm holdings, where he built levees and ditches and secured an island. Under a lease agreement with Phillips, Shima provided labor and equipment to burn off vegetation as preparation for planting and farming. Between 1908 and 1920, the two partners reclaimed and farmed more than 100,000 acres of Delta land (Walker 1992).

Documentation regarding the relations among Shima, his employees, and other parties who participated in the agricultural development of the Delta islands is important to the history of work camps in central California. Shima died a millionaire in 1926. His legacy remains in the Delta, evidenced by the infrastructure that has supported the area's agricultural growth for more than a century. The numerous work camps associated with ethnic immigrant farm laborers are extant within the islands, although many camp buildings have been demolished or were left to decay. Twelve of Shima's camps were constructed on Bacon Island around 1915. The intact camps constitute the Bacon Island Rural Historic District and were determined eligible in 1993 for listing in the NRHP at the state level under Criteria A, B, C, and D as an intact example of Shima's farming ventures in the Delta (Maniery 1993). In addition to the 12 camps built in 1915, the island contains the headquarters camp for the ferry operator, a pump house, siphons, a ditch system, and 5,000 acres of agricultural fields add to the sense of history.

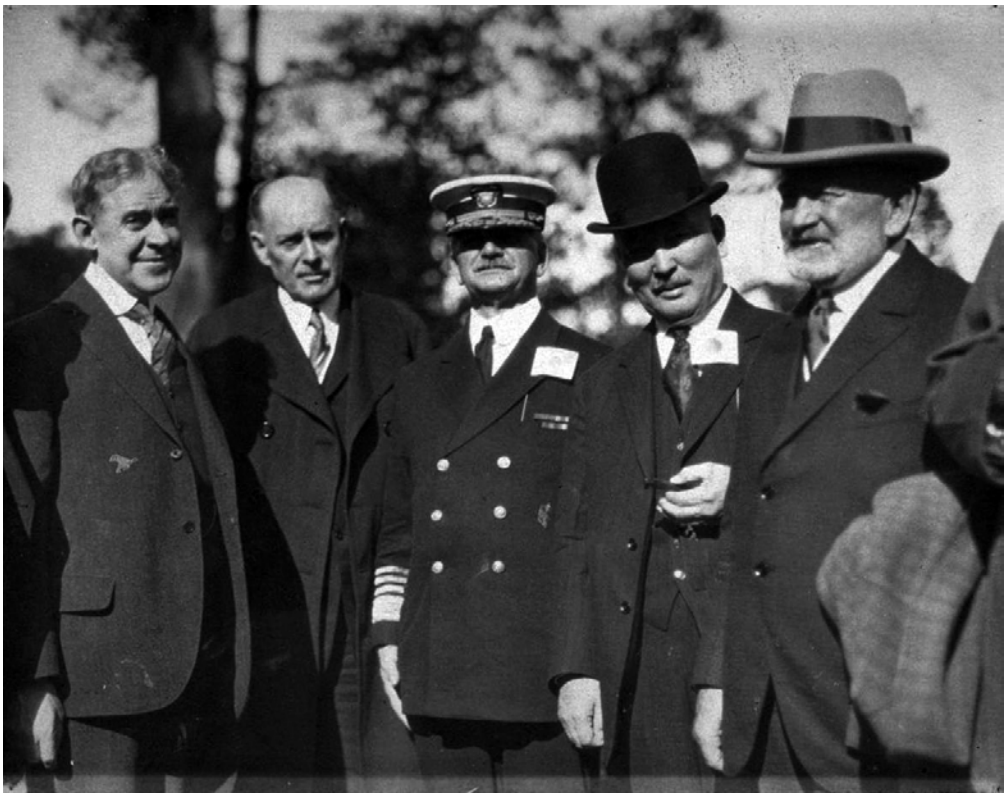

Figure 46. (*from right to left*) Ex-Senator James P. Phelan; George Shima; Admiral Robert E. Coontz, U.S. Navy; Congressman Edward G. Taylor; and Mr. Robert Newton Lynch at a reception and tea party in the Japanese Tea Garden, Golden Gate Park, San Francisco, ca. 1910. *(Courtesy of Bancroft Library, University of California, Berkeley, California Faces: Selections from the Bancroft Library Portrait Collection, George Shima.)*

Naka's (1913) study of Shima's camps found them to be "the best in the delta" because of their overall cleanliness and living conditions. On March 2, 1917, the CCIH and the California State Board of Health reported on inspections carried out at various farm laborer camps spread throughout the Delta. The reports provide insight into conditions within the camps during a period in which the state was just beginning to address health and sanitation conditions for workers. Ironically, a memorandum directed to the Rindge Land and Navigation Company noted that the "farm houses were filthy and endangered the health of the farmers" and made the following recommendations:

1. The Tenants [tenant farmer] must provide proper toilets. The old pits must be well covered with earth and new ones dug. They must also be properly screened so flies cannot get in.
2. Lime, ashes or dry earth must be sprinkled frequently on all toilet pits. Please be particular to see that this is done regularly.
3. The houses must be thoroughly cleaned and kept clean. Whitewashing is recommended for the inside.
4. They must clean up all rubbish, including tin cans, and what cannot be burned must be buried deep enough not to interfere with the farming of the land. Rubbish must not be thrown into the river, canals, or ditches or in waste places (designated dumps).

5. Each Tenant must provide himself with a garbage receptacle, which must have a cover, and which must be kept on at all times, and emptied and cleaned out frequently. The garbage must be burned, buried, or otherwise disposed of in a sanitary manner. It must not be thrown on the land.
6. Hog pens must be removed at least 300 yards from the living quarters, and must be kept clean.
7. The manure must be removed from the barns at least once a week so long as there is unplanted land where it can be spread. When this is not feasible, the manure should be freely sprinkled with lime or ashes.
8. It is recommended by the Commission that all water for drinking purposes be boiled before using. Urge this upon all Tenants [CCIH 1917].

The standards imposed by the CCIH and the State Board of Health were regulated by law; however, enforcement of the standards was extremely lax largely because of the lack of state health inspectors and the sheer numbers of tenant farmers and work camps scattered throughout the state. The state imposed requirements after health inspections at numerous labor camps in the Delta region (Figure 47). Health investigators found substandard conditions in most camps, including those owned by George Shima. Most of the Delta lands were leased to tenant farmers who themselves employed laborers to work the lands. Shima and others, therefore, relied on the tenant farmers to abide by the state regulations, but apparently most did not, at least up to 1917. In 1922, health workers again visited the Delta work camps; at that time, they reported that each camp had Japanese bathhouses and a Japanese cook and that fresh fish, white rice, and tea were served at each meal (Matsui 1922). The discrepancies between the findings of Naka (1913) and, later, Schichiro Matsui (1922) and those of the CCIH and the State Board of Health in the Delta region may reflect differences in camp composition and ethnicity. The work camps run by Japanese labor contractors may have had better living conditions and higher health standards than those occupied by other ethnic groups, such as Hindus, who perhaps were paid less and were provided with substandard living conditions. In any case, these differences are worthy of further study.

State Board of Health records, unfortunately, provide little insight into the interpersonal relationships between laborers and contractors. One exception is a series of oral interviews conducted at the University of California, Santa Cruz, in the 1970s with farm laborers and contractors, particularly Filipinos and Mexicans, working in Monterey and Santa Cruz counties. These interviews portray a complex situation characterized by a wide range of working conditions and occasional conflicts between Filipino and Mexican laborers.

The labor contract system in California (discussed in detail in Labor and Immigration, above) was formed during the California gold rush. At first, Chinese contract laborers formed the bulk of the workforce. In later years, the system of labor contracting for agricultural field workers arose from the state's particular agricultural characteristics. California's extraordinarily diverse and specialized crop production required peaks of intensive field labor for each specific crop. Because production was almost a year-round enterprise, which extended from the southern interior valleys up to the northern counties, a seasonal cycle evolved. Farm laborers constantly migrated between regions as crops reached maturity (Reti 2004:3). Consequently, California's agricultural work camps provide one of the few opportunities to examine camp life that included not only single men but also entire families, who were present seasonally, if not continually.

Families followed the seasonal rotation of planting and harvesting crops that took them across the Imperial and Coachella valleys and into coastal areas and the Central Valley (National Park Service 2011:6).

When the Gentlemen's Agreement of 1907 and, later, the Immigration Act of 1924 depleted the Japanese agricultural labor force, significant numbers of Filipinos were recruited by sugar growers in Hawaii (Waugh et al. 1988:162). Many eventually trickled over to California. Most were young, single men with limited education and skills. Many intended to save a little money and to return home to their families. As a result of the Spanish-American War (1898), the Philippine Islands became a U.S. territory, and Filipinos were considered "wards" or "nationals," legally entitled to enter the continental United States. Unlike the Chinese, the Japanese, and, later, the Mexicans, the Filipinos' legal status precluded deportation. However, "their status was ambiguous. They were not eligible for citizenship [but] when they traveled abroad, they used United States passports" (Reti 2004:4–5).

In 1920, 5,603 Filipinos lived in the United States, and 2,700 lived and worked in California. When California growers began to fear that Mexican immigration would be restricted by a quota under the Immigration Act of 1924, the influx of Filipino immigrants filled the gap left by Mexican workers. In 1923 alone, 2,426 Filipinos entered the state of California. By 1930, their numbers had grown to 30,500, replacing Chinese, Japanese, Indians, and Pakistani workers as the predominant cultural group constituting the state's agricultural labor force (Reti 2004) (Figure 48).

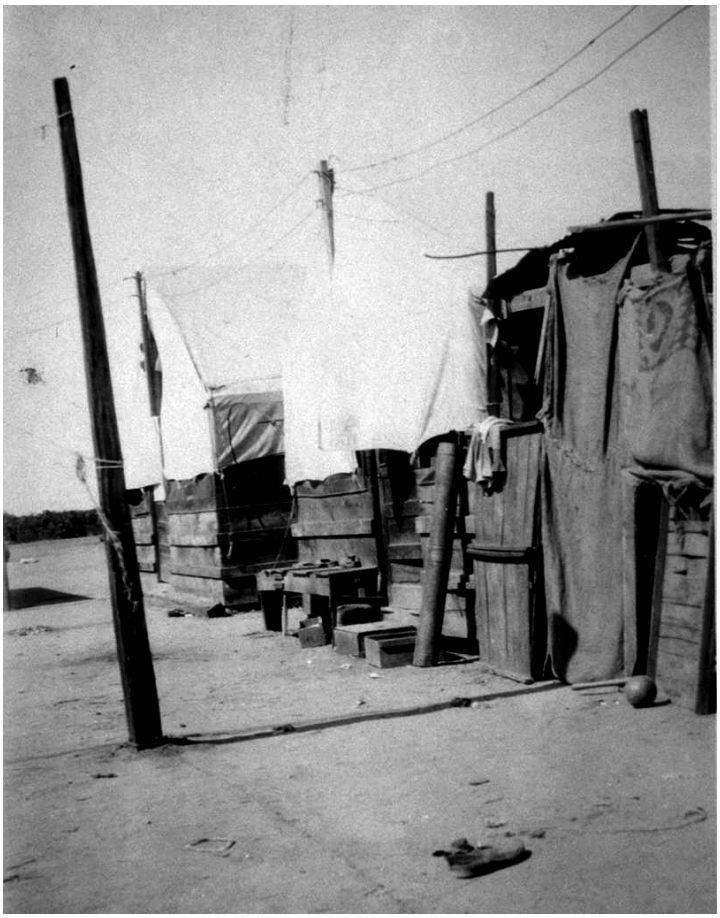

Figure 47. Filipino agricultural labor camp, ca. 1930s. *(Courtesy of Bancroft Library, University of California, Berkeley, BANC-PIC 1945.010:38—PIC).*

Figure 48. Filipino contract-laborer band members in Turlock, 1925. *(Courtesy of California State University, Stanislaus, Image No. cturs-095.)*

Welcomed at first as model workers, by the late 1920s and early 1930s, Filipinos had become the objects of racism, as had the Chinese and the Japanese before them. Monterey County was the epicenter of anti-Filipino race rioting in the 1930s. With the passage of the Tydings-McDuffie Act in 1934, which granted independence to the Philippines, and after a 10-year period of commonwealth status, legal exclusion of the Filipinos began. The act established a yearly quota of 50, and citizens of the Philippine Islands who were not citizens of the United States were henceforth considered aliens. During World War II, many Filipinos, formerly farm laborers, enlisted with the military, thereby creating a shortage of Filipino laborers. With the loss of Japanese farm laborers to forced relocation by the government, Mexican workers became the primary source of manual labor for farmers throughout California. Mexican fieldworkers worked alongside Filipino and Japanese workers, but labor contractors held most of the power in hiring, firing, and paying wages (Figure 49).

When interviewed in 1977, José Galvan Amaro (2004), a Mexican American farm worker, commented that labor contractors not uncommonly took advantage of the laborers who worked for them. The company paid the contractor, but the contractor paid the laborers. Often, food and other expenses were deducted from workers' pay. Some contractors actually absconded with the farm laborers' salaries, which in the late 1930s, according to Amaro (2004), was about 35 cents per day. According to Amaro, living conditions varied from camp to camp. Men bunked together, sometimes with three bunks atop one another and six to nine people, on average, to a bunkhouse. Although Mexicans and Filipinos shared the same camp, they bunked independently. Filipino laborers insisted on bathing every afternoon after work in tubs provided by the contractor, who usually was Filipino (Amaro 2004:43–45).

Many Filipino farm laborers who came to the mainland between 1900 and 1920 lived a very modest life and worked largely in agriculture. When working in the sugarcane fields of Hawaii, most had lived in primitive huts or houses built with bamboo and door straw, in which one large multifunctional room and a kitchen formed the interior space. Usually, they had obtained water from a well and had cooked with wood. Rice, pork, and, on occasion, beef were food staples for Filipinos in mainland work camps (Amaro 2004).

Filipino men were more likely to read and write English than their Mexican or Japanese counterparts because the Philippine Islands had been a U.S. territory. Possibly because of these language skills, Filipinos tended to earn more money and generally lived under better working conditions.

Figure 49. Filipino laborer picking lettuce, Imperial Valley, 1939. *(Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Image LC-USF34- 019341-E [P&P] LOT 347.)*

According to Frank Barba (2004), a Mexican American labor contractor working near Aromas, Monterey County, during the 1930s and 1940s his "boys" sometimes began work at 4:30 a.m. and worked 10–12 hours per day, depending on the workload. They received 15-minute breaks twice a day in addition to 30 minutes for lunch. During the Great Depression, workers generally received lower wages, but the lower wages were offset by lower prices for foodstuffs and clothing. A five-day workweek was most common, but sometimes laborers worked on both Saturday and Sunday. Barba charged his laborers $0.50 per day for room and board in the 1930s and $1.75 during the 1940s. He transported workers, about 40 total, from the work camp to the job site in a converted Chevrolet truck. Barba's crews slept 15 to a bunkhouse and usually were provided with one room and a bathroom. A separate cabin was used solely as a kitchen. Liquor was not allowed in camp, but time was allotted for recreational pursuits (Barba 2004).

The accounts presented by Amaro (2004) and Barba (2004) reveal that, although many Mexican and Filipino laborers struggled to make a living in the agricultural camps of California, others

profited by becoming labor contractors, and some were lucky enough to acquire their own property. During the 1930s, Filipino laborers seemed to have fared better than their Mexican counterparts, but racist attitudes in Monterey County and Watsonville certainly influenced their relationships with growers, contractors, and other migratory laborers.

During the 1930s, migrant farm laborers, many from Oklahoma, Texas, Missouri, and Arkansas, ultimately settled in California's agricultural areas. Their cultural traditions blended with those of other migrant workers to form unique cultural enclaves, from which came deeply rooted forms of music, such as bluegrass, blues, country and western, and folk. Bakersfield is widely recognized as the home of country and western music in California, much of it inspired by Dust Bowl migrants, many from Oklahoma, who settled in and around the community during the 1930s.

While many agricultural work camps remained for decades, others dissolved after one season. Camp buildings could be easily transported, since they were built of wood, often lacking any interior sheathing, and generally consisted of one to two rooms. Mess halls or kitchens were larger, and some contract laborers may have had larger homes within or near the labor camp. For most of the 19th century, sanitation was extremely poor in almost all labor camps. Most farm laborers were unable to force the contractors or owners to make improvements to housing and sanitation, but by the 1910s, unions and state labor laws created specific standards. Attempts to enforce those standards did succeed; however, state resources to ensure compliance were very limited.

Archaeological studies of privately owned or tenant-operated farmsteads are plentiful in California and the United States (Caltrans 2007). Nevertheless, despite the importance of affordable labor in the development of California's agricultural economy, relatively few archaeological studies of agricultural work camps have been conducted. In California, existing studies focus on camps associated with both the ranching and the field crops industries; the level of enterprise ranges from small, family-owned farms with a mixed economic focus to larger, corporate businesses (Maniery and Fryman 1993; Mackey et al. 2000; Van Bueren 2005; Walker 2008; Van Bueren and Wooten 2009; Huddleson and Fine 2011; Crawford 2012).

As noted earlier, 12 agricultural work camps were evaluated on the perimeter of Bacon Island, in California's Delta region, and became one of the first rural Historic Districts in the state (Maniery 1993). Studies focused on the labor housing established by George Shima and occupied primarily by Japanese workers. In addition, Maniery and Fryman (1993) excavated three work camps on Webb Tract and Bouldin Island in the Delta.

Mackey et al. (2000) evaluated ranch work camps along the California–Great Basin interface, including temporary sheep-herding and "cowboy" camps. During the late 19th and early 20th centuries, the sheep-ranching industry in the western United States was dominated by Basque immigrants. Crawford (2012) used archaeology, represented by aspen tree carvings, along with documentary evidence to explore the idea of chain migration as one possible explanation for the prevalence of one ethnic group in a particular industry. If the broader grazing range of a herd is viewed as part of a sheep camp, then the Basque tree carvings become part of the cultural landscape of a camp. As Crawford explained,

> …the carvings have the ability to answer much larger questions than those of mere historical curiosity. For example, questions of land use and landscape change may be addressed or, as in the case of this study, questions of demographics and migration can be addressed using data retrieved from carvings [Crawford 2012:56].

Work camps containing a more traditional layout and scope have been reported by archaeologists in government documents. For example, in the 1890s, the string-bean-canning industry began in the region of Clear Lake, Lake County, California. Studies of the factory and the associated seasonal work camps associated with cultivation of string beans discuss the scarcity of surface artifacts at the camp's location (Huddleson and Fine 2011). Limited archaeological and documentary studies of seasonal, transient labor have been conducted in the hop-growing region of California's Central Valley (Tremaine and Simons 2010). Although excavations were not part of these investigations, Tremaine and Simons (2010) recommended the locations of the work camps involved in the Wheatland Hop Riot eligible for listing in the NRHP as part of an historic district.

The archaeological footprint of agricultural work camps reflects the transience of the industry, including seasonality, embodied in the character and quality of the camp's housing and infrastructure. In addition, evidence of the physical markers and the material culture of occupants, which would have provided clues to ethnicity, gender, and family composition, may have been limited by this transience (Caltrans 2007:197). Landscape transformation over time may also have contributed to the scarcity of artifacts. The field of contemporary archaeology, which considers modern society from an archaeological perspective, may be useful in the study of work camps in the 20th century (Rathje and Murphy 2001).

Van Bueren (2005) presented the results of archaeological data recovery excavations at CA-AMA-364/H, a historic farmstead occupied between 1848 and 1917. The investigations identified several structures and activity areas used by hired hands. Those workers included native-born, Chinese, and other foreign laborers, as well as local Native Americans. The experiences of those workers were reconstructed through a wide variety of archaeological and historical clues, including a ledger left behind by a Chinese cook in 1857. Van Bueren and Wooten (2009) expanded research on the subject, focusing on archaeological deposits and material culture associated with a woman laborer at the property.

The contributions of Native Californians to the local economy are a worthy subject for research with respect to agricultural labor in California. Documentary information about Native American labor on agricultural properties treats the work both of members of local tribes and of individuals imported from farther abroad to work in a particular industry. However, archaeological references are more limited (Van Bueren 2005; Huddleson and Fine 2011).

In studies that address agricultural properties, contextual archaeology can emphasize the commonplace and reveal the lives of the disfranchised:

> While it is usually possible to learn a fair amount about property owners and even tenants, workers are in many cases virtually invisible in the historical record because they commonly led such transient lives. That implies archaeology can add significantly to our knowledge of those poorly known agricultural workers [Caltrans 2007:197–199].

In summary, the agricultural industry represents by far the most diverse property type when studying the evolution of work camps in California. Virtually every form of agriculture required some degree of camp labor to make it sustainable.

CHARCOAL- AND LIME-PRODUCTION WORK CAMPS

In the American West, charcoal was used as fuel in restaurants, laundries, assay shops, smelters, blacksmith shops, tinsmith and sheet-metal shops, homes, and hotels (Bancroft 1890:77; Bailey 2002:147). Charcoal was a preferred fuel because it was generally inexpensive, widely available, and lightweight; had superior heating capacity; and burned without producing sooty smoke (May 1956:2; Brady 1971:182). Before 1850 in California, lime was burned to produce mortar for stone and brick construction, and the remains of old limekilns have been reported in Marin and Santa Cruz counties (California Division of Mines 1959:12–13) (Figure 50).

Figure 50. Davis and Cowell Lime Works, Santa Cruz, ca. 1865. *(Courtesy of Library of Congress, Lawrence and Houseworth Collection, Washington, D.C., Image No. LOT 3544-55, no. 54.)*

Charcoal production in California dates to the early 1850s, as the demand for alternative fuel arose in remote mining regions, and steadily increased in the state's urban communities. Most fuelwood consumed for charcoal production had little or no commercial value; other species had much higher value for the production of lumber and lumber products. In remote areas, trees near the work site quickly disappeared, and workers had to venture farther and farther from camp to collect fuel. In regions of the West (particularly portions of Nevada and Utah) that lacked large stands of commercial timber, wood as an energy source "became very expensive once stands of

pinyon and juniper adjacent to the mills were cut … so costs were reduced by carbonizing the raw wood to charcoal before transportation to the mills" (Young and Svejcar 1999:48). Until the late 1870s, charcoal fueled the base-metal smelting industry from the Pacific coast to the Rocky Mountains (Bailey 2002:147). Commercial charcoal production fueled the smelters in central Nevada, for use in the mines around Cerro Gordo and, later, Nevada's lead mines (Bailey 2002:147,149; Straka and Wynn 2008:63–66). By 1880, the consumption of wood for charcoal production was widespread throughout portions of California and Nevada, where a ready supply of noncommercial trees was available (Bailey 2002:172). In the Coso Mountains south of Owens Lake, charcoal-industry laborers worked in small, informal camps as well as company camps of up to 300 men, where bulk goods were provided and a company store stocked clothing, hardware, and provisions (Roberts 1931:70–71).

The harvesting and preparation of fuelwood and its conversion into charcoal required the felling of live trees, such as California black oak (*Quercus kelloggii*), madrone (*Arbutus menziesii*), pinyon (*Pinus*), and, sometimes, Douglas fir (*Pseudotsuga*). Generally, charcoal-production sites were small, labor-intensive operations. In the process of preparation for incineration, leaves, small branches, and, sometimes, the bark were removed to maximize the amount of wood. Charcoal was produced either in an open pile (meiler) or in enclosed rectangular or conical kilns. Some archaeologists have speculated that economic considerations determined the use of either a meiler or a kiln, which kilns were "associated with larger groups and more permanent and complex domestic activities," or that meilers are generally not found in association with evidence of long-term occupation (Hardesty and Hattori 1983:20–22 [summarizing work by Buckles (1978:882-894)]). Ruby and Hildebrandt (2004) identified ovens intended for a single episode of use and interpreted that they were selected because of the steep Coso Mountain slopes. The two methods yielded comparable products, however; combustion in a kiln had the advantage of successful operation in any type of weather and a faster charring process. Limekilns and the lime-treatment process have also been described in detail (California Division of Mines 1959:11,14).

Preparation of a meiler involved clearing an area of any combustible material, followed by placing four-foot-long logs and limbs upright in a circle around a center pole that would later be removed to create a central chimney about 12 inches in diameter. When the first layer was four to five feet high from the center, a second layer of wood was begun. The addition of other layers created a beehive-shaped inverted cone (Lee 1965:226; Whatford 2000:114) (Figure 51).

Once the pile had been created, it was ignited by a variety of sources. The intent was to char, not to incinerate, the wood by covering the pile with soil and leaves and then allowing it to smolder. Charring the wood was a slow process that often took 3–5 weeks, followed by a cooling process that took 7–10 days.

Kilns were constructed of stone, red brick, or firebrick in combination with clay and mortar. Rectangular versions measured up to 50 feet long and 18 feet high and held up to 90 cords of wood; round or conical kilns measured up to 30 feet in diameter and 28 feet high. Raw wood typically was cut to lengths of four feet, was laid flat on the kiln floor, and was piled closely to fill the interior (Bailey 2002:154–160). In round and conical kilns, a hollow space was left in the center of the wood stack to form a natural chimney.

"Watchers," who tended the piles and ensured that fires neither flared up nor died out, monitored the entire process (Bailey 2002:158; Ruby 2005:178). Cooled charcoal, or "charred wood," was

broken into short lengths about six inches long and was placed in sacks for distribution (Whatford 2000:114–115). Thirty-five cords of wood yielded 1,750 bushels of charcoal (Bailey 2002:163). At Eureka in Humboldt County, the fuel brought 15 cents a bushel; payment usually was rendered in goods or mercantile credit (Bailey 2002:150–151). According to Lewis Giovannini, whose father and grandfather had been in the charcoal, coal, and wood business since the 1860s, the going price for charcoal in 1910, delivered to a railroad car in Occidental, Sonoma County, was 25 cents a sack; each sack weighed approximately 50 lb. (Whatford 2000:115; Lee 1979:184).

Figure 51. Olive-wood charcoal-production kiln near La Habra, 1917. *(Courtesy of La Habra Old Settlers Historical Society, La Habra, California, Image No. claoshs-089-LHOS-089.)*

In 1879, in Eureka, along California's north coast, charcoal burners organized against dishonest teamsters and merchants. Forming the Eureka Coalburners Protective Association, the burners claimed that they could not survive at the rate of 28 cents per bushel, demanded an increase in value to 30 cents per bushel, and threatened to cut off fuel supply if their demands were not met. Armed burners blocked the passage of teamsters to the burning grounds and loading facilities. Over the course of a few months, the association became increasingly violent, and more-militant individuals assumed leadership. Local law enforcement was no match for the resistance, and the state militia was called in. The Fish Creek War ensued; a handful of burners were killed and others were wounded or arrested before peace was restored (Bailey 2002:173–179).

At best, charcoal manufacturing in California was a minor industry when compared to similar industries in the state, such as sawmills, planing mills, and other forms of lumber manufacturing. For a time, charcoal production in certain localities, such as the forested portions of Sonoma County (Whatford 2000) and in Owens Valley (Murphy 1972), generated both jobs and income for local economies. At Eureka, where charcoal burners kept furnaces going for nearly two decades, workers settled in "charcoal ranches" near the meilers (Bailey 2002:150).

Archaeological sites and features associated with charcoal production in California and the Great Basin were investigated by Wallace and Wallace (1981), Hattori et al. (1984), Zeier (1985),

Reno (1994, 1996), and Ruby and Hildebrandt (2004), among others. In Nevada, charcoal was produced for the mining and railroad industries primarily by Italian and Swiss immigrants known as *carbonari*, who had learned the trade in their homelands (Bailey 2002:150). Many *carbonari* worked as independent contractors. Thus, they tended to have more direct control of their living and working conditions than did wage laborers working for corporate or government entities. Evidence of Italian charcoal-production workers in the charcoal fields of the Roberts Mountains in Nevada is revealed in the presence of traditional Mediterranean-style bread ovens within the camps (Reno 1996).

In the Roberts Mountains, Reno (1994, 1996) examined charcoal production (1860s–1891) in terms of a world system (Hardesty 2010), which provided broader insight into the demography, technology, economy, organization, and ideology represented in the industry. Reno characterized the Roberts Mountains camps as having culturally diverse households averaging about four men but often containing one to 12 individuals. No women were documented as having occupied the camps (Reno 1994, 1996). This approach provided a cohesive way to examine factors that influenced local industry in relation to the much larger 19th-century mining ventures and the worldwide expansion of capitalism (Reno 1996).

Whatford (2000) identified charcoal-production archaeological sites or features in Sonoma, San Mateo, San Luis Obispo, and Santa Barbara counties. Most of the colliers, or charcoal workers, around Sonoma were Italian immigrants. In Truckee in the 1870s, Sisson, Wallace, & Company hired 350 Chinese laborers, who cut wood and produced up to 58,000 bushels of charcoal a week for smelters in Virginia City. Excavations at the Chinese work camps around Truckee recovered varieties of Chinese-manufactured porcelain, cooking features (including three-chambered woks), opium pipes and tins, medicine bottles, buttons, and gaming pieces (Elston and Hardesty 1981:96–97; Elston et al. 1982; Sharon Waechter 2006, pers. comm.). Whatford (2000) noted that comparing data from the Italian-produced charcoal fields around Sonoma and the Roberts Mountains with the Chinese production areas may yield new information regarding technological adaptation.

In the Coso Range charcoal-production fields in Inyo County, Hildebrandt et al. (2000) and Ruby and Hildebrandt (2004) identified work areas, including six watch stations and 15 occupation areas linked together by a network of mule trails and wagon roads, as well as more than 750 charcoal ovens that differ in shape and structure from the Nevada examples. Production in the Coso Range occurred from 1874 until 1879, a time when smelters operating in nearby Darwin required vast amounts of fuel. According to journal entries kept by a Coso collier, a typical camp consisted of a cleared area surrounded by cacti and pine boughs to keep out snakes. Occasionally, a canvas tarp was laid on the ground and another was stretched across pine limbs, to create a private shelter. Some centralized areas also had rock-walled shelters. Mules transported food, including bacon, beans, potatoes, and flour, in bulk into the camps. Colliers' camp equipment consisted of blankets, a coffee pot, and a frying pan (Roberts 1931:138). Many of the colliers were Mexicans or local Native Americans. Many sites appear to retain excellent integrity.

Certain charcoal-production areas have garnered significant status; these include the Cottonwood Charcoal Kilns in Inyo County, which are a California Historical Landmark (California Department of Parks and Recreation 1990:63), and charcoal-kiln sites in Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming (National Register of Historic Places 2011).

Future study of charcoal camps should consider questions related to traditional technologies, ethnicity, demographics, transportation networks, and subsistence in a remote setting (Hildebrandt et al. 2000:15–17; Ruby and Hildebrandt 2004).

GOVERNMENT WORK CAMPS

Between the late 19th and the mid-20th centuries, government-sponsored work camps sheltered residents ranging from prison inmates to unemployed workers, migratory laborers, and young men from poor families.

In the 1880s, California mounted the first documented efforts to form government-sponsored work camps with a work program for prison inmates (*Daily Alta California* 1884, 1886). Work camps sponsored or financially supported by the government were, for the most part, a social experiment that was prompted by high rates of unemployment and the hope that providing shelter and basic services might assist in dispelling any social unrest promulgated by the influx of new migrants into the state. A second purpose, which applied especially to convict labor camps, was to assist the state with its infrastructure projects, particularly the building of roads, bridges, and highways.

The idea of government work camps evolved from the state's program that provided temporary furloughs for prisoners during the first two decades of the 20th century. Prison labor camps created in other states proved successful, particularly for highway construction and maintenance projects, which required considerable hand labor. State authorities also believed that prison labor camps, confined to felons convicted of less serious offenses, would offer a form of rehabilitation so that released prisoners might acquire gainful employment.

In an era when the use of motor vehicles was increasing rapidly and was changing the face of transportation in California, the state legislature put into effect a program that was intended to construct more highways at an expected savings while improving the character of selected prison inmates (Berrien 1997:44). In 1915, legislature Assemblyman B. B. Meek of Butte County introduced a bill, now known as the Convict Labor Law, that authorized the employment of prison labor on state highways, provided good-time allowance for prisoners, and required penalties for interference with the prisoners (Blow 1920:41–46). With the passage of the Convict Labor Law on August 8, 1915, the "California Highway Commission was authorized to designate and supervise all roadwork, and provide, supervise and maintain necessary camps and commissariat" (Tilton 1949a:5). Under the shared responsibility of the State Board of Prison Directors and the California Highway Commission (CHC), thousands of convicts who met stringent criteria, including good behavior, assisted in the construction and improvement of approximately 775 miles of highways throughout the state between 1915 and 1974 (Berrien 1997:42–43).

The history of convict labor camps mirrors the changes in the various highway departments authorized to build the roads. In 1907, the California legislature created the Department of Engineering, which was charged with the maintenance and construction of highways. In 1921, this agency was renamed the Division of Highways and was placed under the newly created Department of Public Works. In 1923, highway activities were removed from the Department of Public Works and were placed under the CHC (California Department of Public Works 1921). The 1923 reorganization was important because six new departments were added, including

Prison Road Camps. The division was placed under the Department of Public Works again in 1927. In 1928, the Department of Prison Road Camps was moved into the construction division of the Department of Public Works.

The Division of Highways first used convict labor in 1915 for heavy manual labor in the construction of highways (Chernin 1937:49). Problems with the system surfaced because resident engineers and prison directors shared supervision of the convicts. Prison guards did not understand how roads were constructed, and engineers were not trained to handle convicts. In addition, convict morale was low. In 1923, Julian H. Alco of the State Board of Prison Directors worked with the CHC and the state legislature to pass Assembly Bill No. 1366, the "Alco Plan," to put the convicts in these work projects under the control of the CHC, instead of joint management (Purcell 1947:91–92).

In 1923, the state legislature amended the law governing prisoners in road camps (Chernin 1937:53–58). The key provision of this law was the reduction of prison staff by providing an incentive for prisoners to stay at the camp with a minimal number of guards. Participation in the road-construction program was a privilege that earned the prisoners a shorter sentence, wages to be received upon release, improved food and housing, and an opportunity to participate in local activities such as dances and ball games. Convicts were credited up to $2.50 per day of labor, out of which their expenses were subtracted. To encourage convicts not to run away, half of their first three months' pay was withheld and was paid upon completion of their convict labor rotation. Furthermore, a reward of $200.00 was authorized for the capture and return of each escaped road camp prisoner, the amount to be deducted from the earnings of the other prisoners in the camp (Alco 1923). For these reasons, escape attempts were rare, particularly in remote areas of the state.

The selection of locations deemed suitable for the construction of prison road camps involved several considerations. The Division of Highways publication *Prison Road Camps* noted that "no other feature of prison road camp administration is more important and vital to successful operation of the camps than the selection of the camp site and design of the camp layout" (California Division of Highways 1950:28). Before the 1950s, camp layouts were highly specialized. The physical and custodial considerations that were weighed in the selection of a campsite included the following (Tilton 1949b:23–28):

1. The camp should be located as near as possible to the center of construction or to the heaviest part of the proposed highway work.
2. A comparatively level and well-drained area of at least six-acres is necessary for the development of a well-balanced camp layout.
3. A clean water supply of at least 10,000 gallons per day should be available for domestic use in the camp, as well as at least 20,000 gallons for storage for fire protection.
4. For security reasons, the site should be located a reasonable distance from highways, railroads, and local residences.
5. Consideration should be given to the proximity of telephone lines and a commercial power supply to quickly establish communication links between the camp and the outside world.

Given its years of experience in operating convict road camps, the California Division of Highways developed a body of standardized practices for the layout and construction of the

camps (Chernin 1937:85) (Figure 52). Once the location for a convict road camp had been selected, the arrangement of the various buildings was governed by a set of general rules. The buildings in a typical convict road camp were arranged in three general groupings:

1. Group 1, or the Central Group, included buildings used jointly by free personnel and prisoners, such as the administration building, commissary, mess hall, kitchen, guards' quarters, and offices. These buildings typically were located in the central portion of the camp layout and encompassed an area of about one acre. They were placed so that they could be readily accessible to all concerned.

2. Group 2 buildings included structures occupied by prisoners. Convict bunkhouses were to be arranged in a semicircle, if possible, with the doors facing the sergeant's quarters. All buildings occupied and used exclusively by prisoners were arranged, as much as possible, on one side of the camp (Chernin 1937:85). This group of buildings included the prisoners' cabins, bathhouse, hospital, commissary, cobbler shop, library, barbershop, and recreation hall or open space where movies or boxing matches could be held.

3. Group 3 buildings included structures occupied by free men. These buildings included the free men's quarters, superintendent quarters, shop buildings, storehouses, garages, and blacksmith shop. The structures were placed together in a section of the camp removed from that of the convicts, typically on the opposite side of the camp, at a distance of not more than a quarter-mile from the main camp (Chernin 1937:85; Gillis 1942).

The portion of the camp occupied by free men was considered off-limits to prisoners outside working hours. Free men contracted to provide skilled labor typically constituted 25–30 percent of the workforce. They worked alongside the inmates, eating in the same mess hall and wearing the same work clothes.

In the first convict camps, men were housed in either frame buildings or large (23 × 50 feet) tents with dirt floors (Watson 1973:60). The tents soon proved expensive and unsatisfactory, however, and were quickly abandoned in favor of large bunkhouses accommodating 40–80 men. These large bunkhouses were constructed of lumber and tarpaper, measuring 25–30 feet wide by 50–60 feet long. Later, the "squad system" was implemented, where convicts were housed in eight-man bunkhouses (Gillis 1942:4). The smaller bunkhouses, though more expensive, were more satisfactory. As noted by Gillis,

> This [squad] system has the advantage of allowing congenial or racial groups to be placed together, localized responsibility for proper conduct on the part of the convicts, simplifies the supervision by the guards and instills a spirit of emulation in neatness and cleanliness in the housekeeping among the convict groups [Gillis 1942:4–5].

The one-story bunkhouses measured 18 × 24 feet and replaced the larger bunkhouses (Chernin 1937:87). The smaller buildings were fabricated in panel sections for ease of assembly when camp locations changed. The presence of fewer men in each cabin was thought to permit better rest for the workers and to be appreciated; the expected result was increased production (Watson 1973:60) (Figure 53).

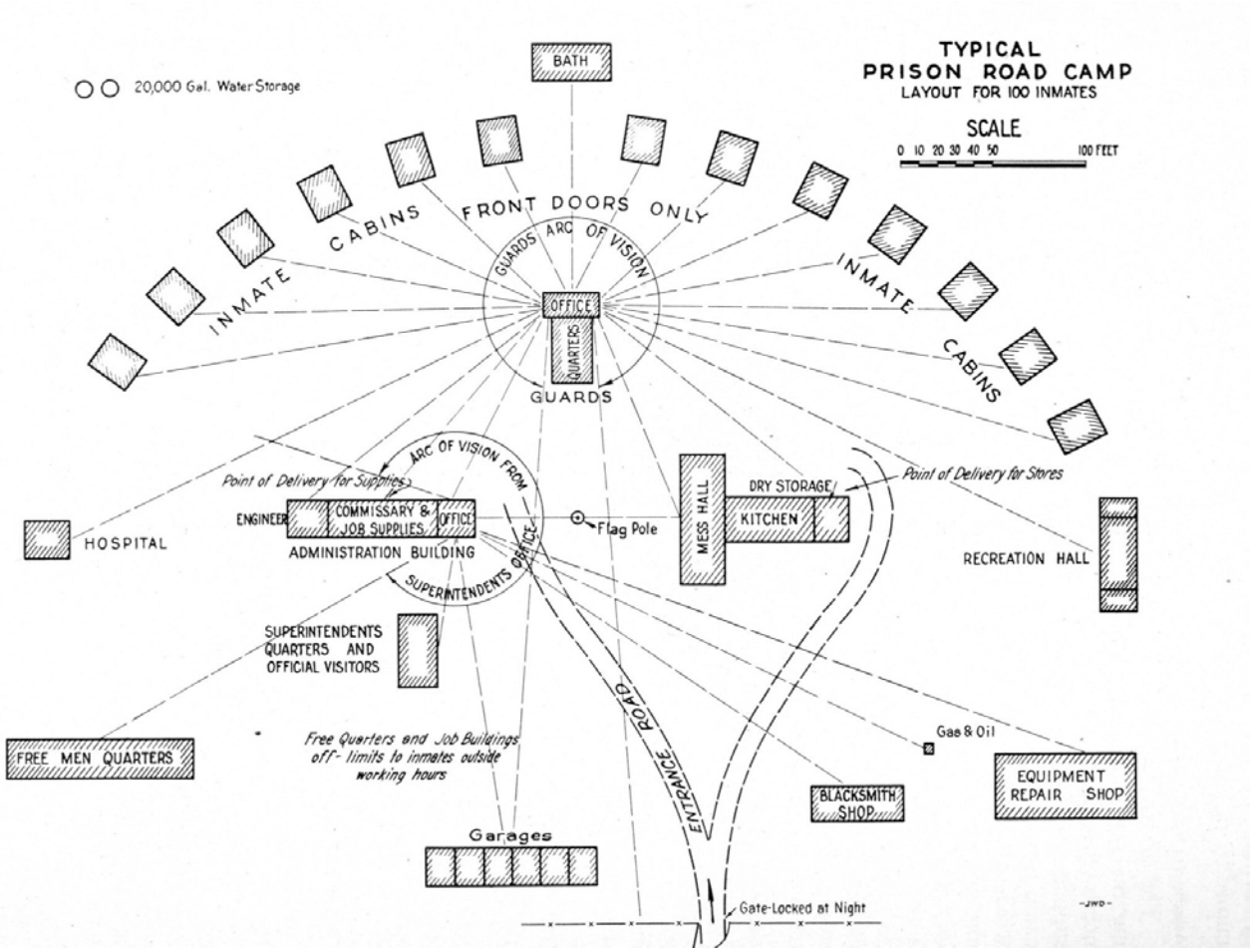

Figure 52. Typical prison road camp layout, 1949 *(Tilton 1949b:24).*

By the 1930s, portable houses became more common. In California, they were used first in free camps that were detached from the convict camps (California Highway Commission 1930). However, as early as 1923, portable buildings were mentioned in connection with use by the "highway service" for the Greenhorn Camp in Shasta County (Berrien 1997:55). The state experimented with portable housing at the camps, thus allowing for the relocation of entire camps or the movement of individual buildings to other camps that required expansion. Once a camp was dismantled, the California Division of Highways either sold the property or used it as a maintenance yard. Camps were also established on leased property.

Within the convict bunkhouses, each convict had a steel-spring cot equipped with mattress, pillow, sheets, pillowcase, and as many blankets as the season necessitated. Lockers for personal belongings and other conveniences such as tables, chairs, and heating equipment were also provided to the inmates (Chernin 1937:87).

Careful attention was paid to sanitary accommodations and arrangements in the camps (Chernin 1937:89). Sanitation conformed to the regulations of the CCIH, which covered everything conducive to cleanliness, health, and comfort, including bathing facilities (Watson 1973:62). A sufficient number of latrines, properly located, designed, and screened, were provided; special care was taken to keep them sanitary, with no possible pollution to the water supply (Chernin 1937:89). Garbage was disposed of in a sanitary manner by burying or burning in a properly designed incinerator. Hauling and dumping of garbage over slopes or into a dedicated dump

generally were not allowed. The rules and regulations of the Division of Housing and Sanitation of the State Department of Industrial Relations with respect to camp sanitation and housing were strictly observed, and camps were subject to inspection by the officials of the division (Commission of Immigration and Housing, State of California 1920:1–4; Chernin 1937:89). (Appendix B presents a complete set of the CCIH's rules for owners and operators of camps.)

The Prison Road Camp Program peaked in 1929–1930, when the program operated seven camps with a total participation of 700 inmates. Suitable jobs for inmate labor subsequently dropped; by 1950, only 200 inmates were employed (Tilton 1950:41; Berrien 1997:42–43,45,55–56). Most of the roadwork was conducted with small Fresno scrapers, wheelbarrows, picks, and shovels or similar equipment. By the time that the last camps were in operation, modern grading equipment was being used and geometric road-design standards had been improved.

During the Great Depression of the 1930s, a massive influx of destitute and unemployed U.S. citizens entered California in order to find work. In managing these large numbers of migrants—which included nearly 1,300 homeless men entering the state daily—California's political officials experimented with government-sponsored public work camps as of the late 1920s, a full two years before the inception of the federally sponsored CCC camps throughout the state and nation (Carew 1983:172–173; Otis et al. 1986).

Figure 53. Anderson prison labor camp along the Carmel–San Simeon Highway. *The camp reportedly operated from 1928 through 1934. (Courtesy of California Department of Transportation, Sacramento.)*

In December 1930, CHC and Division of Highways officials organized five highway labor camps for more than 1,100 unemployed California residents who were married or had sole dependents (California Highways and Public Works 1930:2). The four camp locations included Feather River lateral in Plumas County, Arroyo Seco Highway alternate Ridge Route in Los Angeles County, Yosemite lateral in Mariposa County, and Carmel–San Simeon Highway in Monterey County. The Carmel–San Simeon Highway camp south of Monterey provided housing and other accommodations for 125 men (California Highways and Public Works 1930:2) (Figure 54).

Figure 54. Monterey County labor camp for the unemployed, 1920s. *The camp was built to provide housing for laborers constructing the Coast Highway 1 between Monterey and San Simeon. (Courtesy of Monterey County Free Library, Monterey, California, Image CSALCL_152.)*

The laborers were paid three dollars per day, along with room and board. One year later, two highway camps opened (one near Needles and one near Rich), providing room, board, and tobacco rations in exchange for work to both single and married California residents and nonresidents.

During the early 1930s, state work camps in northern California generally comprised wood-frame housing units, whereas camps in southern California typically used tents or tent platforms, largely because of differences in climate. For instance, the highway camp near Rich in northern California contained eight 20 × 40 feet two-story bunkhouses that housed 32 men each, a mess hall with seating for 260 men, a bath and laundry building with hot showers, a hospital structure, an office, superintendent and foreman buildings, a shop, and a toilet house. The highway camp

near Needles in southern California, however, contained eight-man tents with wooden floors, fully screened sides, electric lights, and heating stoves. Each man received a cot, a sleeping pad, a pillow, and three blankets and had access to hot showers with water taken from the Colorado River. All camps employed a basic first-aid "man." Workers with more serious illnesses or injuries were sent to community health clinics, then state or county hospitals (Black 1932:9–10,29,31–32) (Figure 55).

In November 1931, Governor James Rolph, Jr., responded to the State Unemployment Commission's request for a work camp feasibility study by establishing the State Labor Camp Committee, which, in turn, established several more work camps throughout California (Black 1932:5–7). These newly created camps allowed unmarried, transient, itinerant homeless men to perform daily work in exchange for food, clothing, tobacco, and shelter. Only 20 percent of these men claimed California residency; the rest were from out of state. Camp organizers purposely tailored these camps for nonresidents so that individual communities could care for their own members. To be eligible for the camps, the men typically volunteered for them through charitable institutions and then had to pass a physical examination (Black 1932:9–10,25–27,39,42; Winters 1972:4).

From late 1931 to mid-1932, 28 state-run forestry camps and two highway camps operated in California. During the first season (1931–1932), forestry camp laborers completed 504 miles of roads and firebreaks, along with hundreds of miles of telephone-line maintenance, and various improvements to state-run campgrounds. In general, state-run camps operated until the specific project's completion; the longest-running camp operated for 133 days and the shortest for 12 days. Laborers cycled through these camps approximately every 30 days. Each man typically worked an average of four hours daily after accounting for travel to and from the jobsite. By the 1932–1933 winter season, more than 15,600 men had worked at the 55 state work camps in California (Black 1932:9–10,12; Clar 1969:193,199,203; Winters 1972:4).

Figure 55. FSA migratory labor camp, Brawley, California, 1939. *Father is home after a day in the pea fields. Note tent platform, standard equipment in FSA camps. (Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Image LC-USF34-019319-E.)*

By 1933, California's surplus work camp funds fell short and were supplemented by federal help from the Roosevelt administration. Congress soon established the Federal Emergency Relief Administration (FERA) to match state funds in providing relief to its residents, which the newly created State Emergency Relief Administration (SERA) distributed. In 1933, Congress also created the Civil Works Administration (CWA), which provided work relief in the form of large public programs. Eventually, the 1935 Works Progress Administration (WPA) superseded the CWA and FERA, although SERA camps did continue to operate in California until 1941.

Between 1933 and 1942, CCC camps that had been established throughout California offered employment to unmarried men between the ages of 18 and 25 (later regulations allowed men aged 17–26 to participate) for projects sponsored by both state and federal governments. By late 1933, the Fort MacArthur District of the U.S. Forest Service in California, which comprised the Angeles and Santa Barbara (now Los Padres) national forests, had 24 CCC camps in operation, each containing an average of 200 men. That year, 167 CCC camps operated in California; 134 of them continued throughout the winter (Carew 1983:174; Cole 1991:121). These men worked for a period of six months in exchange for $30 monthly pay, $25 of which went directly to the campers' families. Upon completing a six-month work rotation, the men could again enlist for work up to a maximum of 18 months as total time of service.

Minority groups also took part in CCC camps, though largely in segregated work environments. The camps accepted both African Americans and Native Americans, though most often these groups worked as entirely separate companies within the camps. By 1935, official directives mandated this racial segregation. During that summer, CCC officials created five all–African American companies, which existed until 1942, within the camps (Cole 1991:122).

On April 4, 1935, President Franklin Delano Roosevelt signed the Emergency Relief Appropriation Act, which placed the newly created Resettlement Administration (RA) in charge of all existing rural relief programs. In addition to resettling farmers on more-fertile land, RA authorities attempted experiments in creating self-sustaining rural and suburban communities or camps for these migrants. Although the RA's success remained marginal, the administration served as the forerunner to the FSA, created in 1937 through the Bankhead-Jones Farm Tenant Act as part of President Roosevelt's second round of New Deal efforts. The FSA gave loans to individuals to purchase farms and organized migrant camps in the western states. These government work camps became the most widespread and visible in California and dotted virtually the entire length of the state.

California's FSA camps served a wide demographic of individuals facing financial struggles; most were Dust Bowl migrants from the southwestern United States. California's temperate climate, abundant agricultural fields, and promotional advertisements enticed these migrants in large numbers during the Great Depression because of the devastated economy, drought, and the inability to compete with mechanized farm machinery (Stein 1973:26). The rise in cotton production in the San Joaquin Valley after World War I triggered this demographic shift, which peaked between 1935 and 1938 with the Dust Bowl migration (Hise 1995:247).

During the mid-1930s, members of most households living in California's FSA camps were relative newcomers to the state. Many had previously worked in agriculture, and most came from Oklahoma, Texas, and Arkansas (Cannon 1996:8). California FSA camp authorities, despite an official antidiscrimination policy, also segregated African Americans, Filipinos, and Hispanics from the general camp populations (Stein 1973:171; Cole 1991:121; Wilson 2003:78).

Between 1936 and 1941, the FSA operated 13 work camps throughout California's rural agricultural valleys (Hise 1995:243). The camps, known for fostering labor unions and with a reputation among local farmers for disrupting the current wage system, typically faced initial opposition by local communities and agricultural growers. However, FSA officials constructed these camps in the areas of their choosing despite early complaints, with the exception of one proposed camp in Ceres, where vigorous protests by the townspeople caused authorities to abandon their plans. Nevertheless, most communities eventually came to a gradual acceptance of the nearby FSA camps, and the hostility largely dissipated (Stein 1973:180–184) (Figure 56).

California's FSA camps not only provided work relief for the swelling numbers of incoming migrant families but also served as social experiments through introduction to democratic principles and communal living. These camps, deliberately staffed by young, zealous, educated individuals without prior backgrounds in professional casework, attempted to impart a modern, civilized lifestyle to its newcomers. Camp leaders accomplished this by organizing democratic resident governing bodies, arranging weekly dances and club meetings, teaching birth-control measures, and introducing hygienic and sanitary practices into the lives of camp residents (Stein 1973:166–171). All campers had to agree upon arrival to abide by a list of 12 regulations relating to sanitary practices, camp duties, and peaceful group living (Cannon 1996:8). Despite the desire to achieve an amicable camp environment, clashes occurred among various migrant families.

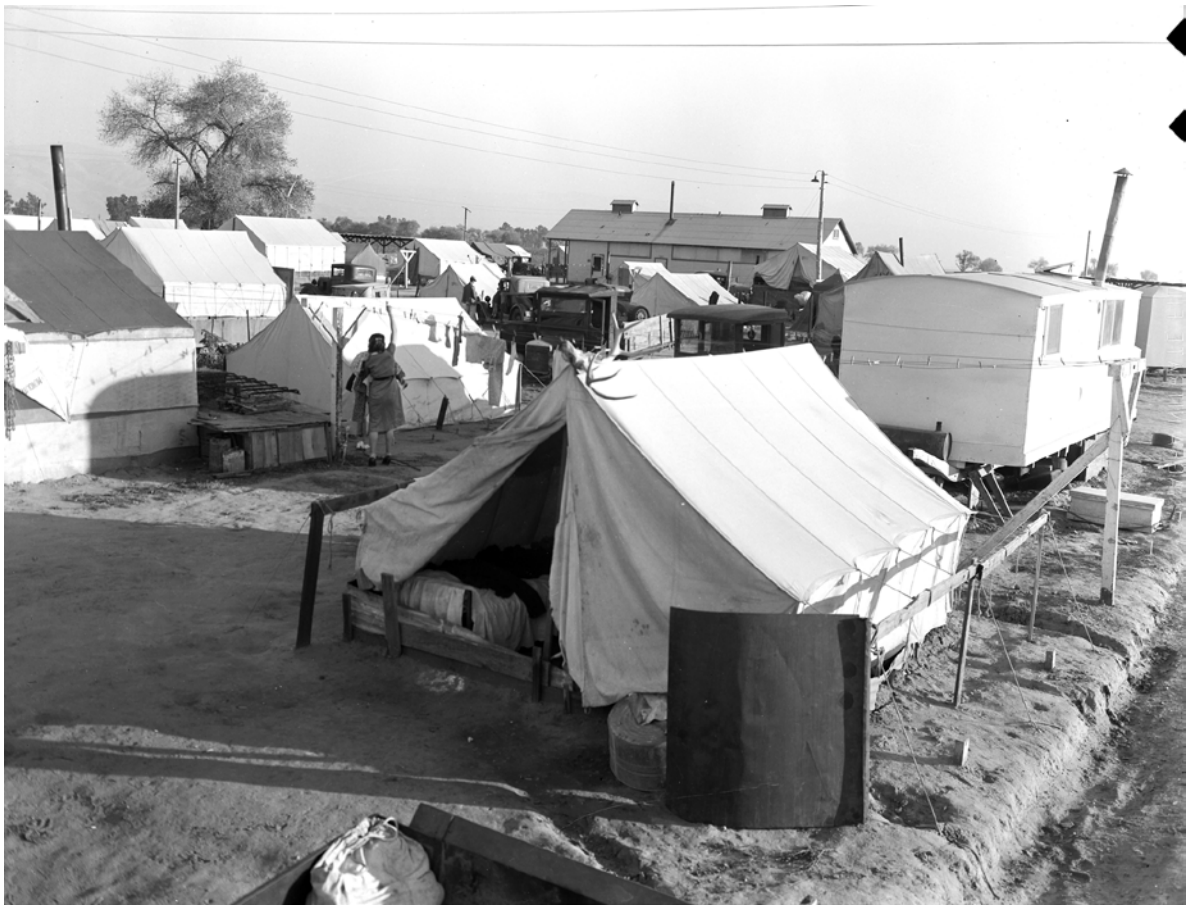

Figure 56. Kern FSA migrant camp, 1936. *(Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Image No. LC-USF34- 009883-C [P&P] LOT 354.)*

In all, 56 FSA camps were established nationwide, 13 of which operated in California between 1936 and 1941 (Hise 1995:243; Cannon 1996:1–2). Originally built as SERA camps in 1935, California's first FSA camps were at Arvin and Marysville. In 1936, these camps were turned over to the RA, which began to improve the living conditions and to build more camps throughout the state. The FSA took control in 1937 (Hise 1995:245–246).

The Arvin camp, which was carefully documented in hundreds of period photographs, served as a prototype for the rest of the FSA camps throughout California. Government officials laid out the fenced-in federally operated camp at Arvin using right angles that provided space for 96 tents within a three-block area divided by roads and having one main entrance/exit gate near the camp office. All tents had a direct water connection and faced a centrally located community building, which, early on, consisted of a large platform that could be covered during inclement weather. Later, builders began to construct permanent, framed central structures. The camp also contained three utility buildings with showers, sinks, laundry facilities, and flush toilets for each 40 tents; an 18 × 38 foot framed warehouse as an office and community center; and a 14 × 18 foot building as a first-aid center, nursery, and children's playroom (Hise 1995:245–246; Cannon 1996:6) (Figure 57).

Figure 57. Kern FSA migrant camp with family garden plots, 1936. *(Courtesy of Library of Congress, Prints and Photographs Division, Dorothea Lange Collection, Washington, D.C., Image No. LC-USF34-009892-C.)*

Most FSA camps featured indoor plumbing, hot water, and free medical care by staffed nurses. Eleven months after Arvin was taken over by the FSA, administrators built a raised wooden platform for each tent, along with storage units and wooden arbors. Before this, campers had often used cardboard as tent flooring, which did not stop water from settling inside the tents during heavy rains. Even with raised platforms, however, the tents offered little protection from the rain, wind, and hot sun (Hise 1995:248; Cannon 1996:7,13).

FSA camp design evolved through the years as administrators experimented with efficient building practices and spatial configuration (Hise 1995:245). In 1938, camp officials tried tin shelters instead of tents at the new FSA camp in Westley. Each shelter arrived in five pieces, and an experienced crew of six workers could put one together in 10 minutes. This new type of lodging also featured a covered porch and a storage area with built-in shelving. Each family in

this camp also received two iron benches, two iron beds, and a kerosene stove (Hise 1995:248). By 1939, FSA officials ordered tin shelters to replace the tents at the Arvin camp, placing these structures on poured cement slabs. Yet despite this upgrade in accommodations to provide better protection from the elements, these shelters were also highly susceptible to climate variations and noise, particularly during rainstorms and summer heat (Cannon 1996:15).

In 1938, one year before the installation of tin shelters at the Arvin camp, FSA administrators began to experiment with single-family rental cabins, otherwise known as "garden homes." Each garden home rented for $8.20 monthly, measured 240 square feet, and contained a kitchen, a dining area, a bathroom with a shower, and a cot. These homes also included a sleeping porch with two extra cots. After this, officials began to build garden homes at other FSA camps throughout California, though doubling their size, given that the bulk of the building expense stemmed from labor and not materials. Migrant families who lived in the more modest housing units often were jealous of families fortunate enough to have the new garden-housing units (Cannon 1996:15). Eventually, workers constructed "two-story, multifamily housing blocks" at existing FSA camps. In doing so, they used on-site shops to prepare the homes before moving them to the individual lots and beginning the assembly process. In this sense, these structures were an early example of prefabricated homes (Hise 1995:248–249).

Gradually, California FSA camps evolved from an orthogonal-grid-pattern layout to a circular pattern, and from temporary tent living to more-permanent housing. Administrators transformed camp layouts into circular patterns for space efficiency, partly through providing one large piece of shared community space in the center. Furthermore, this shared space, combined with the circular housing layout surrounding it, promoted a community atmosphere within the camps. The Yuba City FSA camp, completed in 1940, was the first with permanent housing planned from its inception. Officials laid out the camp in a double-hexagonal shape: tents and shelters occupied one side, flanking the community center, whereas permanent, framed housing occupied the other side amid a grove of trees. These new permanent structures represented a shift in official FSA policy through an attempt to convert the seasonal migrating workforce into "a fixed population that supplemented wage work in growers' fields with domestic production for self-sufficiency" (Hise 1995:249–250).

As a rule, sanitary conditions at government work relief camps in California were much better than those at other migrant camps throughout the state. Government camps offered square meals, childcare, hot showers, improved living shelters, and basic medical care. However, even the degree of sanitation at the camps depended largely on the habits of residents. Because residents partook in rotational camp upkeep and janitorial duties at the FSA camps, for instance, complaints often surfaced over the improper cleaning of facilities. Furthermore, campers did not always adhere to the most sanitary practices. This lack of compliance, combined with the high volume of traffic, made the restrooms particularly difficult to keep clean. Other common complaints involved the noise level within the camps and various grievances relating to close group living (Cannon 1996:27–28).

The FSA shut down in 1943. While some of the FSA camps were demolished, others were moved to other locations, and were reoccupied by other government agencies, or were sold to individuals. The experiments in self-sufficiency by the FSA and other government agencies were disrupted by the outbreak of World War II. With the subsequent aggressive measures of the federal government to focus the nation's industries on the war effort, migrants slowly gravitated

toward jobs in cities and away from the agricultural regions of the state. With the loss of farm laborers during World War II, agriculturists enlisted *braceros*, who were allowed to enter the United States through a series of laws and diplomatic agreements initiated in August 1942. After the expiration of the initial agreement in 1947, the program was allowed to continue in the agricultural industry under a variety of laws and administrative agreements until its formal end in 1964 (García y Griego1996:45–85).

Even after camps closed and workers were separated, relationships among workers often continued, through hire as permanent employees or through visits to old friends. During the Great Depression, government-sponsored work camps generated an esprit de corps that was expressed in many oral histories, particularly among the unemployed who sought work in state-sponsored camps and among young men who joined the federally mandated CCC. For many, the CCC provided a rare opportunity to engage in projects far distant from the bustling urban centers of the nation where many corps members came from. In the process, they learned new skills and made new friends.

Over the past several decades, archaeologists have explored the research value of government-sponsored or government-organized work camps, including those occupied by convicts, migrant laborers, unemployed workers, and CCC members.

A few convict labor camps have been recorded in California by archaeologists, but none have been excavated (Davis-King and Marvin 1998; Schinke and Huddleson 2004; Hamusek et al. 2009). These camps were either cleared and abandoned or reused by others when the camp was no longer needed for road construction. Camp E at Briceburg was occupied from 1923 to 1925 and housed inmates constructing Highway 120 in Mariposa County, the all-weather highway to Yosemite (Davis-King and Marvin 1998). Although the Briceburg Inn was built on the eastern portion of the site in 1927, and the site was cleared when the camp was abandoned, the site retains enough integrity to be listed on the California Register (March 30, 2001).

Convict Labor Camp 11, which included a mobile crew working on the Tahoe-Ukiah Road, is evidenced by a can dump located near Grizzly Rocks on present-day Highway 20 in Lake County (Schinke and Huddleson 2004). The refuse deposit contained approximately 500 large cans indicative of the scale of food preparation needed for a prison work camp. The remainder of the artifacts included smaller cans and a few pieces of ceramics, glass, and faunal remains.

The Greenhorn Mine Convict Labor Camp (CA-SHA-4169/H) is located along Highway 299, west of Redding, and was used by employees of the Greenhorn Copper Mine and convict road crews (Hamusek et al. 2009). The mineworkers occupied the site from 1900 to 1919 and the convicts from 1923 to 1924. The mineworkers and the road crews simultaneously occupied the site between 1927 and 1931. Site features include dirt roads, a refuse scatter, remnants of an apple orchard, and a concrete foundation (Figure 58).

In 2009, the Department of Defense's Legacy Resource Management Program produced *Nationwide Context, Inventory, and Heritage Assessment of Works Progress Administration and Civilian Conservation Corps Resources on Department of Defense Installations* (Goodfellow et al. 2009). The document provides a historical overview of the two programs, a discussion of archaeological resource types that might be associated with them, and guidelines for significance evaluations.

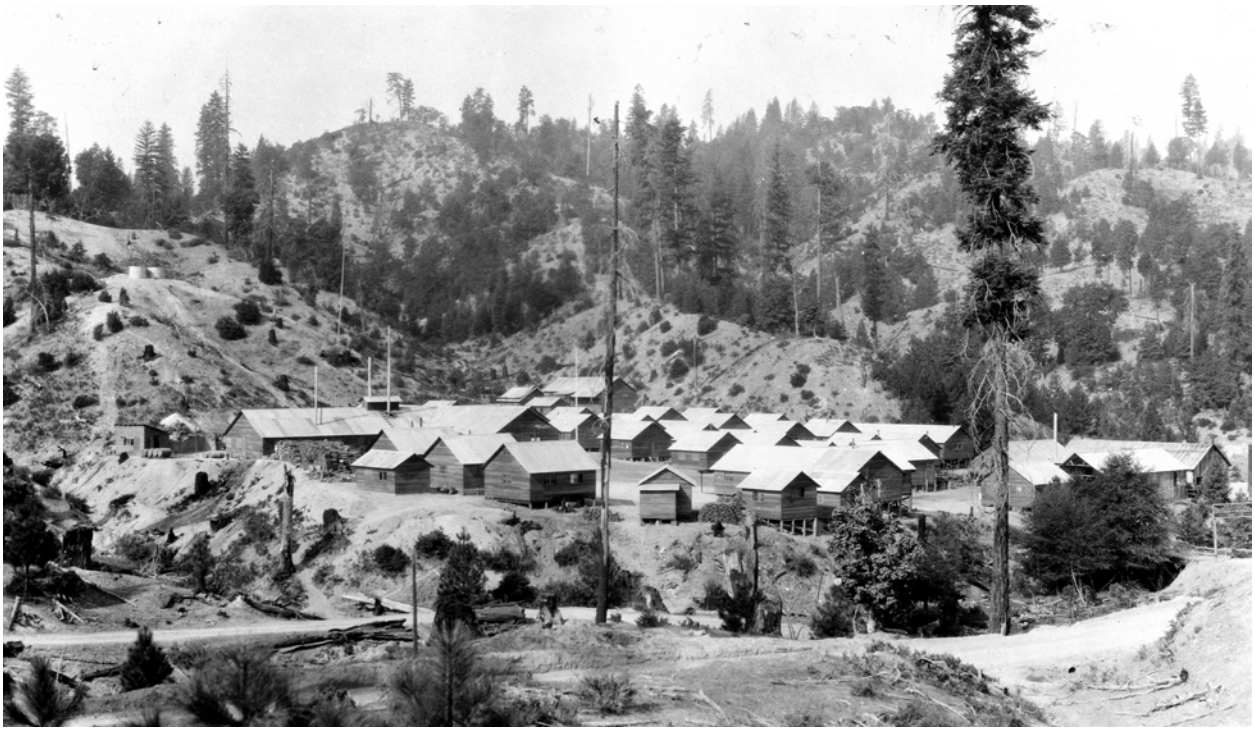

Figure 58. Trinity County Convict Labor Camp No. 12, 1930. *(Courtesy of California Department of Transportation, District 2 Archives, Redding.)*

Since the 1970s, a handful of CCC camps have been recorded and excavated in California. Howe (2009a, 2009b) excavated the CCC camp F-101 in Havilah, California, occupied during 1934 and 1935. The excavation uncovered the remains of 25 features including latrines, root cellars, and foundations of buildings including the administration building and the combined dining and recreation hall.

Archaeological studies of CCC camps have been conducted in other states, as well. Schoen (2004) investigated the Dunnigan Lake Emergency Conservation Work (ECW)/CCC camp (F-16) in Lake County, Minnesota, and identified 26 features. The camp includes structural remains, pits, and intact archaeological deposits associated with the operation of this facility between 1933 and 1937. Three features were excavated: a possible root cellar (Feature 1), a well (Feature 3), and a latrine pit (Feature 14). The artifacts from Feature 14 represent food and food packaging, tableware, and structural items (Schoen 2004:65). Schoen concluded that the site can contribute important information about the organization, diet, and activities at the camp and determined that the site was eligible for listing in the NRHP under Criterion A for its association with the ECW and CCC programs and under Criterion D for its scientific data potential.

Tuck (2011) studied the archaeology of community and possible resistance at Camp Zigzag in Oregon, near Mount Hood. Smith (2001) examined a CCC camp at Bandelier National Park, New Mexico, which was bulldozed after the site was abandoned in the 1930s. Despite this impact, she was able to map the site and to determine activity areas. Butler (2006) studied CCC camps in and around the Rocky Mountain National Park. Libbon (2011) compared a CCC camp in the Allegheny National Forest with the CCC camps in New Mexico and Oregon. Libbon concluded that archaeologists should look for off-site dumps to expand the numbers of identified features and artifacts associated with the camp. He also recommended that archaeologists

compare residential areas occupied by enrollees with those where officers lived. He discussed the Depression-era economic transition of American workers from producers to consumers and suggested that CCC camp enrollees maintained their previous spending habits while living at the camp, despite reduced income.

LOGGING AND LUMBER WORK CAMPS

This section focuses on the work camps associated with the lumber industry, most of which were located within or near the mountainous areas of the state that had a sufficient supply of timber to support commercial logging operations. It does not address logging, lumber, or sawmill towns, as opposed to camps, which are also an important part of the state's cultural landscape (Caltrans [2010] offers more information on these property types).

Numerous published and unpublished documents have treated the history of California's lumber, or logging, industry, particularly railroad logging, which has been the subject of many histories since the 1960s. Archaeologists have taken an interest in logging railroads, principally within national forest lands, where a number of studies have been carried out since the 1970s (Vaughan 1985a, 1985b, 1990; Sawyer 1987, 1988; Maniery and Baker 1997) (Figure 59).

Figure 59. Logging camp, Sierra Nevada, ca. 1900. *Note the Dolbeer steam donkey engine in the foreground and the skid shacks in the background. (Courtesy of Tulare Public Library, San Joaquin Valley Digitization Project, Tulare, California.)*

Historical documents suggest that Joseph Chapman, who had logged and worked as a carpenter in Maine, established the first organized labor force associated with logging in California. Chapman arrived in southern California in 1818 (Caughey 1940:241). During the following year, he set up a logging camp in Millard Canyon in the San Gabriel Mountains. There he instructed Native Americans in leveling benches to provide workspace and in felling trees (Robinson 1946:9–10). From these benches, the logs "were rolled and dragged down below Millard Falls,

after which oxen hauled them down into the [San Fernando] valley and to the plaza of the pueblo of Los Angeles" (Robinson 1946:10), where they were used to build the Plaza Church (Robinson 1991:11–12,29,51–52). Another early effort was that of John Augustus Sutter in 1847 at or near his sawmill in Coloma (Neasham 1947). Sutter's Mill, overseen by James Marshall, used Native American labor in addition the services of a contingent of Mormons (Hittell et al. 1968).

Logging spread throughout the western foothills of the Sierra Nevada during the California gold rush, particularly in and around mining camps. As the easy lumber was quickly denuded, companies moved farther into the forest where old-growth timber was still readily available. The only obstacle was to transport the lumber from the forest to the sawmills and from the sawmills to the lumberyards of towns. Technology was the principal determinant of the cost of labor and equipment during the 19th century. Eventually, oxen, mules, and horses were replaced with steam engines, such as the Dolbeer steam donkey engine, and, later, with railroads. Railroad logging systems required a larger and more highly skilled workforce and more capital outlay. By 1912, the industry had to abide by new regulations under the auspices of the Railroad Commission of the State of California. During the 1920s, diesel trucks began to replace railroad logging systems. These technological changes had a direct effect on labor, labor costs, and the level of skill required to operate and maintain logging systems (Brown 1947).

In 1852, Mormon settlers from San Bernardino Valley built one of the first roads into the San Bernardino Mountains and erected a sawmill. Within a few years, at least four other mills were in operation there. Lumber from these operations was used in the fledgling communities surrounding San Bernardino and in nearby mining camps and was hauled to various locations throughout southern California (Leadabrand 1964:97–99; Lyman 1996:74).

Before 1859, only sporadic and small-scale logging occurred in the Lake Tahoe Basin. During the early 1860s in the northern Sierra, a regional logging complex developed around the shores of Lake Tahoe, linked to Carson Valley and silver mines along the Comstock Lode. The greatest challenge was for the logging companies around Lake Tahoe to cut and process the lumber and to transport it from the basin to the silver mines around Virginia City. Because of the distance to be covered and the rugged terrain of the east side of the Sierra, logging companies erected wooden V-flumes and later built a narrow-gauge logging railroad to transport cordwood and lumber to base camps at the foot of the mountains, particularly around Carson City and Genoa, Nevada (Carson and Tahoe Lumber and Fluming Company Papers 1873–1947; Lindström 1993). As in other Sierra lumber camps, the workers around Lake Tahoe represented a number of ethnic groups, including French-Canadians and overseas Chinese fresh from the construction camps of the Central Pacific and Union Pacific railroads (Carson and Tahoe Lumber and Fluming Company 1873–1947).

During the later part of the 19th century through the first few decades of the 20th century, new technologies influenced changes in labor stratification, wages, living conditions and the overall economic vitality of the logging industry (Brown 1947; Conners 1997). Those technologies are represented in the archaeological remains at a wide variety of logging sites scattered throughout California.

Since the 1970s, logging camps have received considerable archaeological attention, particularly in California, where a thematic study sponsored by the U.S. Forest Service Region 5 guided many investigations of railroad logging camps (Tamez et al. 1983; Lux 1989). The Forest

Service thematic design provides a regional historic context that focused on the economic efficiency of railroad systems, the role of technological innovations, relations between the railroad logging industry and the environment, and the importance of social and ethnic considerations in the workforce. The sociocultural theme encompasses topics such as demography, social relations within camps, unionization, and ethnicity. The research themes in this study have guided archaeological excavations at several California railroad logging camps (Vaughan 1985a, 1985b, 1990; Sawyer 1987, 1988; Elliott 1990). Through field research, archaeologists have gained insights into the spatial organization of camps, including the functional layout of mess halls and barracks; the division of residential areas based on marital status and ethnicity; and the lifeways of camp occupants. Along with other factors, camp organization appears to be related to the duration of the occupation and the size and diversity of the labor force.

In 1990, Stanislaus National Forest historian Pam Conners (1990) used the Region 5 thematic study and her research regarding the West Side Lumber Company to develop a ranking system for evaluating railroad logging grades and camps used from the 1890s to the 1930s. Ranking variables included a property's research value, interpretive potential, and integrity (Table 3). She concluded that camps that were ranked as having excellent or good integrity might be eligible for listing in the NRHP under Criterion D if they exhibit potential to yield important information regarding research domains and questions presented in the Region 5 thematic study. Eligibility under other criteria is considered in that document, as well (Conners 1990:7–10).

Table 3. Integrity Ranking System for Railroad Logging Camps

Integrity	Components
Excellent	A camp with substantial intact patterning. This may include collapsed structures and/or substantially undisturbed structure pads, dumps, and other function areas that are part of the camp property.
Good	A camp with patterning that is still recognizable but that may be substantially deteriorated or disturbed.
Poor	A camp where the original patterning has deteriorated or has been disturbed to the point at which it is no longer recognizable.

Source: Conners (1990)

Maniery and Baker (1997) conducted NRHP evaluations of three railroad logging systems in northeast California dating to the early 20th century: Red River Lumber Company (Red River), Fruit Growers Supply Company (Fruit Growers), and Lassen Lumber and Box. Their studies included oral interviews with past employees, archival research, the inspection of more than 750 miles of grade and associated camps, and the application of ranking systems developed by Tamez et al. (1983), Conners (1990), and Isaacs (1989). Based on their research, they identified three types of logging-related construction camps that were occupied by small crews surveying and building the rail lines. In certain situations, larger, more permanent camps were needed for main-line railroad construction, trestles, and other engineering work that required skilled labor. Generally, logging railroad work camps were temporary and were moved quickly as the work progressed. Steam donkeys were situated at landing sites and assisted in the loading of logs onto flat cars (Maniery and Baker 1997:7).

Under certain conditions throughout the 20th century, competition for labor was fierce among the various lumber companies, whereas wages and living conditions were often deciding factors

for workers. Red River's Camp Bunyan, for example, housed 400 men and had a bakery, a kitchen, and a mess hall. Cooks went through 200 pounds of ham and 125 pounds of bacon for a typical breakfast meal. The labor force included a large immigrant workforce including many workers from Portugal and Italy. Red River also hired Greek, Swiss-Italian, Swedish, Mexican, and Native American loggers. A typical logging camp for Lassen Lumber and Box included 200 men, 15 married women, 27 children, 120 10 × 20 feet portable cabins, and a central bathhouse (Maniery and Baker 1997:8).

Efforts were made at all three camps to retain a loyal seasonal labor force by providing leisure activities. Red River loggers had a radio in camp; Fruit Growers supplied movie projectors and held boxing contests. Lassen Lumber and Box sponsored dances and transported attendees by train from nearby towns. All three companies had summer picnic days. Some companies allowed families to reside in camps, especially in summer when schools were out. Family quarters at Red River usually were separated from the bachelor quarters and consisted of tents instead of portable cabins (Maniery and Baker 1997:7,36).

Maniery and Baker's (1997) research included the inspection of more than 50 archaeological sites identified as logging work camps illustrated on company maps. Typically, camps associated with infrastructure development, such as building the spur railroad lines, were ephemeral and had few physical remains visible on the surface. Pocket tobacco tins, occasional discarded spikes and tools, and a few commercial-sized cans were common at these types of camps. Seasonal, and certainly long-term, logging camps were evidenced by discarded piles of large cans, sometimes numbering in the thousands, around the edges of the site. Utilitarian, unimproved earthenware dishes and enamelware pots and pans were present in the refuse dumps. Some camps had skids that formed the underpinning of the laborers' cabins still in place or artificial pads for structural support. Two woods camps that operated with steam donkey engines were identified. Both had platform remnants that once supported the steam engine, tools, and coal and contained domestic refuse (Maniery and Baker 1997:67–70).

Much attention has been directed toward the types of archaeological sites commonly associated with large and midscale logging companies active throughout the state after 1900, largely because they tend to leave more physical evidence. Research on the smaller, more independent operations has been limited.

Sites within the Elkins Cedar Mill complex provided an opportunity to contrast the data from large, corporate logging camps with artifactual material from sites associated with small, independent operators. The presence of intact industrial features at the three mill sites also provides useful data to study technological change over time (Maniery et al. 1996:95–98). William Elkins operated a cedar mill operation along the McCloud River (Maniery et al. 1996) and a mill near Mount Shasta from 1926 to 1942, logging cedar for sale to pencil factories. Typical of many small-scale entrepreneurs, he used horses to haul timber, rather than the more expensive railroads. During the 19th century, besides flumes, rivers, and railroads, oxen generally had been the preferred method for hauling logs. Short hauls, smooth surfaces, little vegetation, and gentle slopes or flat lands allowed the use of horses or mules to haul the logs from the forest to the mill. After the cedar around the Elkins mill was cut over, the mill moved to a new location (Maniery et al. 1996:99).

Maniery et al. (1996) found that besides the sawmill camps themselves, the work camps were concentrated around the fringes of the mill sites within a radius of one to two miles. Elkins apparently did not provide a cookhouse for his employees; each household, whether a nuclear family or bachelors, prepared their own food. As a result, the artifact assemblages for the Elkins-related sites differ from those associated with large company-owned woods camps. Refuse deposits at Elkins operations typically contained smaller containers, rather than the much larger cans. Large numbers of beer cans, condiment bottles, pocket tobacco tins, and milk cans were also present at the Elkins woods camps. The domestic refuse represented a wide variety of utilitarian white improved earthenware (WIE) vessel patterns and styles, as opposed to the "hotelware" often evident at large company camps (Maniery et al. 1996:88–98).

The industrial components of railroad logging camps have also been studied at other sites. For example, archaeological investigations at a blacksmith shop at Camp 25 on the West Side Lumber Company system in Tuolumne County revealed that the shop was not used for the repair of rails; instead, it was used for general blacksmithing (Vaughan 1990).

Praetzellis and Praetzellis (1993) investigated the Cole and Nelson Sawmill and work camp in Sierra County over several seasons. Evidence of industrial and domestic activity areas were identified at the sawmill, which was occupied from 1883 to 1889. Research at the site focused on technology and socioeconomics. The authors found that equipment was chosen more for its reliability in performing a particular task than for its advanced technology. Additionally, sawmill employees appeared to have chosen readily available local materials and technology, efficient site layout, and labor-intensive solutions over technological solutions.

Praetzellis and Praetzellis (1993) identified what may have been a more liberal institutional structure evidenced by after-work activities, which, for the most part, would have been discouraged by operators of other, similar logging or lumber operations. In regard to contrasting social characteristics at large versus small logging work camps, Praetzellis and Praetzellis (1993:iii) argued that

> At small operations, this [i.e., allowable leisure activities] was partly determined by the idiosyncrasies of the owners and resident managers; however, a general principle was applied that work and non-work activities were to be strictly separated. The environment was paternal, rather than institutional. In contrast, large camps tended to be bureaucratic, and rule governed with less concern for the accommodation of worker's desires. Here the object was to exclude vices, rather than manage them.

In research on a 1870s redwood lumbering and milling operation at Salt Point State Park, Sonoma County, Douglass (2002) compared the material culture of Chinese and European American workers in the camps and mills and linked the infrastructure of the redwood camps to logging traditions in the Midwest and on the East Coast. Logging companies often acquired timberland far distant from their corporate headquarters; therefore, the relationship between the company or corporate structure and the camps itself is an important research question.

Research at logging camps outside California offers comparative data. For example, archaeological studies at the Lava Caves railroad logging camp (OR-DS-5) in Oregon focused on camp layout, economics, and lifeways (Ross and Sekora 1995). These studies confirmed the presence of families and a linear arrangement of features along the railroad grade; industrial

facilities were concentrated at the center of the camp, and residential areas were dispersed near its margins. Meals at the Lava Caves camp were prepared by family units, rather than collectively, as evidenced by more-costly ceramic tableware.

Ayres (1983) studied changes in log-cabin architecture and refuse-disposal practices at logging camps in the Uinta Mountains of Utah. Before 1912, the workforce was dominated by Irish immigrants, who scattered their trash out the doors of their log cabins. Later, the Uinta logging crews were overwhelmingly made up of Swedes, who built log cabins that are more substantial and often buried their refuse.

A study of several logging camps in northern Michigan focused on interpreting behavior related to food consumption, in relation to families and ethnicity (Franzen 1992). Historical documents suggest that utilitarian white earthenware and fresh beef were preferred over tinware and canned meat products, and archaeological evidence seemed to validate this observation. Whether for economic or for cultural reasons, the presence of earthenware and fresh foods increased from the 1910s through the 1920s.

MINING WORK CAMPS

Mining companies and camps, particularly those that exploited gold, silver, and copper resources, were one of the first forms of organized labor in California after statehood. These camps spanned the Sierra Nevada foothills from Mariposa on the south to Downieville in the north, and east over the Sierra Nevada (for a more detailed discussion of historic-era mining, see Lingenfelter 1974 and Caltrans [2008]).

Although many gold rush and post–gold rush miners worked independently, most formed partnerships with two to more than a dozen miners who participated in the operations. Mining required a substantial amount of labor and technology depending on the type of minerals being extracted. Although many of the mining camps of the California gold rush evolved into towns, others were depopulated and exist today only as archaeological sites with perhaps a few extant ruins. Work camps at large corporate mines often were transformed into company towns where mine owners often provided goods and services. During the Great Depression of the 1930s, many abandoned mines were reopened because of the increased price of gold, and, once again, mining work camps were formed, some overlapping much older workings.

In the Mother Lode region, loosely organized or bearing a charter or agreement document (Shinn 1965), miners collaborated to form a workforce that they deemed necessary for capital investment and for the labor pool needed to extract gold from streams and quartz veins. These loosely knit work camps remained in place until the mine played out, the operations lacked the capital to continue, or winter or spring torrents of water destroyed the mining operations.

In contrast to those at later mining work camps, most of the participants in mining work camps of the gold rush era were in partnership in the operation, and generally, all were young male miners. Large-scale mining operations along Sierra gold-bearing streams, such as the Middle Fork of the American River and the Middle Fork of the Feather River, required supplemental laborers hired from the pool of miners in the area. Among those hired under contract were large numbers of overseas Chinese miners. Chinese were particularly adept at river mining and performed arduous labor that other miners chose to avoid. In other operations, Chinese miners pooled their labor and formed their own mining companies (Figure 60).

Chinese miners have been the subject of numerous publications in the past two decades (Askin et al. 1980a, 1980b; Hardesty and Hattori 1982, 1983; Duff 1984; Cameron 1985; Blanford 1987, 1989; Hardesty 1988, 1989; Cheney 1992; Earls et al. 1993; Bell 1995; Dixon and Prouty 2001).As has been well documented, Chinese miners spread from California northward into Oregon and Washington, and east into Nevada, Arizona, Idaho, and Montana (Francaviglia 1991:106–107). Archaeological and historical projects throughout the West have devoted considerable attention to the presence of imported or manufactured items from China (Spier 1958; LaLande 1981; Hardesty and Hattori 1983; Tordoff and Seldner 1987:221; Stapp 1990, 1993; Wegars 1991a, 1991b; Longenecker and Stapp 1993; Sisson 1993; James 1995; Couch 1996; Wegars and Xu 2001). Chinese artifact assemblages at mining sites generally are distinct, although by the late 19th century, acculturation and adaptation sometimes prevailed over traditional cultural values, evidenced by presence of European-American produced vessels and tablewares.

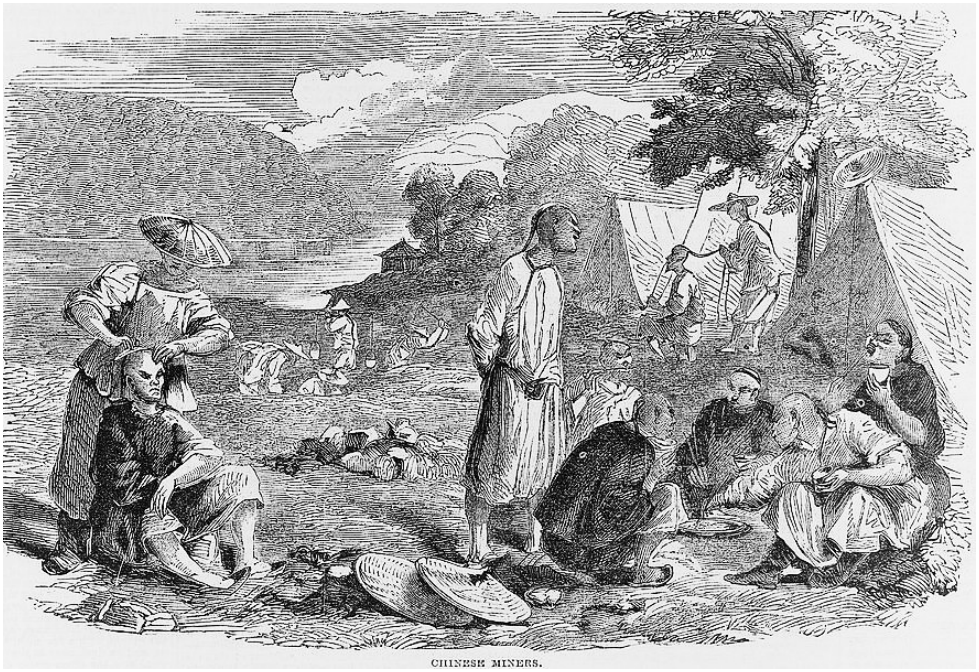

Figure 60. Mining life in California: Chinese miners, 1857. *Chinese gold miners eating and attending to their hair among tents in camp. (Courtesy of Library of Congress, Prints and Photographs Division, Washington, D.C, Image No. LC-USZ62-130289.)*

Whereas Chinese mining work camps usually are easy to identify, those of other ethnic groups are more difficult, largely because the artifacts present have few specific cultural markers. For example, most European American and Latin American miners consumed and purchased similar goods and foodstuffs.

Over the past four decades, numerous published works have discussed the development of mining, particularly of gold mining in California. Much of this documentation was published in commemoration of the centennial and sesquicentennial of the California gold rush. Of particular importance are journals, diaries, and reminiscences that depict life in the mines as described by actual participants.

Originally published in 1884, *Mining Camps: A Study in American Frontier Government* (Shinn 1965) described Charles H. Shinn's personal experiences and attempted to characterize the hasty

development and variety of governmental bodies that shaped California's mining frontier during and after the gold rush. Shinn examined the self-government imposed by mining companies. Shinn (1965:112) noted that "one of the elements in early camp-life was companies, or groups of associates who had come from the same place, or had traveled together for mutual comfort and protection." Many of these loosely knit companies had organized and had set up rules for their own government before they left for the gold fields of California.

Shinn (1965:113) gave the following rules of a small mining company of which he was a member:

1. That we shall bear an equal share in all expenses.
2. That no man shall be allowed to leave the company without general consent till we reach the mines.
3. That anyone leaving with our consent shall have back his original investment.
4. That we work together in the mines, and use our tools in common.
5. That each man shall retain all the gold he finds, but must contribute an equal portion of our daily expenses.
6. That we stand by each other.
7. That each man shall in turn cook, and do his share of the drudgery.
8. That anyone guilty of stealing shall be expelled from tent and claim, with such other punishment as a majority of our company decide upon.
9. That no sick comrade be abandoned.

Although miners did not always follow the aforementioned set of rules to the letter, the rules created a sense of self-government for a time. The period of ad hoc mining companies ended as corporate mining operations became more common, although during the Great Depression and the loss of many urban jobs, men and, sometimes, women and children formed small mining companies.

Mining work camps varied from a handful of individuals to hundreds of miners, depending on the operation and labor required to extract the gold. One of the key characteristics of non-corporate mining work camps was that they generally pooled their money and shared in the profits. Camps were built and operated at the job site, and workers usually ate, slept, and participated in most of the functions at each respective camp. Young male workers dominated most camps, although many camps hired additional workers as required by the tasks performed. Corporate mining operated under more paternalistic rules, established set hourly wages and working conditions and a narrow range of options for housing and other forms of subsistence, and involved a much larger proportion of ethnic workers.

During the 1920s and 1930s, as was true for other industries in the American West, strikes became more common, and mine workers, many of whom were unionized, succeeded in improving working conditions in the mines, as well as increasing benefits for the families of disabled or deceased miners (Wyman 1979:224–225). At some mines, work camps were well organized and had adopted state standards for health and safety. By the 1940s, many of the state's mines had closed because of the war, and most were under corporate ownership.

During the 1960s and 1970s, large dam and reservoir projects led to some of the earliest and most comprehensive cultural resource studies that identified significant concentrations of mining resources. Along the Middle Fork of the American River, for example, 45 historic-era mining sites were identified, of which 18 contained foundations and 14 had mining-related features, such as shafts, adits, and *arrastras* (Childress and Ritter 1967).

Archaeologists conducted numerous cultural resource studies at the New Melones Dam and Reservoir project, between 1968 and the early 1980s. They identified 442 historic-era resources; more than 60 percent were mining sites (Moratto et al. 1988:v). One theoretical approach applied at New Melones was the concept of "Frontier-self-sufficiency and Victorian-dependency" for interpreting historic-era sites within the reservoir complex (Greenwood 1982; Greenwood and Shoup 1983). A comparison of the cultural characteristics of placer and lode gold miners suggested that placer miners formed partnerships and used relatively simple technologies. In contrast, lode miners employed imported and often expensive industrial technologies that required a larger labor force. Large corporations operating well outside the local boundaries of the mining operations themselves generally oversaw capital investment and management (Greenwood and Shoup 1983:273).

The Cottonwood Creek archaeological project in Shasta and Tehama counties provided additional comparable data on gold-mining resources (Johnson and Theodoratus 1984a, 1984b). Between 1848 and 1870, the Cottonwood Creek area was placer mined intensively, initially by European Americans and later by Chinese. Within the 45,000 ac project area, 405 cultural resources were documented, 89 of which related to gold mining. Of these, more than 70 percent of the placer gold mining sites were considered potentially eligible for listing in the NRHP; 54 contributed to the proposed Gas Point Historic Mining District; nine were "evaluated as a group"; and another, particularly large site spanning more than 50 acres (CA-SHA-1330H) was considered a "complete mining system," at least for archaeological purposes (Johnson and Theodoratus 1984a:333). The 13 historic-era sites selected for additional archaeological testing represented temporary habitation features located adjacent to placer mining areas (Tordoff and Seldner 1987). Research focused on chronology, water use, mining organization, ethnicity, and social interaction. Of special interest were Chinese miners and their relationship with European Americans in the context of the project.

Rising gold values in the 1980s also led to a resurgence of commercial mining, which, combined with new environmental regulations, fueled archaeological studies of mining sites (Spude 1990a:3). Several of these studies focused on remote Mojave Desert mining camps. Of note is Hallaran and Wilke's (1987) study of the Valley View Mine and Mill site in the Castle Mountains of San Bernardino County, which operated during the first half of the 20th century. Field and archival research, coupled with oral interviews, indicated that the camp had corrugated-metal bunkhouses, equipped with cold-water sinks, for workers. Also present were the remains of a shower house/lavatory, laundry features, a mess hall, and a trash dump. The mess hall had both hot and cold running water, a cold-storage bin, and a spacious porch. Data gleaned from oral history interviews indicated that meals were prepared by a Greek cook, who was assisted by his wife and daughters. Laborers collaborated on menu choices, and beef was purchased from a nearby cattle ranch. Meal costs were deducted from workers' paychecks. A residence for administrative personnel included a bathroom. Flowerbeds, complete with transplanted cactus and yucca, and a water fountain and pool were found in association with the administrator's residence. The range of hot- and cold-water features at this remote desert site is

unusual among work camps of similar type, size, and location. The features suggest an uncommon level of care on the part of camp administration.

The C&K Mine in the Providence Mountains of San Bernardino County operated periodically from the 1880s to the 1960s and was the subject of an archaeological study in 1989 (Wilke and Swope 1989). The mine was occupied during intermittent production phases; its lack of infrastructure and its simple extraction techniques were "typical of the hundreds of mines in the California deserts" (Wilke and Swope 1989:36). Wilke and Swope identified loci for extraction and transport of ore, as well as facilities and a residential area separated from the mine workings. The complete lack of tablewares led researchers to conclude that laborers ate entirely from cans and other containers.

More recently, archaeological investigations have been completed at historic-era mining sites in western states as part of state and federally mandated programs for reclamation of abandoned mine lands and mine closures (Drake 1991; Gaunt 1991; Knight 1991; Levine and Evans 1991; White 2008, 2009, 2011a, 2011b; Searcy 2011).

The mining of nonprecious-metals commodities, also an important part of California's mining heritage, "is largely the basis for the infrastructure upon which the state was built" (California Department of Conservation 2000:11). Fewer archaeological studies have focused on sites where nonprecious metals were exploited, even though numerous sites remain where materials such as clay, sand, gravel, dimension stone, salines, boron, and salts were recovered and processed.

Whatford (1995) studied a basalt-paving-stone quarry in Sonoma County. The report includes a historic context for the production of paving blocks for California city streets between 1880 and 1920, after which the burgeoning automobile industry led to demand for more-durable and quieter paving materials, such as asphalt. Most of the quarry workers were European immigrants. The quarries, processing areas, hauling mechanisms, structural remains, and domestic-refuse deposits were investigated as a "rural historic vernacular landscape" exhibiting "a local response to changing technology and available natural resources," with the potential to provide new insights into the ordinary workplaces of "blue-collar" workers (Whatford 1995:192).

In 1982, the South Dakota State Historical Preservation Center (SDSHPC) determined that mining sites "had received insufficient research, interpretation and preservation attention," specifically in response to the Homestake Mining Company's proposal to reopen a large mine (Torma 1987:1). In 1987, the SDSHPC and the South Dakota State Historical Society sponsored a workshop on historic mining resources to define research questions for evaluation and preservation (Buechler 1987). The multidisciplinary workshop proceedings included perspectives from social and industrial history, mine engineering, geology, cultural geography, and historical archaeology. Among the specific research topics addressed were the idea that mining properties should be considered part of a feature system instead of isolated elements (Hardesty 1987; Spude 1987:55), the concept of mining landscapes (Alanen 1987:61), horizontal stratigraphy in mining contexts (Hardesty 1987), and the notion that mining history benefits from analysis based on archaeological resources (Miller 1987:31).

Two of the workshop presenters, Arnold Alanen and Donald Hardesty, merit particular mention in the context of mining work camps. Both Alanen and Hardesty have extensive experience in documenting historic-era mining properties in the Intermountain West. Alanen's (1987) work is

particularly useful for interpreting the physical remains and social-behavior correlates of a mining landscape. Alanen (1987:63–67) postulated that a typology of mining communities can be realized through archaeological investigations, which can reveal data concerning daily life that are difficult to obtain from historical documents and oral history. In a similar vein, landscape historian Richard Francaviglia (1991) has documented the distinctive imprint of mining on the land. He suggested that mining sites represent technological processes, but also the opposing forces of culture, the environment, as well as competitiveness, risk taking, male identity power, and dominance over nature.

Hardesty (1987:88) suggested that sites should be measured against a "significance evaluation matrix" of seven topics: environment, technology, diet and consumption, social organization, demography, ideology, and chronology. Each topic can be addressed on any of three scales: world systems, mining district, and feature systems. In later research, Hardesty (2010) compiled decades of compliance-based mining archaeology in Nevada. Between 1860 and 1930, using the state's extensive lode gold- and silver-mining history, he employed case studies to illustrate various property types, historic contexts, and potential research avenues. Hardesty (1988:17) distinguished between historical archaeology and industrial archaeology, noting that limiting studies to "detailed architectural and engineering descriptions of surviving machinery and buildings" does "not seem broad enough to take advantage of the information contained in the archaeological record of mining sites."

In 1989, the U.S. National Park Service sponsored a weeklong historic mining conference, called Death Valley to Deadwood; Kennecott to Cripple Creek. This was the first of its kind, to improve the management of historic-era mining resources. The resulting proceedings covered historic context, inventory and evaluation measures, compliance and management considerations, views on interpretation, and the use of Historic American Engineering Record (HAER) forms and contained several case studies (Barker and Huston 1990). Several participants (including Feierabend [1990], Huston [1990], and Spude [1990]) reinforced the view that abandoned mining regions should be evaluated as distinct landscape districts. Case studies by Rogers (1990) and Waters (1990) demonstrated the advantages of interpretation at this scale. Reno (1990:56) noted that "the mining district has been recognized by most researchers as an ideal study unit for mining activities."

Hardesty (1990:41), citing Schuyler (1988), applied the term "historical ethnography" to the reconstruction of past lifeways using site-specific data as an interpretive approach to mining resources. An excellent example of this is Teague's (1980) early study of the Reward Mine and two related camps inhabited, in part, by Papago (Tohono O'odham) miners from the 1880s to the 1920s. The detailed integration of historic context and artifact analysis provided a clearer picture of the mining sites and illuminated their place in the context of other mining properties.

The technology of mining is featured prominently in Gordon and Malone's (1994) *The Texture of Industry*. In this overview of industrial archaeology, citing numerous examples, the authors stressed the development of technological processes and how workers used space and adapted to changing work environments. Archaeological studies of the social fabric of mining sites are presented in *Social Approaches to an Industrial Past: The Archaeology and Anthropology of Mining* (Knapp et al. 1998). This work addresses mining communities as well as the role of women in these male-dominated settlements.

OIL AND PETROLEUM WORK CAMPS

The evolution of the petroleum, or oil, industry in California has its antecedents in the demand for petroleum products that began with kerosene use in the United States and Europe and, later, followed the rise of automobiles during the first two decades of the 20th century. Although oil was known to exist in various forms in the state long before the gold rush, demand for it was sporadic until the 20th century. Pees (2004) provided a good account of the historical development of the oil industry in the United States, particularly the various technologies used to remove the oil and transport it to refineries.

California oil first appeared as asphaltum, a natural tarlike substance used by Native Californians and, later, by the Spanish for sealing seams in their ships. Oil seeps were discovered in Humboldt, Colusa, Santa Clara, San Mateo, Mendocino, Marin, Contra Costa, Santa Clara, and Santa Cruz counties during the mid-19th century. Oil from a Humboldt County seep reportedly was sold in 1855, several years before the discovery of rich oil reserves in Pennsylvania (California Department of Conservation, Division of Oil, Gas and Geothermal Resources [CDC, DOGGR] 2005:1).

In Southern California during the mid-19th century, large seeps were discovered in Ventura, Santa Barbara, Kern, and Los Angeles counties. The first commercial use of oil in California may have been settlers' distilling of asphaltum into lamp oil. In 1850, Andreas Pico reportedly took oil from seeps in Pico Canyon, near Newhall, and distilled it for use at the San Fernando Mission (CDC, DOGGR 2005:1).

In the late 1850s and early 1860s, G. S. Gilbert was refining oil commercially from seeps on the Ojai Ranch. The plant reportedly produced about 300–400 gallons of refined oil each week for several years (CDC, DOGGR 2005:1).

In the early 1860s, Josiah Stanford, a mining engineer, excavated about 30 tunnels into a mountain near Santa Paula in Ventura County. Gravity allowed the oil to flow out of the tunnels, which were cut at a slight incline, and into holding ponds. Each of several tunnels reportedly produced 20 barrels of oil per day. By the late 1860s, Stanford was one of the top oil producers in California (CDC, DOGGR 2005:2).

Seep operations gave way to more effective means of securing oil, such as drilling. In 1861 in Humboldt County, the first oil well in California was drilled. By the late 1860s, wells were being drilled in Ventura County, and more than 65 companies were in operation (CDC, DOGGR 2005:2).

As other minerals or commodities, oil required substantial investment and a large labor force, most of which was stratified by level of expertise. Oil workers shared a strong bond and mutual interests that were manifest in oil boom towns that emerged adjacent to the oil reserves.

One of the early oil camps in Los Angeles County was located in Pico Canyon, about eight miles west of the fledgling community of Newhall. In 1883, the Star Oil Works had 10–12 wells in operation running around the clock. Oil from the canyon reached Newhall via riveted iron pipes. In the canyon, about 80–100 men occupied the oil camp, which consisted of wooden bunkhouses, dining rooms and kitchens, all of which were provided with gas heat and lighting. In

1883, most of the oilmen in the Pico Canyon oil camps reportedly had migrated to California from Pennsylvania's oil fields (*Los Angeles Times* 1883:4).

By the 1900, oil exploration had expanded throughout portions of Southern California, and oil stocks were openly traded on the Los Angeles Oil Exchange (Redpath 1900:53). Newspaper accounts of the period reported that speculators had driven up the prices of oil stocks during the early 1900s as new fields were opened throughout Southern California.

One of the most significant oil discoveries in California took place in the 1860s, in Kern County in the lower San Joaquin Valley. The Kern oil fields, as they were called, covered a large swath of land beginning at the base of the Tehachapi Mountains and running north through the lower San Joaquin Valley toward the community of Taft. The resulting oil discoveries in Kern County almost immediately created boomtowns, such as McKittrick, Fellows, and Reward (*Los Angeles Times* 1899). After the initial success of the Buena Vista Oil Refinery in 1864, the Buena Vista Petroleum District was organized on February 1, 1865 (Bailey 1966). John Hambleton began commercial oil development in Kern County in 1872, "extracting petroleum from hand-dug pits" (United States Department of Agriculture, Natural Resources Conservation Service 2009:5). In 1877, the first oil wells were drilled near McKittrick; in the same year, the first oil derrick in the county, located in the future Sunset field, was erected by Jewett & Blodget. The Sunset Oil Company was incorporated in March 1887 (San Joaquin Geological Society 2002). By 1892, the field had produced 1,200 tons of asphaltum (USDA 2009:5) (Figure 61).

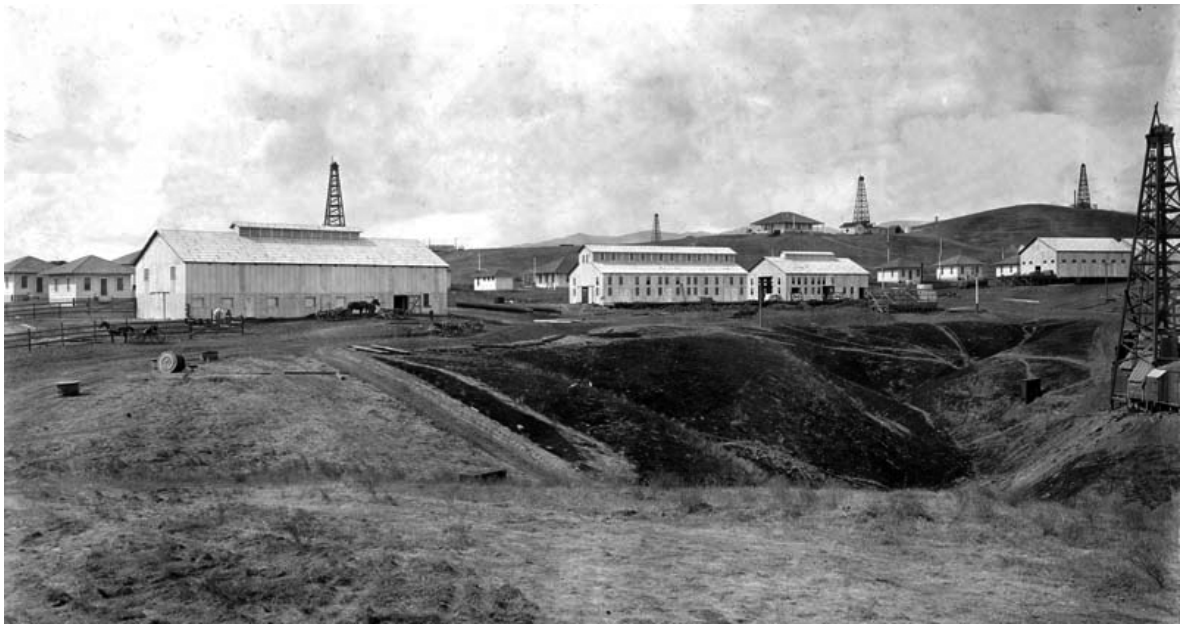

Figure 61. Shell Oil Camp Section 28, Coalinga, 1913. *(Courtesy of R. C. Baker Memorial Museum, San Joaquin Valley Library System, Coalinga, California, Image cob0185.)*

One of the principal financiers of the post-1900s oil boom was the Southern Pacific Company, whose railroad lines were an essential part of delivering the oil from the fields to various refineries in the state (*Los Angeles Times* 1901). On March 16, 1900, the Sunset Railroad Company was incorporated to provide rail transport of petroleum products on the west side of the oil fields. The survey of the line was completed during the next month. In 1901, the line was completed to Sunset, renamed Hazelton in 1907, a total of 30.27 miles The first rail was laid in April of that year. An additional 2.5 miles was built to Maricopa in March 1904, and a 17.11

mile extension, named the Sunset Western Railroad, running from Pentland Junction to Shale and Moron, was completed on January 1, 1909 (USDA 2009:5–6). The relationship between railroad and oil companies may be evidenced in work camps placed not only at or near the source of oil discoveries but also along the railroad grades that serviced the camps and oil fields.

The first oil pipeline in Kern County, built by the Standard Oil Company and completed in 1902, ran from the Kern River Oil Field to Point Richmond. In the same year, the Independent Oil Producers' Agency (IOPA) was incorporated to obtain fair prices for members' crude oil (USDA 2009:6). Work camps were established at various locations along the pipeline corridors.

In 1909, the Buena Vista Hills oil field was discovered; in the same year, the Midway well No. 2-6 blew over its derrick and made the Midway oil field famous and its owner's wealthy (Bailey 1966; San Joaquin Geological Society 2002). The Lakeview Gusher in the Buena Vista field began spewing oil and did not stop until September 9, 1911, at the time becoming the largest ever in the nation (Bailey 1966; Rintoul 1990; San Joaquin Geological Society 2002). So much oil spewed from the well that a stream of oil, dubbed "the trout stream," flowed down the slope, heading toward Buena Vista Lake. Fortunately, an extensive system of pumps and dikes routed the oil into a large pool and prevented it from entering the lake (USDA 2009:6).

The first natural gas pipeline in Kern County was completed in 1910. In 1912, the Elk Hills Naval Reserve oil field (later called the Elk Hills Naval Petroleum Reserve) in Kern County was established and encompassed 70,000 acres. During the early 1920s, this field was the object of the infamous Teapot Dome scandal that garnered so much attention during President Warren G. Harding's administration. Also in 1912, a gas pipeline was built from the Midway oil field to Los Angeles. In a tribute to the growing fame of the Kern oil fields, a Fatty Arbuckle movie titled *Opportunity* was filmed there; it premiered in Taft's C&C Theatre on March 31, 1913 (USDA 2009:6).

In 1922, the Wheeler Ridge oil field was discovered. In March 1930, Standard Oil's Mascot No. 1 well in the Midway-Sunset field set the oil well depth record for that time: it was rotary drilled to 9,629 feet (USDA 2009:6). In 1934, the Buena Vista Lake gas field was discovered; the Paloma Oil Field in the Buena Vista Lake bottom was discovered on August 31, 1939 (USDA 2009:6). The Ohio Oil Company completed the deepest oil well in the world— reaching 20,521 feet—on August 20, 1953, in the Paloma Oil Field about 17 miles southwest of Bakersfield.

The oil discoveries beginning in the early 1900s drew thousands of workers into the southern San Joaquin Valley and offered a wide variety of jobs, both skilled and unskilled. Towns like Taft, Arbuckle, and McKittrick emerged as a result of the oil boom in the valley.

During the 1920s, while new discoveries were being made in the San Joaquin Valley, oil production dramatically increased in Los Angeles and Orange counties with discoveries in Long Beach, Seal Beach, and Huntington Beach. More-urban oil camps sprang up in areas that were previously undeveloped or were formerly in agricultural production. Generally, oil production trumped all other types of land use, and politicians as well as developers patronized the big oil companies. For the most part, World War II ended the discovery period for west-side Kern County oil. New discoveries continued in oil-rich Los Angeles and Orange counties, although urban growth had encroached on many of the former oil fields, particularly those near Long

Beach and Huntington Beach. In places like Huntington Beach, oil discoveries encroached on existing urban areas as oil leases resulted in the elimination of residential properties.

At most of the oil fields in California, particularly in the San Joaquin Valley, work camps were established during the construction phase and, often, during the production phase. Most of the single laborers, who outnumbered married workers four to one, lived in bunkhouses or barracks within the confines of the oil field itself. Generally, three daily meals were served in the camps, and lunches were packed for men working in the oil fields. Monthly costs for food, lodging, and clean linens at some camps totaled $30 (Coffee 1993). The West Kern Oil Museum in Taft, one of the few museums dedicated to the history of oil production, curates oral histories of several individuals who lived in local work camps, including those of Eileen McKay. McKay (1993) noted that in at least one camp, "bosses" lived in better housing on "Silk Stocking Row," with gas lighting by the 1920s and, later, electricity. The camp provided a community hall and swimming pool. Children at another camp in the area attended a one-room school. The cookhouse provided lunches for students, who rode the stage line to the school. Occasionally, workers, particularly married ones, boarded in oil boomtowns such as Taft and nearby McKittrick (Coffee 1993) (Figure 62).

Figure 62. Single men of the Mascot Oil Company playing music in front of their bunkhouse, Kern County, ca. 1910s. *(Courtesy of Kern County Library, Bakersfield, California, Image No. cbak_276-TA001-035.)*

Oil work camps were not immune to the labor tensions that rose out of poor working conditions and wages during the 1910s and 1920s. The IWW also recruited camp workers during this period. During the early 1920s, oil workers periodically engaged in strikes. The strikers attempted to shut down operations and pressed the oil companies to acquiesce to their demands.

Several historical works are good sources of information for the study of oil work camps. *Oil-Industry History*, the journal of the Petroleum History Institute, is a useful reference for a general history of the oil industry in the United States. Williams (1997) offered a compelling history of oil and gas exploration in California from the 1860s to the 1940s. Henderson (2001) reviewed the history of oil production in California. Weaver (2010) presented the history of the Texas oil

industry from the perspective of the workers. Numerous historical documents concerning the history of the oil industry were published for the 1959 commemoration of the centennial of the discovery of oil in North America. Standard Oil Company of Indiana (Giddens 1955) and Humble Oil & Refining Company of Texas (Larson and Porter 1959) prepared company histories that contain considerable information on work camps and working conditions.

In the late 1990s, archaeological excavations were conducted at an oil-production camp near Maricopa, California (Fagan et al. 1989). In addition, archaeologists have evaluated more than 100 camps within the Elk Hills Oil Field (Hamusek et al. 1997). At Elk Hills, data suggested that little separation between industrial and residential life existed. The archaeological record revealed a complex of residential and industrial-related structures and refuse deposits, once operated by small companies. Historical documents revealed that oil workers employed during this period (1910–1918) came from Italy, Portugal, Norway, or Sweden. A single producing oil well may have had up to a few dozen men working at any given time; family members lived at the oil-drilling site. The wives of workers usually cooked for the crew, with a diet of canned food and milk. Some condiments were used for seasoning, and food was served on inexpensive, mass-produced tableware (Hamusek et al. 1997:85–88). Baxter (2002), in his work at the oil field camp of Squaw Flat in Ventura County, also noted the lack of formal separation of residential and industrial space but described how the workers at these camps informally created a separation between the two realms.

Large corporations, such as Standard Oil, established company camps to develop multiple wells and to process and distribute the oil. Usually, these camps were occupied for five or more years, or until the oil ran dry, and contained up to 300 men. Generally, the oil crews were skilled laborers, rather than the inexperienced immigrant laborers typically employed during exploration and preliminary development. The camps included bunkhouses for bachelors, cottages for married men or foremen, a cookhouse, and, after 1930, and recreational facilities. Although the diet was similar to that at small camps, workers had a greater variety of canned goods and condiments. Some companies, like Standard Oil, kept sheep, dairy cows, and chickens—allowing them to graze around the oil wells—so that they could provide fresh milk, eggs, butter, and meat to the workers. Most of the tableware at these large residential camps was mass-produced, undecorated, utilitarian earthenware, but a variety of imported vessels, decorated earthenware, and porcelain was also present (Hamusek et al. 1997:88–93). Future archaeological studies that address the oil industry should consider comparative analysis between oil production and other forms of mineral extraction, including the extraction of gas, which involved a relatively sophisticated level of technology and a large labor force.

RAILROAD CONSTRUCTION AND MAINTENANCE WORK CAMPS

The history of this nation's railroads has been the subject of numerous published books and articles (Clarke 1897; Fickewirth 1992). Most focus on specific railroad companies, such as the Central Pacific and Union Pacific railroads and the SPRR (Beebe 1963; Griego 1979; Bain 1999; Orsi 2007; Middleton 2011). Histories that address the working conditions experienced by railroad employees are even less frequent.

Railroad clubs and associations with Web sites dedicated to specific railroad companies or systems have emerged across the country. Among those devoted to the history of specific railroads or to the restoration of railroad engines, cars, machinery, buildings, and structures are

Peter J. McClosky's Southern Pacific Railroad Web Resources Page (www.sphts.org/pmcclosky/spwebresources.html) and the Southern Pacific Historical & Technical Society (www.sphts.org/). Other groups or sites (e.g., the Central Pacific Railroad Photographic History Museum [www.cprr.org]) focus on the photographic history of railroads and provide detailed bibliographies.

The building of the Transcontinental Railroad has been the subject of numerous publications. Myrick (1963) provided a detailed account of the railroads in the eastern part of California. Little attention, however, has been paid to the thousands of workers—mainly contract laborers—who built the less familiar railroads, many of which bisected California from the Oregon border to Mexico or ran east into Nevada and Arizona. One exception is workers on logging railroads, for which academic and avocational historians have researched and published histories. Logging railroads are discussed in Logging and Lumber Work Camps, above, and are not treated here.

The technical requirements to build a railroad were realized in the middle of the 19th century. Railroad construction demanded significant financial investment. The labor necessary to survey the line of the railroad, to construct the grade or bed, and to lay track also was costly in human terms; serious injury or death was common. In the early days, railroads were constructed principally by hand labor, supplemented by mules and horses for grading the line. When California's first railroad was being constructed in the mid-1850s between Folsom and Sacramento, contract labor crews assembled at different points along the right of way and inched their way toward Folsom following the same route used today by Sacramento's light rail transit system. Solomon (2006) presented a broad overview of the people who work for railroad companies, and Wolmar's (2010) work provides a broad perspective on the challenges faced by railroad construction workers.

By the 1860s, most railroad construction crews consisted almost solely of contract laborers representing a wide diversity of cultures and ethnic groups. During the halcyon years (1866–1900) of main-line railroad construction in California, thousands of miles of railroad right-of-way were surveyed, grades were cleared of vegetation, and thousands of contract laborers were employed. Toward the latter part of the 19th century and during the first two decades of the 20th century, many Chinese railroad workers had been replaced with Mexican laborers fresh from railroad construction work in northern Mexico and Arizona. The demand for both skilled and unskilled Mexican railroad workers was acute because Chinese immigration into the United States had almost ceased by the late 1880s.

Building the railroads in California required not only large pools of unskilled labor but also skilled laborers, including land surveyors, graders, tunnel blasters, track layers, and supervising foremen. California's extreme climate and physical features, including the heat in its deserts and the rugged terrain of its mountainous regions, presented considerable challenges to those employed in railroad construction (Figure 63).

The most widely and carefully documented railroad in California was the Central Pacific, which was leased by the Southern Pacific Railroad Company in 1885 (Beebe 1963; Bain 1999; Ambrose 2000). The histories of the Central Pacific and, later, the SPRR provide an accurate gauge for interpreting work camps along other railroads in California, at least during the latter part of the 19th century. Construction of the Central Pacific Railroad from Sacramento to Promontory Point, Utah, began in 1863 and involved several thousand Chinese contract laborers. These workers performed most of the clearing, grading, and tunnel-blasting work, while their

Anglo-European counterparts, most of them Irish, set the rails and served as foremen for the entire construction process. Upon arrival at the work camps, the Chinese laborers usually paid dues to join one of six "tongs" or the Six Companies, which served as benevolent and protective associations (Barter 2003:26–27). For most railroad construction, contract crews, predominantly Chinese, lived either alongside their work in camps or in camp trains. The former included large base camps such as Roseville in Placer County, as well as advance camps for surveyors and for those "at all the tunnels and heavy construction points leading to the summit" (Kraus 1969:115).

Figure 63. Unidentified Chinese man working on the Central Pacific Railroad construction in the Sierra Nevada near Donner Summit, ca. 1867–1868. *(Courtesy of Bancroft Library, University of California, Berkeley, Roy D. Graves Pictorial Collection SERIES 1: SAN FRANCISCO VIEWS, Subseries 6: Chinese and Chinatown, Volume 29, BANC PIC 1905.17500 v.29:130—ALB.)*

Camps that developed alongside the construction of the Central Pacific Railroad can be classified into four broad categories, each associated with a distinct type of work: survey, clearing and grubbing, grading, and rail laying. The initial surveyors for the Central Pacific put in long hours under harsh conditions, camping in tents at the end of their workday. After the initial survey work, other advance crews, including additional surveyors, along with clearing and grading crews, also lived in tents and makeshift shelters beside their constantly moving work site, receiving supplies by wagon (Barter 2003:21–22).

Once clearing and grading crews reached Donner Summit, the work slowed considerably and presented difficult challenges, including the blasting of several tunnels through solid granite. Chinese crews blasted 15 railroad tunnels that ranged in length from just less than 100 feet to more than 1,600 feet. Both the blasting crews and the foremen worked around the clock, the former in three eight-hour shifts and the latter in 12-hour shifts. The blasting crews consisted almost entirely of Chinese workers; most of the foremen were Irish. Each foreman usually

managed a crew of 30–40 Chinese laborers at each tunnel end. Twelve to 15 of these laborers worked on the heading of the tunnel while the rest removed excess material and performed other, related tasks (Kraus 1969:144–151).

Chinese laborers working for the Central Pacific Railroad did not receive board with their pay. Because they often lived outside the main railroad camp, their living conditions within the work camps were poorly documented. Even so, a few such documents exist. For example, an 1868 newspaper report briefly describes the living quarters of the clearing crews just west of Donner Summit in the Sierra:

> On the lower side of the hill we pass many huts and shanties; rude structures, built of boughs and fern branches, and loosely covered in with thin boards. These are the camps of the loggers and working parties, who swarm along this portion of the road, and whose axes are busy from dawn to sunset, cutting ties for the line that is rushing eastward far in advance [*Carson Daily Appeal* 1868:28].

Chinese laborers involved in tunnel blasting reportedly lived, on occasion, in burrows dug several feet into the ground and lined with layers of moss, pine needles, and animal skins (Barter 2003:35).

Because Chinese laborers on the Central Pacific lived in communal, temporary shelters, they employed their own cooks and general attendants to prepare their meals and to handle various duties associated with group organization and finances. The laborers themselves paid these employees, usually at the rate of about $1 per day (Barter 2003:28–29). Because they hired their own cooks, the Chinese laborers' diet was relatively traditional: dried, salted, or canned seafood; vegetables; fruits; pork; poultry; rice; and tea. Their Anglo-European counterparts ate "quantities of beef, pork, butter, potatoes, onions, hard crackers, and coffee" (Kraus 1969:111). Because the Chinese usually drank large quantities of boiled tea, they reportedly avoided some of the illnesses contracted by workers who drank contaminated water without boiling.

During the winter of 1866 and 1867, Central Pacific laborers worked under the surface of the snow in snow caves, building retaining walls and bridges. The snow tunnels used to access the tunnel-blasting areas and to haul out excess rock varied from around 50 to 200 feet in length (Kraus 1969:148). One report suggests that these quarters were cramped, with as many as 250 Chinese workers "within a compass of 250 feet" (Sabin 1919:120). This same report states that workers built makeshift, rudimentary cabins within the snow tunnels as living quarters (Sabin 1919:120). Apparently, snow slides caused by both tunnel blasting and severe weather did occur, covering "camps and crews" and leaving some men to be found only during spring thaw (Sabin 1919:121; Wilder 1920).

Anglo-European workers for the Central Pacific Railroad, on the other hand, received better wages, along with room and board. Skilled masons, carpenters and ironworkers received even better pay. Workers laying track and working at the railhead slept in hammocks in a camp train, with designated space provided for their provisions and gear. This train consisted of 10–11 large train cars; the forward car was outfitted for the construction superintendent and his family, and the back cars were used as eating and sleeping quarters for approximately 500 men, among whom were other various railroad officials and employees. This train also contained three to four platform cars for assembling telegraph poles and accessories, a telegraph office, kitchen cars, a clerical office, a harness shop, and a "movable blacksmith shop" that could be moved to the side

of the tracks. Every night, the train tied into the newly completed telegraph line so that officials could report to the main office. During the day, it traveled twice to the end of the newly completed track to supply lunch, dinner, and sleeping quarters. In the mornings at sunrise, the train sounded the signal to begin work, at which the laborers began to unload the newly arrived daily supply train of about 30 carloads (Kraus 1969:217,220–221). The Chinese workers at the railhead lived beside the tracks in tents.

Historians remain divided in their estimates of the numbers of casualties from snow avalanches and blasting that actually occurred during the construction of the Central Pacific Railroad, as well as their views on the actual safety and sanitary conditions for these workers. Despite the risks involved in railroad construction, a large immigrant workforce filled the demand for both unskilled and skilled labor. The contract labor system continued to operate, although by the early 1900s, most construction crews consisted principally of Anglo-European and Latin American work crews (Park 1977; Garcilazo 1995).

The Central Pacific Railroad illustrates the challenges faced in railroad construction. The building of other railroads was much less arduous. Notable examples include the Southern Pacific's Valley Railroad slicing south to north through the east side of the San Joaquin Valley in the early 1870s. Relatively level topography required less blasting, and although working conditions were grueling during the summer, mild winter conditions allowed work to proceed throughout the year (Cooper 2004; Orsi 2007).

The SPRR expanded its operations and the Atchison, Topeka and Santa Fe Railway established lines in southern and northern California. By the early 1900s, working conditions for most railroad laborers remained substandard at best. Although Parker's (1915:119) state investigation in 1914 found that railroad camps had by far the lowest percentage of unsanitary toilets of all work camps (see Table 2), this observation probably related to camps for the larger railroad companies (Figure 64).

In a model drawn from work in the Rocky Mountain region, Buckles (1983) discussed various types of railroad construction camps and the research topics that they could address. Buckles distinguished among camps occupied by crews undertaking the following tasks: survey, grading that preceded track laying, trestle construction, track laying, and construction of depots, snow sheds, and other support facilities. According to Buckles (1983:213), the study of railroad construction camps addresses questions related to the environment, culture, social structure, economics and commerce, subsistence, labor organization, and technology. He presented research themes including acculturation, consumer choice, cultural ecology, cultural materialism, and environmental determinism. Buckles made a particularly important observation that "there are a number of contradictions … between behaviors observed or inferred relative to railroad construction and those anticipated" (Buckles 1983:220). For example, he noted that the needs of the industry supported by the camp often superseded logical decisions (as when occupation areas were located in environmentally unfavorable situations). The architecture or infrastructure of worker housing and the contents of associated refuse deposits may aid in interpreting site function, design, interpersonal relations, and ethnicity (Wegars 1993; Costello and Marvin 1998) (Figure 65).

Industrial features, such as blacksmithing structures and artifacts, may also allow identification of the kinds of work conducted and the technologies employed at a given camp. Blacksmith work areas may include evidence of the "renewals of drill rod tips" and, possibly, other items

that were in demand for tasks at construction locations along rail lines (Buckles 1983:216–217). One blacksmith camp north of Las Vegas along the San Pedro, Los Angeles and Salt Lake Railroad revealed that drill tips were sharpened at portable forges in sheltered areas. Generally, few domestic or personal-use items are associated with these work areas (Morris et al. 2006:22–23) (Figure 66).

As previously noted, Chinese laborers associated with railroad construction and similar industries have received considerable attention in published and unpublished studies. Historical and archaeological studies associated with the construction of the Central Pacific and Union Pacific transcontinental railroads during the 1860s have identified numerous Chinese construction camps, as have studies in Arizona and Montana (Chew 2004; Baxter and Allen 2008; Merritt 2010). Chace and Evans (1969) characterized the ethnicity of railroad construction camps through artifact assemblages and the examination of Chinese-manufactured ceramics. Chinese construction sites along the Virginia & Truckee Railroad identified cooking features (hearths) with distinctive U-shaped designs, domestic goods, and a variety of tools. These sites lend themselves to comparative studies focused on themes of ethnicity, social/cultural behavior, technology, and cultural geography (Wrobleski 1996; Rogers 1997; Mires and Hutchins 1998).

Figure 64. Dove Springs Camp on the Red Rock Spur Railroad during construction of the LA Aqueduct, ca. 1909. *(Courtesy of University of California, Riverside, Water Resources Collections and Archives, WRCA LIPP Box 78, Item 141, No. 380.)*

Hamilton et al. (2004) prepared a research design for CA-SBA-1145/H, the Honda railroad section house in Santa Barbara County. Although this site technically is not a work camp, the study addressed ethnic diversity and social stratification, subsistence, communal dining, age, and gender of railroad workers.

Hallaran et al. (1989) studied a construction camp on the San Diego and Arizona Eastern Railway. The camp, within the Anza-Borrego Desert State Park, was occupied just before 1919, while workers drove tunnels in nearby hills. Although the site is familiarly known as China Camp, research revealed no ethnic Chinese markers, and archival data indicated that the laborers were of diverse cultural backgrounds, including Mexicans, Americans, Indians, Pakistanis, Native Americans, Greeks, Swedes, and Chinese.

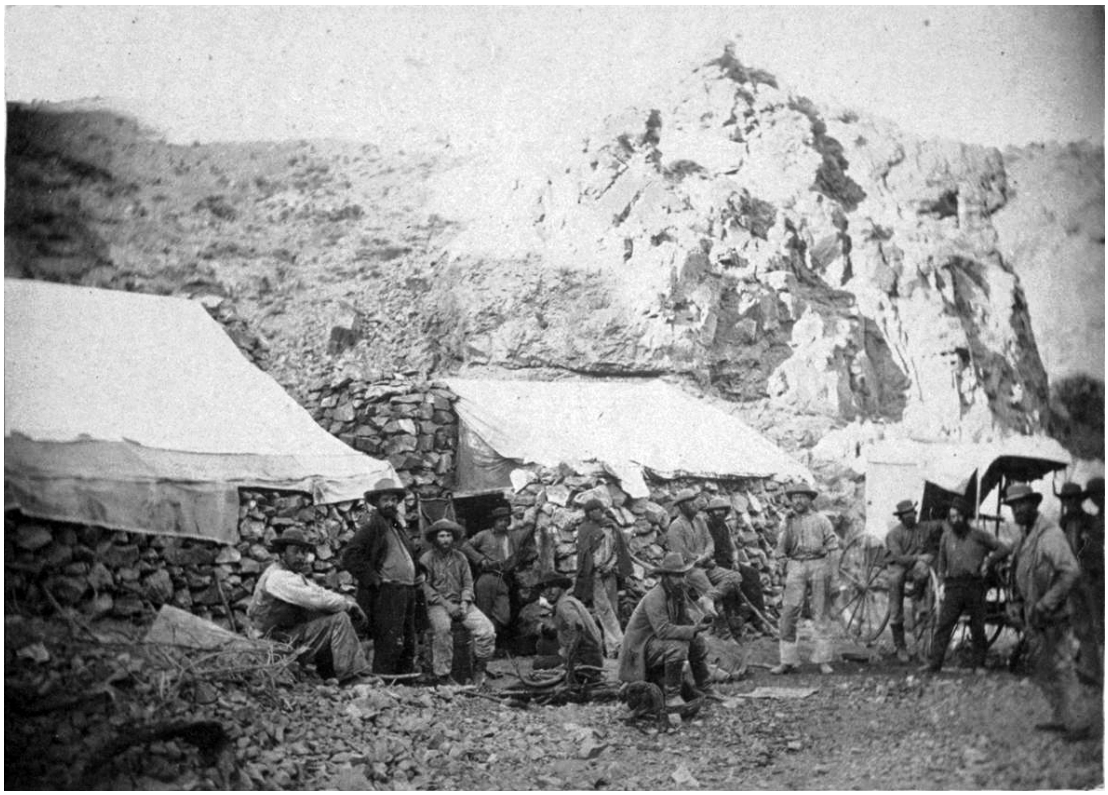

Figure 65. Railroad survey crew, San Juan Camp, Eldorado Canyon, proposed Mohave Railroad route, 1863. *(Courtesy of Bancroft Library, University of California, Berkeley, BANC PIC 1905.16894:20B—A.)*

Reynolds et al. (1987) investigated a construction camp on the Randsburg Railroad, a spur line built in 1897 that ran north to Johannesburg from the Santa Fe main line between Mojave and Needles. The line provided supplies to the booming mining districts around Randsburg, in San Bernardino County. Two camp locations, several work areas, and refuse deposits were identified. The camps were occupied only briefly while workers prepared a roadbed and laid track across the relatively level desert landscape. Domestic artifacts included cans, glass bottles and jars, ceramics, and, in keeping with the transient nature of the occupation, tent stakes and cot frames—but no prepared tent pads or foundations. Cans at the sites were all small; ceramic tablewares consisted of highly decorative patterns typical of the period and intended for household use; no hotelware vessels were encountered. All of this evidence indicated that meals were taken informally with no formal preparation. Also present were blacksmithing debris, railroad hardware, and an assemblage of general tools and hardware. Some artifacts at the sites are attributed to dismantling of the line in 1934.

Sutton (1986) reported on archaeological investigations at the Milepost 14 Camp on the Death Valley Railway, in Inyo County. A crew of 150–200 Mexican workers constructed the railroad in

1914 (Pitti and Castañeda 1981; Sutton 1986:39–40). Nearly 50 tent platforms with dry-laid stone foundation walls were identified at the site; most measured no more than two by three meters. The largest platform was interpreted as the location of the mess tent; refuse had been burned nearby. Tobacco cans dominated the artifact assemblage, and food cans were conspicuously lacking. Food supplies, which were delivered to the camp weekly, probably were packaged in bulk containers such as barrels, boxes, and sacks. Work animals were kept away from the camp (Sutton 1986:41,43).

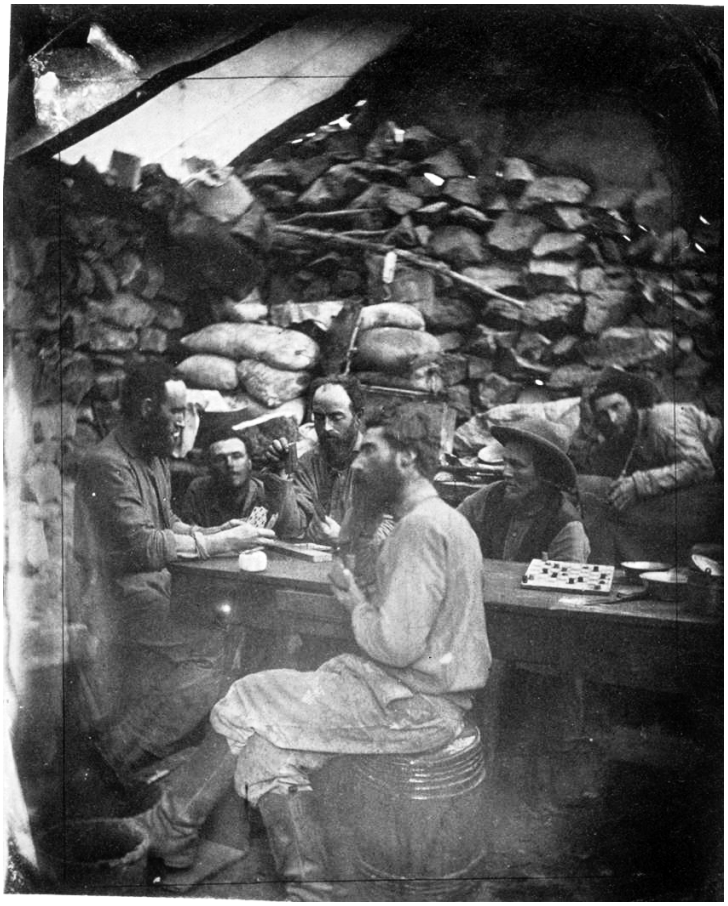

Figure 66. Interior of a stone shelter, Upper Camp, Eldorado Canyon, 1863. *(Courtesy of Bancroft Library, University of California, Berkeley, BANC PIC 1905.16894:19—A.)*

Studies of railroad construction camps in states other than California provide comparative information. Without any archaeological excavation, 16 such camps at the Golden Spike National Historic Site in the Promontory Mountains of Utah were determined eligible for listing in the NRHP (Anderson 1983) based on their potential to address research themes outlined by Buckles (1983). These camps contained the remains of more than 340 habitation and industrial features associated with the construction of the transcontinental railroad during the bitterly cold winter of 1868–1869. Each camp probably was occupied by a specific crew, many, if not most, of which were contract laborers. The crews included Mormon, Chinese, and Irish laborers. The habitation remains included a wide array of dugouts, pit structures, leveled platforms, and masonry foundations. In addition, the archaeological remains of 25 branch stations west of Promontory Summit have been the subjects of surface investigations and historical research (Raymond and Fike 1983).

The Joso Trestle railroad construction camp in Idaho has received extensive excavation and documentary research (Wegars and Sprague 1981). Occupied during 1913 and 1914, the camp

includes the remains of many residential and industrial structures, as well as associated refuse deposits and ancillary features. Wegars and Sprague demonstrated how archaeological data and documentary information can be combined to address the social and economic dimensions of camp life.

Archaeological excavations were conducted at Skookum Camp, a railroad construction community some 60 miles southwest of Bend, Oregon, that was occupied between 1923 and 1926 during the construction of the Southern Pacific's Natron Cutoff (Ross and Sekora 1995). Multiple food-preparation and disposal areas, rather than a communal mess hall, were documented at the camp. Expenditures for tableware and food were modest, when compared with those at the Lava Caves railroad logging camp, which was cohabited by women and children. In 1998, excavations were conducted at the 1880s Hogg Railroad Camp in the Cascade Mountains of Oregon. The fieldwork identified 44 features, including domed rock ovens, bunkhouse foundations, dugouts, and refuse pits (Case 2001). The study addressed segregation by class, ethnicity, and gender; access to markets; corporate provisioning and control; living conditions; diet; and sanitation.

WATER DEVELOPMENT/HYDROELECTRIC POWER WORK CAMPS

The construction of water projects in California required an immense amount of human labor, animal power, and mechanical equipment. Virtually every large-scale water project in California included some form of work or labor camp. Although many were built as temporary quarters, others were constructed for long-term or permanent occupation. Most water-development work camps were created near or adjacent to the actual project location. Exceptions include projects, such as those in the desert regions of California, where a lack of water or transportation precluded the location of camps next to the project site. Initially, water development work camps consisted of surveyors and engineers whose responsibility was to locate an appropriate route or alignment for a linear water project, such as a canal or penstock, or the most feasible location for a reservoir and dam. Most hydroelectric projects are associated with water impoundment. With the delivery of sufficient water through canals, flumes, and penstocks, however, hydroelectric plants were developed at locations far from the impoundment source.

Two publications are particularly noteworthy for background information on the history of water development projects in California. Hay's (1991a, 1991b) two-volume work focuses on national hydroelectric projects but provides a scholarly context for interpreting hydroelectric projects in California. Of special interest is the detailed chronology of hydroelectric plants (Hay 1991b:119–162). The comprehensive study of water conveyance systems developed in collaboration between Caltrans and JRP Historical Consulting (JRP Historical Consulting Services and Caltrans 2000) provides a good overview of the technical and industrial characteristics of water canal and hydroelectric development in California. The study, however, did not focus on labor or work camps associated with water development projects.

During the late 18th century, the Spanish in California made a concerted effort to construct short yet important canals to provide domestic and irrigated water to missions and fortifications. Russian settlers at Fort Ross also constructed irrigation systems and dug wells for potable water. During the Mexican period, earthworks were built at ranchos, and agricultural development dramatically expanded. Not until after the discovery of gold in 1848, however, did large-scale water development projects begin in California.

In 1852, the state surveyor-general identified swamplands in California of which roughly half a million acres lay in the Sacramento–San Joaquin Delta. By 1871, virtually all Delta swamp and overflow lands were transferred to private ownership, and the responsibility for improvements was placed squarely on local county boards of supervisors, under whose jurisdiction reclamation districts were formed (Minnick 1988:63). To support agriculture or flood protection, these districts focused on "reclaiming" land that was periodically inundated or was deemed swampland.

During the 1850s, one of the earliest reclamation projects in California was the construction of levees along the Sacramento, American, and Feather rivers, principally to prevent seasonal flooding, which often resulted in substantial loss of real estate and personal property. During this period, the demand for levees of any height was significant; because of the sheer lengths of these rivers, levee construction required large sums of money and hundreds, if not thousands, of laborers.

In the Central Valley, contract laborers who were housed at or near the project site did most of the tedious work of levee, dike, and drainage canal construction. During the 1850s, much of the work on levees was done by hand. Horses, mules, and oxen supplemented the hand labor. Laborers usually worked during the late spring, summer, and fall, under arduous conditions that included swarms of malaria-carrying mosquitoes and intense heat. Nevertheless, the levees moved forward mile by mile along the banks of the Sacramento, American, and Feather rivers.

California's Delta region, the center of a vast network of levees, dikes, and drainage canals, today bears little resemblance to its appearance before intervention by agriculturists and land speculators in the 1850s and 1860s. Between 1852 and 1857, parts of Grand, Rough and Ready, Andrus, Roberts, and Union islands were reclaimed through construction of levees and drainage canals. Agriculturists constructed dikes around the marsh and drains to rid the land of water, thus creating an island. The first levees, barely three feet tall, were made of peat soil, which often disintegrated in high water. Eventually, farmers built higher levees to hold back seasonal floodwaters. Today, 57 reclaimed islands exist where the Delta once consisted of interconnected waterways, sloughs, and marshes, with only a handful of areas outside the tidal flow or flood events. Steamboat Slough was the main transportation route through the Delta for schooners, steamboats, and other watercraft. Riparian vegetation and mature trees provided fuel for steamships passing through the Delta, and fuelwood cutters' camps probably were built along the navigation channels. Lands cut over were later transformed for agricultural use (McClurg 2000:38).

Levee construction around Stockton occurred in the 1850s and 1860s. In 1872, the Tide Lands Reclamation Company initiated the first large reclamation project in San Joaquin County by constructing levees that surrounded Union Island. At Staten Island in 1872, levee construction included five-foot high embankments. Subsequent flooding destroyed or damaged many of these early levees (Minnick 1988:65).

Levee construction continued unabated through the 1880s, when the first irrigation districts were formed. During this period, as during the previous two decades, contract laborers using hand tools did virtually all the construction. This approach changed in the 1890s through early 1900s, when steam-powered shovels assisted in excavation.

By the early 1900s, given the construction of thousands of miles of levees, , maintenance had become a serious concern, and persistent storms and flooding eroded the hastily built earthen berms. The number of levee breaks was not accurately recorded during the late-19th century. To put the frequency of breaks into perspective, 29 major levee breaks, many resulting in severe damage to livestock and property, have occurred since 1967. Given the fact that most levees were reinforced from the 1920s forward, it is likely that 19th century levees frequently succumbed to high water and were a persistent problem for farmers. Periodic droughts also had severe consequences for Delta agriculturists who relied on rainwater to replenish aquifers and cisterns. The drought of 1863–1864 and that of 1928–1934 forced farmers to hold off planting or to plant different crops that were more drought tolerant (McClurg 2000:65).

The construction of canals, flumes, dams, and penstocks or piped water conveyances in California required a substantial workforce. Extreme conditions of seasonal flooding and periodic drought influenced settlement and resulted in a considerable demand for labor to build infrastructure to protect cities from flooding and to sustain growth in the state's arid regions (Figure 67).

Figure 67. Cottonwood construction camp, part of the development for the LA Aqueduct, 1907. *(Courtesy of University of California, Riverside, Water Resources Collections and Archives, Image WRCA LIPP Box 78, Item 141, No. 201.)*

During the mid-19th century, the most ambitious water projects were constructed in the heart of the state along the San Joaquin and Sacramento rivers. At the same time, companies had formed in the Sierra Nevada to impound rivers and streams and to divert that water for mining or domestic use in the lower foothills or the valley. By 1854, 4,000 miles of ditches and flumes had been built to deliver water to various mining operations in the state. Nevada County alone had more than 700 miles of ditches by 1857 (McClurg 2000:28). During the 1850s and 1860s, almost all ditches and canals were constructed with hand labor. Exceptions included steam sawmills that milled the lumber needed for the flumes. Ditch companies used Giant brand powder, which was developed in Santa Cruz in the 1860s and was used on the Central Pacific Railroad during its

construction over the Sierra, to blast rock and stumps. By the 20th century, dynamite had become the preferred method of blasting for water construction projects because it was more stable and lacked volatility while the charge or fuse was set. Nevertheless, construction crews faced considerable danger, and serious injuries were not uncommon.

Between the 1880s and the first two decades of the 20th century, entrepreneurs, capitalists, and cities successfully dammed or siphoned water from California's rivers, streams, and aquifers to impound it for domestic use and irrigation. Most of the state's first dams were relatively small and were constructed of earth, rock, and logs. At the turn of the 20th century, changes in technology allowed the construction of more-sophisticated and larger dams, most built of concrete (Figure 68).

Figure 68. Construction of Bear Valley Dam, ca. 1900. *The camp was formed to construct the Bear Valley Dam (the reservoir was renamed Lake Wohlford in 1924). (Courtesy of Escondido Public Library, Pioneer Room, Escondido, California, Image No. CESC_010-349.)*

The Lower Crystal Springs Dam in San Mateo County was a prototype of the concrete gravity dam. Built in 1888 near the San Andreas Fault, this dam withstood the 1906 San Francisco earthquake with no serious damage. At the close of the 19th century, the arch dam emerged in California because of engineering and technological improvements. This type of dam reduced costs and materials needed for construction. It had an innovative design that used its shape, rather than its weight (as in the gravity dam) to withstand forces induced by water pressure. Despite improved technology, stresses on arch dams were not adequately understood, and most

of the early arch dams resembled gravity dams with broad cross sections. This lack of understanding delayed greater use of the arch dam until the middle of the 20th century.

By the early 1900s, engineers working in the Los Angeles Basin had begun to design a series of flood-control channels and catch basins to prevent devastating floods that wreaked havoc on communities along the river channels and at the foot of the mountains. All of these endeavors required careful planning, engineering skills, and a large labor force.

With respect to work camps and labor crews, concrete arch dams required competent skilled and unskilled laborers who formed a hierarchy based on pay, housing, and other forms of compensation. Generally, each project required one or two resident engineers; other highly skilled engineers, designers, and financiers lived away from the job site and commuted back and forth as needed. The day-to-day labor crews usually lived on-site, participated in all aspects of the construction process, engaged in social events, and shared living accommodations.

Although many water, hydroelectric, and dam construction projects influenced the future development of local communities and regions of the state, the most controversial projects during the 20th century was the building of the O'Shaughnessy Dam at Hetch Hetchy Valley in Mariposa County. The Hetch Hetchy project pitted the City of San Francisco against members of the Sierra Club (including John Muir) in a struggle that pitted preserving natural beauty against fostering economic growth. The federal government ended the dispute in 1913, with the passage of the Raker Act, which allowed the flooding of the valley. The O'Shaughnessy Dam, completed in 1923, impounded the water flowing through the valley; associated with the dam were several large construction work camps that are still evident today in the form of ruins and standing buildings along the shores of the reservoir (Righter 2005). The controversy over large water projects continues to this day, exacerbated by California's growing population and increasing demand for a sustainable supply of water for domestic use and irrigation.

Other significant water projects of the 20th century in California were the Central Valley Project, Hoover Dam, and the Los Angeles and Colorado River Aqueducts, built to provide flood control, water, and power generation (Wolfe 1996; Billington et al. 2005). During the 20th century, California had two significant episodes of water projects: ca. 1912–1923 and 1932–1937, the latter period associated with an infusion of federal funding through the New Deal (see Appendix C for details on water project). Although many water projects were designed solely to impound water for delivery, others were developed to provide hydroelectric power. Used for both milling and pumping during the 18th and 19th centuries, hydroelectric power peaked during the 20th century in the United States. By the 1940s, hydroelectric power provided roughly 75 percent of all the electricity consumed in the West and the Pacific Northwest and about one-third of all electrical energy in the United States (United States Department of the Interior [USDI], Bureau of Reclamation 2009).

According to Hay (1991a, 1991b), hydroelectric plants are composed of "dams; intake structures; water delivery systems such as canals, flumes, pipelines, tunnels, and penstocks; and prime movers—water turbines or impulse wheels, all arranged to drive electrical generators." This complex array of mechanical devices, not to mention the actual water storage facility including the dam and reservoir, required enormous skill and significant labor to construct—hence the need for both skilled and unskilled labor for virtually all hydroelectric projects in the United States. Although the Bureau of Reclamation, under the U.S. Department of the Interior, became involved in hydropower production in the early 1900s, its authority was more administrative;

large contracts were let to private companies as funding became available for dam construction and hydroelectric projects (Storey 2011).

At the outset of World War I, large-scale reclamation projects provided water and hydroelectric power to farms and ranches throughout California's Central Valley. The Great Depression of the 1930s, as well as flooding throughout portions of the West, spurred the building of great multipurpose reclamation projects such as Grand Coulee Dam on the Columbia River, Hoover Dam on the lower Colorado River, and, in the 1950s, the Central Valley Project in California. During this "big dam" period, the low-cost hydropower produced had a profound effect on urban and industrial growth. With the advent of World War II, the nation's need for hydroelectric power soared (USDI, Bureau of Reclamation 2009).[1]

From the 1940s through the 1960s, California witnessed its share of large, multipurpose dam construction projects, including Shasta Dam and Reservoir (1945), Folsom Dam and Reservoir (1955), and Oroville Dam (1967). With the increased development of other forms of electric-power generation, however, hydroelectric power's percentage of the market slowly declined; today, hydropower provides about one-tenth of the electricity in the United States (USDI, Bureau of Reclamation 2009).

From an archaeological perspective, water development projects produced two distinct property types: those related to survey and construction and those related to maintenance. Whereas the construction phase involved more-ephemeral property types, the maintenance phase often required more-substantive infrastructure, including permanent barracks, cottages, and homes (see Appendix C for a list of California water projects).

In 1924, the director of public relations for the Los Angeles Department of Water and Power (LADWP) related that the company's 20-man survey party set up a base camp near Blythe on the Colorado River. The camp consisted of about 10 canvas tents, some of which housed four to six men each, and others that served as the commissary, the kitchen, and dining and storage areas (Setzler 1967:99). Photographs in the Water Resource Library's collection at the University of California, Riverside, depict numerous water project construction camps consisting of tents as well as wooden barracks. Both the tent camps and the wooden-barracks camps were built in remote locations with limited access to transportation, such as railroads and highways (Figure 69).

During the past two decades, several of the archaeological studies directly related to large water development projects in the West have focused on camps along the Los Angeles Aqueduct (Costello and Marvin 1992; Van Bueren and Fisher 1996), along the Santa Ana River canyon (Foster et al. 1988), at Elephant Butte Dam in New Mexico (Boyd and Etchieson 1986), and in central Arizona (Ayres et al. 1994; Rogge et al. 1994), to name just a few.

Issues of race, class, and, ultimately, segregation defined many of the nation's largest water development projects, particularly in the West. As an example, in 1910, during the construction of Roosevelt Dam in Arizona, ethnic workers often were segregated among the different

[1] The Bureau of Reclamation provides a list of all the dams under their authority in the United States and a brief history of each dam, including a photograph and technical information (available online at http://www.usbr.gov/projects/dams.jsp, accessed February 2012).

construction camps, and living quarters were segregated on the basis of ethnicity and of class or social status (Rogge et al. 1995:127).

With respect to archaeology, the most extensively studied work camps in the West are those associated with the construction of dams and hydroelectric facilities. The investigation of more than 50 dam construction camps in central Arizona is by far the largest study of its kind (Rogge et al. 1994). It focused on work camps associated with the construction of seven dams built between the 1890s and the 1940s. Rogge et al. (1994) focused on four themes: demography of the camps, daily life, the nature of the work, and ethnic relations. The dam construction camps that they studied had populations varying from 100 to perhaps 3,000; occupations were limited to periods of one to six years. The larger camps had measurable impacts on local supply networks and nearby communities. After the turn of the 20th century, camps that were once exclusively occupied by male workers included women and children. That change brought attendant shifts in social behavior and a proliferation of social institutions and community social events, influenced in part by the size and longevity of each community. Schools were present in many camps that included children; buildings associated with religious institutions were not as common. Preachers traveled to many of the camps to hold services and to address social needs expressed by workers and families. Archaeological evidence of alcohol consumption and home brewing has been identified in work camps associated with water projects, despite management efforts to control or to prohibit alcohol use (Rogge et al. 1995).

Figure 69. California Aqueduct cement plant and work camp, 1908. *(Courtesy of University of California, Riverside, Water Resources Collections and Archives, Image WRCA LIPP Box 78, Item No. 274.)*

A growing understanding of the relation between camp sanitation and a healthy workforce was reflected in changes over time in the types of sewerage facilities used at the central Arizona dam construction camps and in the location of those features within the communities. Looking at overall patterns and trends through time, however, researchers found no evidence that "there were any efforts to supply sanitary water or maintain pit latrines at the 1892–1895 frontier camp at the Dyer Diversion Dam. A decade later, camp sanitation was a major concern at Roosevelt, although not always successfully implemented" (Rogge et al. 1994:290). The 1890s Camp Dyer showed no evidence of systems for human-waste disposal or water delivery, leading archaeologists to assume that water came directly from the Agua Fria River and that no formal pit toilets existed. Later camps, however, included piped water, a combination of pit latrines and septic systems, and, occasionally, electricity (Rogge et al. 1994:285–286). The arrangement of the camps also became increasingly formal: more-substantial structures were used at later occupations. Camp organization clearly reflected social hierarchies, as well as "differential standards of living" (Rogge et al. 1994:291–292). At Roosevelt Dam, most managers and supervisors lived in the best wood-frame homes and in "topographical loftiness" (Rogge et al. 1994:291), on a hill above other residents, whereas housing for unskilled workers usually consisted of simple structures or tents. This hierarchical separation between management and transient labor was seen at the camp occupied by Apache laborers and in the later, 1920s Camp Pleasant.

Before the 1920s, the large unskilled component of the dam construction workforce in Arizona was transient, and management found that maintaining a full crew was difficult. The employment of Apaches and other ethnic groups in the workforce may have been due, at least in part, to that labor shortage (Bassett 1994).

The cost of living in many Arizona dam construction camps was high, consuming most of the money that the workers earned. Although pay inequities for the same work among minority laborers were uncommon, access to higher-paying positions usually was discriminatory, frequently favoring nonminorities (Rogge et al. 1994:294). As the supply of labor surpassed the demand for it in the 1930s, the ethnic diversity of the dam construction crews diminished, and the workforce became completely unionized. Offering a prospectus for future studies of work camps, Rogge et al. (1994:296) suggested that economic scaling of material culture would lead to a better understanding of the social hierarchies found within these camps.

Several dam construction camps have been investigated in California; these include two located along the upper Santa Ana River in western San Bernardino County (Foster et al. 1988) and the Relief Dam construction camp in Tuolumne County (Shoup 1989; Van Bueren 1989). Other studies (Maniery 1999; Baker 2001, 2002; Maniery and Compas 2002) have focused on numerous camps built during the 1920s for hydroelectric development projects, stretching from the Stanislaus River to the Pit River in northern California. The Santa Ana River construction camps investigated by Foster et al. (1988) are CA-SBR-5500H, occupied around 1905, and the Warm Springs construction camp (CA-SBR-5503H), first occupied in 1903 and reused in 1926. The former camp organization was unstructured and contained industrial features, structure pads, refuse disposal pits, and evidence of corporate food preparation for large numbers of workers. The presence of a Chinese cook was inferred from a small concentration of imported Chinese ceramics near what was probably the cookhouse. Foster et al. (1988) also surmised that management or religious proscriptions against alcohol use may have been responsible for the low numbers of alcoholic-beverage containers at CA-SBR-5500H.

Foster et al. (1988) found little evidence of the 1903 Warm Springs Camp and undertook no investigations in the area reoccupied by the highly structured 1926 camp. Both CA-SBR-5500H and CA-SBR -5503H, however, were evaluated as eligible for listing in the NRHP on the basis of their potential to address topics concerning technology, spatial patterning, economics, sociocultural context, chronology, and subsistence practices.

In 1989, the Relief Dam construction camp in northeastern Tuolumne County was determined eligible for listing in the NRHP without excavation (Shoup 1989). The hoist works, cableway anchors, steam donkeys, and other equipment used to build this remote dam in the high Sierra Nevada were abandoned in place, leaving a testament to the work accomplished in this rugged setting. A large flat adjacent to the dam contains numerous structure pads and an extensive refuse dump dominated by commercial-size tin cans, indicative of corporate food preparation at a mess hall (Van Bueren 1989). Workers lived in seven bunkhouses; managers and a doctor lived in separate wood-frame houses with their own associated refuse deposits. Status differences are clearly reflected in the remains found in those different parts of the camp.

Archaeological excavation of the Butt Valley Dam Construction Camp 5, an NRHP-eligible site (CA-PLU-1245H) occupied between 1919 and 1925 (Maniery 1999:208), resulted in an extensive database capable of addressing topics similar to those studied by Foster et al. (1988). In general, the camp's core served as the industrial work yard, with a machine shop, a roundhouse, and work areas clearly defined. The east side of the site contained rows of cabins (each with a wood stove), a cookhouse, and a hospital. A substation provided lighting; a bathhouse with sump area, as well as wood-lined privies large enough to accommodate four seats, were at the fringes of the residential areas. Water lines transported water from large tanks to camp facilities. Wastewater from the cookhouse was removed by pipe and was discharged into earthen pits with wooden lids (Maniery 1999:200–209).

In contrast to Rogge et al. (1994) and Foster et al. (1998), Maniery (1999) found that workers at Butt Valley ate moderate- to high-priced meat cuts, such as roasts, ham, and leg of lamb, instead of stews. Fly fishing rod handles and fish and duck bones excavated at the cookhouse site suggest that the diet was supplemented with on-site resources and hint at opportunities for leisure time. Although the remains of an on-site hospital were identified, numerous medicinal products suggest that workers self-treated common colds, sore muscles, and skin rashes. Alcohol containers were noticeably lacking during the construction phase, perhaps because of Prohibition, but numerous pocket tobacco tins of many brands were present throughout all areas of the site (Maniery 1999:200).

Examination of company records, plans, and archaeological remains at five dam construction camps dating from 1920 to 1925 suggests that hydroelectric camps maintained a rigid social organization and division between workers and supervisors. Maps of construction camps indicate that the foremen's housing was removed from the laborer cabins and bunkhouses, a camp design confirmed archaeologically at Butt Valley and at Camp Almanor (Maniery and Compas 2002). At Camp Almanor, foremen's housing and the administration building were connected to running water and sewer pipes that fed into a septic system, whereas cabins occupied by laborers were serviced by communal latrines and outdoor spigots (Maniery and Compas 2002:91). In addition, cookhouses used by Great Western Power Company at Camp Almanor and Butt Lake had separate seating areas for workers and foremen. Most camps also had reserved housing, often within the administration building, that was used by visiting politicians and company officials (Maniery and Compas 2002:91–93).

Layout at Camp Almanor was terraced; the administration building and the foremen's housing was located at the highest level of the camp, affording a view of the overall construction site, residential areas, and Mount Lassen. The terrace below the administration area contained seasonal bunkhouses and cabins (three rows of small structures behind a central cookhouse). The lowest terrace, nearly half a mile from the administrative building, contained a barn and a corralled area to house the many animals used during construction. Can dumps and refuse deposits were found on another terrace below the barn, indicating that trash was disposed of far away from the living areas (Maniery and Compas 2002:93–95).

Work camps on the Los Angeles Aqueduct included modest wood-frame buildings that housed small numbers of roommates, rather than bunkhouses or dormitories. Buildings were insulated against climatic extremes (Lee 1963:192–193). Nevertheless, the average length of employment was reportedly just two weeks (Nadeau 1974:40). Life in the camps was "rude" but not "rowdy"; the mess hall was the common meeting place. Evening entertainment included baseball games, horseshoe pitching, and singing. Forms of entertainment not authorized by management were sought at nearby towns such as Mojave (Nadeau 1974:40) (Figure 70).

Figure 70. Portable bunkhouses used in the construction of the LA Aqueduct, 1908. *(Courtesy of University of California, Riverside, Water Resources Collections and Archives, Image No. WRCA LIPP Box 78, Item 141, No. 319.)*

Archaeological studies that were conducted at several camps associated with the 1908–1913 construction of the Los Angeles Aqueduct involved the camp known as Alabama Gates (CA-INY-3760/H), which was occupied for less than a year starting in 1912. Archaeologists identified well-defined rows of tent pads, artifact scatters, and well-defined features of wood-frame houses. Although the site was determined eligible for listing in the NRHP on the basis of surface evidence alone (Costello and Marvin 1992; Tordoff 1995a, 1995b), data recovery excavations yielded information regarding demography, subsistence patterns, daily life, ethnicity, social

stratification, labor relations, external interactions, health and safety, and industrial activities at this "transitory and relatively isolated community where life centered around work" (Van Bueren et al. 1999:173). The investigation elucidated the layout of four distinct neighborhoods and the stratification of the workforce along ethnic and socioeconomic lines. Work areas were clearly separated from living spaces. Overall, the study revealed a "largely transient lifestyle characterized by few refinements and a fair degree of frugality" (Van Bueren et al. 1999:183).

WHALING AND FISHING WORK CAMPS

This section focuses on work camps associated with the catching and processing of, and the distribution of products obtained from, whales, freshwater and saltwater fishes, and shellfish. A secondary industry, the harvesting of kelp along California's coast was never significant from an economic standpoint.

In 1849, the California gold rush created an instant demand for both saltwater and freshwater fish and shellfish. Demand increased for both perishable and non-perishable seafood products through the 1850s. During the mid-19th century, commercial fishermen, in general, viewed California's saltwater and freshwater fisheries as sustainable, even though previous harvesting, including that of shellfish such as abalone (*Haliotis*) and oyster (*Crassostrea*), had depleted the overall population. By the late 19th century, overharvesting became a serious issue for numerous coastal and inland communities that relied on a stable fishery and lacked other forms of employment.

Commercial fisheries had three principal locations in the state during the mid- to late 19th century: along the California coast, inland along the Sacramento River and within the Sacramento Delta region, and at Lake Tahoe. Before 1850, the coastal whaling industry took precedence, followed by the state's salmon fisheries. California's early whaling and fishing industries were dependent on the exportation of their products. One of the greatest challenges facing inland and coastal fisheries was how to pack perishable products and distribute them to market. This challenge was not as great for the whaling industry as for the state's fisheries, because the principal product, whale oil, was not as perishable when processed.

During the mid- to late 19th century, immigrants from the Azores, an island chain located off the shores of Portugal, did most of the state's whaling. Azorean whalers were experienced in all aspects of the whaling industry and quickly adapted their techniques to the California coast. Azoreans attracted by the gold rush eventually left the mines and settled along the California coast. During the 1850s, San Francisco became the home for a whaling fleet that operated in the Arctic during the summer and anchored in the bay over the winter (Bertao 2006:14–16).

Whalers, in general, were paid a disproportionately higher wage than other workers in engaged in other occupations in California during the 19th century. The demand for whale oil made the business of whaling lucrative and fostered this higher compensation (Figure 71).

Although offshore whaling occurred along the California coast during the early 1800s, "shore whaling" first developed in 1854, in Monterey. Shore whaling relied on smaller vessels, more-primitive weapons, and relatively simple shore factories and furnaces for producing whale oil (Bertao 2006:xi). To outfit two boats of six men each and to keep a lookout on the land, shore whaling usually required at least 13 men. Those who worked on shore repaired boats, collected wood, and did other chores. In cities, whalers often lived in boardinghouses, but in rural areas

along the California coast they created their own housing by erecting cabins and outbuildings (Bertao 2006:14–16).

Shore whalers built their facilities in sheltered harbors, atop bluffs, using the beach below to anchor the whales. Whaling companies generally operated out of a single strategic building used to store supplies, to hold meetings, and to serve as a hospital, if needed. Married whalers usually secured their own quarters or built their own dwellings. When whaling operations shut down, buildings were often dismantled and relocated to another site (Bertao 2006:27–29). In some whaling camps, whalers cultivated small gardens and raised animals for food. At Point Lobos south of Carmel-by-the-Sea, one of the original whaler cabins or boardinghouses has been preserved and is now a museum at Point Lobos State Natural Reserve. Table 4 is a sample of shore whaling locations in California active primarily during the 19th century.

Figure 71. Moss Landing Whaling Station, ca. 1915. *(Courtesy of Monterey County Free Libraries, Local History Photograph and Document Collection, Image CSALCL-051-P1422.)*

Whaling required a wide range of equipment, including whaleboats, harpoons of various sizes and shapes, lances, rope, block and tackle, and try-pots, or large iron cauldrons in which blubber was heated to produce the oil. A 200-gallon try-pot could weigh more than 1,200 lb. and was more than 4 feet in diameter. Another important implement was the capstan, which was used for hauling the whale onto the beach and was installed near the tryworks. It consisted of an inner shaft set into the ground, an outer cylinder around which the whale line wound, and capstan bars placed horizontally into a cylinder, on which men exerted their strength to bring in the whale (Bertao 2006:32).

Table 4. Sample of Portuguese Shore Whaling Stations in California

Station	Dates
Whaler Island, Crescent City Harbor	1885–1895
Trinidad Bay	1861–?
Buhne Point, Humboldt Bay	1855
Bolinas Bay	1857–?
Whaleman's Harbor, north of Pillar Point	1860–1862
Pillar Point, Half Moon Bay	1871–1882
Pigeon Point, northside	1862–1879
Whaler's Cove, Pigeon Point, southside	1893–1898
Point Año Nuevo	1866–1867
Davenport Landing, El Jarro Point	1867–1877
Soquel Landing, Capitola Beach	1865–1866
San Carlos Beach No. 1, Monterey Bay	1854–1904
San Carlos Beach No. 2, Monterey Bay	1858–1873
McAbee Beach, Monterey Bay	1858–1864
Whalers Cove, Point Lobos	1862–1900
Point Sur, Monterey County	1877–1879
Point Piedras Blancas	1872–1887
San Simeon Point	1864–1897
Port San Luis	1867–1890
Cojo Bay, Point Conception	1879–1893
Goleta Sandpit	1870–1876
Portuguese Bend, Los Angeles County	1862–1867
Deadman's Island, San Pedro Bay	1860–1862
Ballast Point No. 1, San Diego Bay	1858–1873
Ballast Point No. 2, San Diego Bay	1859–1873
Whaler's Bight, North Island	1873–1886

Source: Bertao 2006:63.
Note: Stations are listed in order from north to south.

The whaling industry in California began to decline in the late 19th century. Among the causes of this decline were a decrease in the number of whales, the primitive equipment used in hunting and capturing them, and a decreasing demand for whale oil, in large part because of the popularity of kerosene, a pale liquid fuel first distilled from thick crude oil in the mid-1850s (Bertao 2006:59–60). By the early 20th century, whaling camps in California were being converted to other uses or were slowly decaying from the action of winter storms.

With the decline in whaling at the close of the 19th century, commercial fishing became more prevalent as the demand increased. For thousands of years, Native Californians inhabited the Central and North coasts and the Central Valley, fished seasonally for salmon (Salmonidae) and steelhead (*Oncorhynchus mykiss*) in coastal streams and in the Sacramento and San Joaquin

rivers and their tributaries. North Coast tribes routinely sought out salmon runs in the late summer and fall along the Eel, Klamath, Smith, and Trinity rivers and hundreds of smaller tributaries. This pattern of subsistence was disrupted during the mid-19th century by the gold rush but resumed in later years and continues, albeit in a much more limited capacity, even today (Lufkin 1991:6). During the late 1840s, both Captain John Augustus Sutter and John Bidwell hired crews that fished commercially for salmon; both employed Native Californians in their business enterprises (Lufkin 1991:7–8).

Although salmon harvesting in California's coastal and inland waters extends back thousands of years, commercial harvesting began in earnest during and after the gold rush. Large runs of coho (*Oncorhynchus kisutch*) and chinook (*Oncorhynchus tshawytscha*) salmon and steelhead were easy targets for commercial fisheries, and with the advent of canning, hundreds of thousands of fish were caught yearly and then canned and later sold in local, regional, and national markets. Salmon harvesting camps and canneries were located adjacent to salmon fisheries, particularly along the state's navigable inland waterways, such as the Sacramento and San Joaquin rivers.

According to the listing for the Hume salmon cannery by the National Park Service, National Historic Landmarks Program (2005), this salmon processing facility, at Broderick on the Sacramento River, was the first of its kind. It was reportedly established in 1864 by William and George Hume and Andrew Hapgood, and remained in operation until 1866. Before the advent of canning, preservation of the fish was limited unless it was dried and salted. The Hume brothers began processing salmon commercially in 1852, but much of what was caught was sold at local markets.

At the Hume cannery, each can of salmon was packed by hand in salted water and was boiled to 230°F for one hour. Later in the process, the salt was replaced by a pickling agent, and the cans were painted a bright red that distinguished them from other brands even without a label. The company produced 2,000 cases of salmon during the first year of operation and sold them at $5 per dozen. After 1866, the company relocated to the Columbia River, where the salmon supply was more plentiful. Apparently, the Hume cannery site was obliterated by development in recent years and has been delisted as a National Historic Landmark.

During the late 19th century, 20 canneries were in operation along the banks of the Sacramento River (National Park Service, National Historic Landmarks Program 2005). Following in the footsteps of the Hume brothers, Italians and Greeks established commercial fishing camps along the Sacramento River; many of them were taking advantage of the collapse of the Atlantic salmon fishery in the 1860s. Between 1860 and 1880, at least 19 fish canneries were operating in the Sacramento–San Joaquin Delta region; in 1882, they reportedly processed a peak of 200,000 cases of fish (a case held 48 one-pound cans). On the North Coast, a number of salteries and canneries were in operation; several on the Klamath River employed Native Californians in their operations. Salted salmon from Humboldt Bay and the Eel River gained popularity during the latter part of the 19th century. The last commercial fish cannery in the Central Valley reportedly closed in 1919 (Lufkin 1991:8).

One of the largest fish canneries in California, operated by Booth & Company, was at Black Diamond (now known as Pittsburg) in Contra Costa County. The company had a large Chinese workforce as evidenced by a Sanborn Fire Insurance Map (Figure 72) that depicts Chinese housing or barracks segregated from other workers' housing near the cannery (Sanborn Map Company 1884).

Figure 72. Chinese fishing village, Pacific Grove, 1882. *(Courtesy of Bancroft Library, University of California, Berkeley, BANC PIC 1989.063:05—STER.)*

Fishery laws were enacted in California as early as 1852, but the regulations failed to prevent widespread exploitation and overharvesting in most of the state's streams and rivers (Lufkin 1991:7–8). In addition to unsustainable use, fisheries suffered from the effects of other industries on habitat. For example, during the 1860s and 1870s, hydraulic mining in the Mother Lode region had a severe impact on fish populations in the upper Sacramento Valley and the Central Valley, discharging huge volumes of sediment into the rivers and the Delta. The Yuba and Feather rivers, in particular, were severely damaged, because of hydraulic mining, which harmed fisheries and farming by increasing sediment and flood events. The Sawyer Decision of 1884, restricted the amount of alluvium that could enter primary watercourses, such as the Feather and Sacramento rivers, and ultimately ended large-scale hydraulic mining.

During the 1860s, as the Comstock Lode attracted rapid migration after discovery of gold and silver, commercial fishermen exploited Lake Tahoe's native fishery. The principal catch was the large lake trout (*Salvelinus namaycush*), which resembled the salmon in size and was easily harvested during the fall spawning season in most of the tributaries flowing into the lake. In addition to lake trout, whitefish (*Prosopium*) were also harvested commercially. Most of the fish taken from Lake Tahoe were dried, salted, and packed in wooden barrels for shipment either to California or to the silver mines in Nevada. By the late 1870s, the lake's commercial fishery was

waning because of overfishing; by the 1880s, it had largely ceased. Fish camps at Lake Tahoe were concentrated around the Truckee River on the north shore and around Bijou and Camp Richardson on the south shore (Scott 1957:450).

Shellfish collecting sites or camps once dotted the entire coast of California, including inland bays and some waterways. Efforts during the 1850s to establish commercial native oyster beds off the California coast were unsuccessful (Ingersoll 1881:201,204–205; McMillin and Bonnet 1931:246), but by 1870, eastern oysters (*Crassostrea virginica*) had been used to establish commercial Pacific oyster beds (Hector 2002:106). Subsequently, eastern oysters harvested in California were shipped throughout the West Coast and the western interior (Barrett 1963:91).

During the 1850s and 1860s, when Azoreans dominated coastal whaling, the Chinese monopolized the coastal fishing industry (including shellfish harvesting) in California. Overseas Chinese immigrants in the state had had experience in offshore fishing in China and therefore recognized the potential for fishing on California's long, relatively untouched coastline. Beginning in the 1850s, they established fishing camps along coves and beaches from Eureka to San Diego. Most of the fish that they caught were dried and shipped in ovoid clay vessels to markets along the coast and across the Pacific. Chinese fish peddlers sold their dried and undried product in local town markets.

Chinese fishing colonies were established between Monterey and Tomales Bay in the 1870s (Dillon 1972; Stark 1972). During the 1880s, as non-Chinese fishermen took advantage of the state's commercial fisheries and as anti-Chinese sentiment grew, the Chinese were forced to less desirable locations, although many fish camps, such as those in Monterey and Pacific Grove, remained through the first two decades of the 20th century.

China Camp, established along the shores of San Pablo Bay at Point San Pedro, Marin County, was one of largest overseas Chinese fishing villages in North America. It is also one of the best-documented sites for shellfish collection in northern California and was once the home of Coastal Miwok who harvested onshore and offshore flora and fauna, the remains of which appear today in numerous shell middens. In 1880, China Camp was described as an industry largely in the hands of the Chinese, employing more than 225 men. The land occupied by the Chinese fishermen was leased. During the 1906 earthquake, San Francisco's Chinatown was severely damaged, and many Chinese sought temporary refuge from the disaster at China Camp. Several years later, the state decided to introduce sea bass (Serranidae) into San Pablo Bay to help the ailing commercial fishing industry. Soon afterward, Chinese used nets to catch the sea bass, which they dried and shipped to China in brown salt-glazed clay vessels. Ultimately, a fire in 1913 combined with overfishing eventually caused the demise of the commercial fishing industry at China Camp. In 1924, Frank Spenger, who had a fish restaurant in Berkeley, helped China Camp store owner and fisherman Quan Hock Quock with a net that he had designed. Even with the newly designed net, the Quans were working only four fishing boats by 1930 (Dillon 1972). In 1976, the California State Parks system bought the land to establish a state park that preserves the history of the fishing villages (Arrigoni 2001).

Along the Central Coast, the small cove just east of present-day Capitola's Depot Hill neighborhood was an ideal location for the Chinese to develop and maintain a profitable commercial fishing operation. Tucked in at the base of the bluff, the Chinese village, known as China Beach, not only was out of sight but also was removed from competition with other fishermen. The Chinese fishermen obtained their fresh water from springs that came out of the

bluff. They were able to exist in the legal limbo between high tide and the beginning of private property (Dunn 1983; Lydon 2011).

Lydon (2011) described the camp as follows, on the basis of an eyewitness account by Ernest Otto, a Santa Cruz newspaper reporter:

> The houses were about six feet above ground and the bluffs were picturesque with its growth, especially when the evening yellow primroses were in bloom. The boats were usually beached in front of the village and gave it a real touch of China as they were pointed at each end with a graceful curve.
>
> The boats with the "graceful curve" that the Chinese used all around Monterey Bay were the traditional Chinese sampans. Made locally by the Chinese using traditional boat building techniques, the boats often attracted the attention of non-Chinese because of their unusually arched shape. One Monterey newspaper described the boats as "odd-shaped and lumber some-looking [boats] that float over the billows, when lightly loaded, with both ends in the air." The boats were as seaworthy as thousands of years of development in China could make them, however, and the locals soon came to respect sampans as being eminently practical on Monterey Bay.

The fishing technique used by the Chinese in the bay waters adjacent to their village was different from that used on the rocky shore off Monterey. At Monterey, the Chinese used hook-and-line fishing, primarily because the bottom was too rocky to allow the dragging of a seine. At China Beach, however, they used nets with one end attached to a pole stuck in the beach; using a sampan, they swung the other end out beyond the surf line and brought it back farther up the beach, creating a U-shape. The bottom of the net was weighted, and the top had floats attached to it; the result was a wall of net from which the encircled fish could not escape. Then, using a windlass to assist in pulling in the fish-filled net, the Chinese dragged their prey up onto the beach. Most of the fish were split, salted, and dried in the sun (Lydon 2011).

The Chinese fishermen at China Beach reportedly were never secure or comfortable enough to bring their wives and family members. In contrast, for example, the village in Monterey and Pacific Grove was seen as secure enough, and many Chinese children were born there, contributing to a more enduring community. Even today, descendants of the Monterey Chinese fishing village live in the neighborhoods near the old village site (Lydon 2011).

Although documentary research pertaining to the post-1850s era of the fishing, shellfish, and whaling industries is plentiful, archaeological studies are limited. Many are focused on fishing camps and villages occupied and operated by overseas Chinese in the San Francisco Bay area (Schulz and Lortie 1985; Schulz 1996; Williams 2011).

Braje and Erlandson's (2006) study of overseas Chinese shellfish harvesters involved shoreline surveys of San Miguel Island off the Santa Barbara coast, where 17 historic-era Chinese abalone-processing sites were identified. Chinese exploitation of abalone in California is well documented along the mainland, particularly in Monterey, but not on the offshore islands like San Miguel. Beginning in the 1970s, Braje and Erlandson (2006:23) and Axford (1984, 1987) conducted a 10-year study of the prehistoric and historic-era sites on the island, identifying 32 Chinese abalone camps. All of the sites that Axford identified were located within 100 feet of the shore, near rocky intertidal outcrops, spaced at one-kilometer intervals, and in various states of

preservation. According to Hatheway and Greenwood (1981:13), who also investigated historic-era Chinese shellfish camps on the island, "each site contained opium boxes, smoking pipes, porcelain bowls, brownware pottery, cooking hearths, and quantities of abalone shell." The presence of Chinese operating on a remote offshore island along the California coast testifies to their ability to adapt and prosper despite the hardships associated with isolation and, at times, a harsh environment.

More recently, Stanford University student Bryn Williams has conducted excavations of a Chinese fishing village located at the Hopkins Marine Station in Pacific Grove, Monterey County (Julian 2010). These excavations revealed a wide range of imported Chinese artifacts, including porcelain rice bowls and Chinese coins. This Chinese village at Point Alones is a particularly important site because it was occupied in the early 1860s by entire families and remained a viable community through the first few decades of the 20th century.

SUMMARY AND CONCLUSIONS

Between 1848 and 1941, the diversification of California's economy demanded a mobile workforce that included both skilled and unskilled laborers. Technological advances in virtually every industry resulted in a labor market that transcended the state's boundaries and included nearly every continent in the world. At the heart of the industrial revolution and cross-cultural migration were work-related camps designed for specific projects that lasted for a few months to many years. These shot and long-term work camps have the potential to address important questions regarding labor, economics, technology, class, race, ethnicity, gender, and subsistence.

Although many camps were located far from any city or community, others were found on the fringes of communities and thus had easy access to consumer products and services. As California industrialized, urban growth led to the absorption of once-distant work camps by large corporations or local governments. Other camps were discontinued or abandoned, such as those reoccupied by Contentious Objectors and Mexican *braceros* during World War II.

Examining housing, infrastructure, and ancillary buildings, such as commissaries, hospitals, recreation halls, barns, sheds, and blacksmith shops and other facets of the spatial organization of a camp, are fundamental to understanding its function and the lives of its occupants. Some work camps were as simple as several tents, a rock shelter, or a rudimentary log cabin; more-complex camps were built to a standardized design that included stick-frame or masonry housing. Similarly, sanitation varied dramatically from camp to camp. Although occupants of many camps had to rely on hastily rigged outdoor showering facilities and privies, others had access to indoor showers, baths, running water, and toilets.

Access to transportation, services, and consumer products had an important influence on camp location, design, period of occupancy, and function. For example, railroad construction camps were located along the railroad tracks or adjacent to tunnels, trestles, turnpikes, or other construction features. Commonly, the railroad company provided goods and services, and rail cars often served as mobile personnel carriers, sleeping quarters, or mess halls.

With the development of the automobile and the subsequent creation of highways and arterial roads, access to work camps was dramatically improved. In addition, camp workers could be transported easily from the camp to the job site; such movements had been much more time intensive during the pre-automobile era, when transport was either on foot or by wagons, stages,

boats, or trains. Automobiles, diesel trucks, and tractors, although costly to purchase, were beneficial and more efficient for companies who acquired them. Improved machinery and transportation had a push-pull influence on labor. On the one hand, increased efficiency and more-sophisticated technology created a demand for more-skilled laborers, many of whom were paid a higher wage. On the other hand, improved technology resulted in a declining market for unskilled labor in California, with the exception of workers at the very lowest wage level. The result was that work camps, particularly those related to agriculture, employed cheaper labor focused largely on picking and packaging products that could not be harvested by machine. The demand for cheap labor after 1900 contributed to an overall increase in immigration, including workers from Mexico, Japan, the Philippines, and India.

At many work camps, occupants were as transient as the camps themselves were ephemeral. The cultural affiliation of camp members was constantly in flux because of wages, hours worked, living conditions, and—more important—discrimination, changes in labor laws, and limitations placed on immigration. The Chinese who were the mainstay of many work camps in California were succeeded by Japanese workers in the 1880s. In turn, Japanese laborers were succeeded by Mexican workers beginning in the early 1900s. Work camp laborers were subject to racial epithets and discrimination depending on their places of origin, their skill levels, and the perceived challenge that they posed to the dominant wage earners who had already established a foothold in many industries. Despite the numerous obstacles faced by work camp laborers, they persevered, and many ultimately became financially successful, married, raised families, and left legacies of memories to their descendants.

CHAPTER 3. PROPERTY TYPES

An archaeological site—the features and deposits that constitute a resource—is the physical link between the contextual history developed in Chapter 2 and the theoretical orientation and research themes presented in the research design in Chapter 4. These features and deposits are often linked through associated property types that allow researchers to build inferences and to understand a site's history.

A *property type,* according to the NRHP (National Park Service 1999:14), is "a grouping of individual properties characterized by common physical and/or associative attributes." Property types can and should be understood at different scales, with the recognition that districts and cultural landscapes are made up of constituent sites, buildings, structures, and objects, and that historic properties may have significance at local, state, or national levels. There is no single way to define what constitutes a particular property type and many factors should be considered in constructing each definition. Work camps are always part of a broader property type: they are the residential component of a larger industrial enterprise and, from another perspective, a snapshot of the experience of workers across the California landscape. The definition of property types is thus inextricably tied to the utility of the classification as an aid to decision-making and implementation.

From an archaeological perspective, work camps are resources consisting of many discrete features and deposits that can collectively contribute to the historical importance of the larger property. In certain instances, broader research questions may be addressed only by comparing data from several sites.

Important information may be gained from historic properties like work camps when examined at three interrelated scales of analysis: intrasite, site, and intersite. The intrasite level of analysis addresses the individual features and deposits or meaningful groups of features and deposits that constitute the work camp site. These features may have research potential individually, or they may have potential only in relation to other features (as is true for a site locus or a discontiguous activity area across the site) or only when considered in the context of the work camp as a whole.

The site level of analysis considers the work camp site as a single entity. At this level, the research potential may derive from the analysis of the features and deposits across the site, informing on topics such as spatial organization and activity loci.

The intersite level of analysis considers groups of work camps. At this level, the purpose may be to analyze change through time, to consider variation within or across different industries, or to sample from a set of standardized work camps.

This chapter deals primarily with properties found at the intrasite level: those that constitute the site. Work camp sites generally consist of the remains of ephemeral occupations. Thus, other than hollow features used for refuse disposal, the archaeological features that they contain are generally shallow and sometimes diffuse, showing little stratigraphy. In the absence of

documentation such as original work camp plans, identifying the property types represented at a site will involve considering the overall layout of the camp, as well as identifying the nature of associated artifact deposits and features. Property type categories include the following:

- Residential
- Support
- Infrastructure
- Industrial
- Recreation
- Refuse Disposal

Property types at the intrasite level are presented in Table 5, together with their possible archaeological signatures expressed in features and artifacts. It is important to keep in mind the absence of a particular artifact can be, in certain circumstances, as indicative of a feature's function as the presence of an artifact class or classes.

RESIDENTIAL PROPERTY TYPES

Residential property types consist of the worker and management housing accommodations used for personal activities, such as sleep and other non-work related pursuits. This housing was provided either by the camp administrators or by the workers themselves. These residential features constitute the bulk of the properties at the intrasite level. Often, at larger camps, residential features were used simply for sleeping; eating and social activities were carried out at communal facilities, such as mess halls. At smaller camps, where group facilities were not practical or necessary, the archaeological footprint of several personal activities may be contained within the residential property type. The personal activities contained within housing accommodations may vary among social or work classifications or occupations (e.g., laborers, supervisors, or engineers).

Depending on the function of the camp and who was running it, residential property types for workers can range in size and permanence. A "residence" could have been something as ephemeral as blanket on the ground, to a tent (or multiple tents) on a leveled pad, a dugout, or a portable building or structure, to a formal bunkhouse or individual family homes (Figures 73-76). Differences in structural design, layout, and size can provide important information regarding stratification and segregation within the camp, camp demographics, and quality of life.

The structural remains at a camp can reveal elements related to the permanence and portability of dwellings, evidenced by fieldstone, milled lumber or unmilled logs, bricks, adobe, sheet or corrugated metal, concrete, mortar, nails, and tent hardware, as well as domestic artifacts. Even portable structures may be present (Figure 77). The presence or absence of appliances and structural remains, such as stoves, flooring, window screens, or glass windowpanes, is also an important indicator of dwelling types and living conditions. The presence of food storage vessels, food preparation and serving vessels, and food consumption artifacts (e.g., cans, glass

Table 5. Common Property Types for Work Camps

Property Types	Archaeological Features	Artifacts
Residential Property Type Category		
Tent platforms/pads	leveled areas, flats, pads, stone platforms, small berms, ditches	milled lumber; nails, burrs, and grommets; domestic artifacts and features including lighting/heating; artifacts such as food-preparation and serving vessels; clothing; personal items; faunal remains
Permanent or semi-permanent shelters (huts, shacks, dugouts)	leveled areas, flats, pads, dugouts, chimneys, fire hearths, small berms, drainage ditches	building remains such as milled lumber and corrugated sheet metal, domestic artifacts and features including lighting/heating, food-preparation and serving vessels, clothing, personal items, faunal remains
Bunkhouses	foundations, leveled area, footings, flats, pads, archaeological remnants of buildings or structures	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, and window glass; domestic artifacts and features including lighting/ heating; cots; clothing; personal items
Houses	foundations, leveled areas, platforms, archaeological remnants of buildings or structures	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, and window glass; domestic artifacts and features including lighting/heating; artifacts such as food-preparation and serving vessels; clothing; personal items; furnishings; faunal remains
Landscaping	gardens, rock work, terracing, retaining walls	rock alignments, terracing, walkways, and other decorative landscaping; nonnative decorative plants (e.g., tree alignments, decorative plants, fruit-bearing trees/orchards)
Portable architecture	leveled areas and spurs for boxcars, skid shacks	building remains such as milled lumber, domestic artifacts and features including lighting/heating, artifacts such as food-preparation and serving vessels, clothing, personal items, faunal remains
Support Property Type Category		
Cookhouse	leveled area, pad, foundation, ethnic cooking features (e.g., beehive-shaped ovens related to Basque or Greek/ Italian work camps, U-shaped or hairpin hearths from Chinese work camps), rock rings, homemade barbeque pits	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, window glass; lighting/heating; stove parts; food-storage vessels, crockery, food-preparation and serving vessels and implements, and food containers; faunal remains
Mess hall	leveled area, pad, foundation	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, and window glass, lighting/heating; stove parts; food-preparation and serving vessels (particularly hotelware) and utensils; faunal remains; furniture such as benches; evidence of pest control

Property Types	Archaeological Features	Artifacts
Food storage/ procurement	leveled area, pad, foundation, dugout, root cellar, chicken coops, pig pens, slaughterhouse/butchery, gardens	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, and window glass; food containers including bottles, jars, cans (particularly large sizes); barrel hoops; crate parts; meat hooks, nonnative edible plants
Lavatories/privies	leveled area, pad, foundation, privy pits/features	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, and window glass; privy pits and construction materials; water pipes; personal items including razor blades, toothpaste and hair-cream tubes, combs and hairbrushes, and toothbrushes
Showers/bathhouse	leveled area, pad, foundation	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, and window glass; drainage; sump; water pipe; personal items including razor blades, toothpaste and hair-cream tubes, combs and hairbrushes, and toothbrushes
Commissary	leveled area, pad, foundation	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, and window glass; structural artifacts; lighting/heating artifacts and features; writing implements and other office-related artifacts; personal items; tobacco containers and smoking paraphernalia; small food containers; coins and tokens
Office	leveled area, pad, foundation	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, and window glass; structural artifacts; lighting/heating artifacts and features; writing implements and ink containers; telegraph/telephone wires and implements; furniture
Medical clinic/hospital	leveled area, pad, foundation	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, window glass and hardware; lighting/heating artifacts; medical equipment; bed and cot frames; glass and metal medicine containers; writing supplies
Livestock facilities	corrals, barns, shelters	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, lumber, wire, and fasteners; animal-husbandry artifacts such as curry combs, hoof picks, galvanized buckets, water troughs, and tack
Fire suppression	hose boxes and associated equipment caches	associated equipment

Property Types	Archaeological Features	Artifacts
Infrastructure Property Type Category		
Drainage	drains, ditches, sumps	plumbing elements
Water/gas/sewer utility lines	pipes; wells; developed springs; modified watercourses; filtration systems; catchment/storage systems such as cisterns, tanks, dams, reservoirs, valves, faucets, gates, septic tanks, and sumps; water-conveyance features such as flumes or ditches; water tanks; elevated canals/trestles; box drains	disarticulated parts of a system
Power generation	insulators, copper wire, poles, substation foundation/flat/pad, features related to electrical transmission and distribution	disarticulated parts of a system
Roads	roads, culverts, bridges, retaining walls, signage, safety structures (e.g., guardrails and curbs)	transportation-related artifacts
Trails	pedestrian trails, retaining walls	transportation-related artifacts, rock-lined or rock-retained paths
Quarries	production remains, drill scars	landscape cuts and pits, expended tools and equipment, spoil piles, discarded products and by-products
Railways	railroad grade, roadbed, ballast, ties, rails, trestles, culverts, water tanks, platforms, engine house, incline railway/tramway, hoist house	disarticulated parts of the system, boiler cleanout waste, railroad-related artifacts
Communication-transmission lines	poles, wire, insulators, telegraphic equipment, telephone/communications line	disarticulated parts of the system
Industrial Property Type Category		
Stable/corral	foundation, flat, pad, barns, animal shelters, posts, postholes, fencing	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, and window glass; structural artifacts; lighting/heating artifacts and features; fencing materials and barbed wire; animal-husbandry artifacts
Blacksmith	foundation, flat, pad, portable forges	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, and window glass; structural artifacts; industrial artifacts and features; residue such as clinker, coal, and scale tools; industry-specific objects; rod and bar stock; scrap metal
Machine shop/ equipment foundations and storage	foundation, flat, pad, derricks, cranes, compressors, steam-donkey platforms, boiler platforms, automobiles, wagons, flatbeds, carriages, trucks, heavy equipment	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, window glass and structural artifacts; industrial artifacts and features; residue such as metal shavings, slag, and tools

Property Types	Archaeological Features	Artifacts
Warehouse/storehouse	foundation, flat, pad, dugout	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, window glass and structural artifacts; evidence of stockpiled goods
Work buildings (e.g., packing houses)	large flats, pads, or foundations; tool shed/carpenter's shop	building remains such as milled lumber, stone, corrugated sheet metal, roofing material, window glass and structural artifacts; industrial hardware; tools
Quarries	production remains, drill scars	landscape cuts and pits, tools and equipment, spoil piles, discarded products/by-products
Other industry-specific buildings/structures	foundation, flat, pad, cement batch plant; sawmill (at logging camps and most hydroelectric camps), lumberyards, charcoal kiln	industry-specific building remains, structural remains or artifacts
Recreation Property Type Category		
Recreational areas	foundation, flat, pad, horseshoe pit (drill bits, wooden sandbox), baseball diamond, basketball goal, firepit, clubhouse, social hall, recreational hall, swimming pools, tennis courts, graffiti (includes names/dates in concrete)	tobacco tins, liquor bottles, sports equipment, gaming pieces, musical instruments
Refuse Disposal Property Type Category		
Refuse-filled hollow pits	repurposed hollow pit features, such as privy and storage pits, septic tanks, burn pit, drains	building remains such as milled lumber, stone, corrugated sheet metal, and roofing material; structural artifacts; disarticulated pipes or hardware; domestic or industrial refuse deposited in features
Sheet refuse	sheet refuse	surface scatter (dispersed or concentrated) of domestic and/or industrial refuse
Dump	concentrated sheet refuse or landfills	communal, domestic, and/or industrial refuse deposited in specific location or burnpit

bottles and jars, crockery, enamelware, ceramics, cutlery, or faunal remains) at residential properties might indicate individualized food storage, preparation, and consumption by a group of individuals or a family unit. Early-20th-century investigators sometimes observed that foreign-born workers preferred to prepare their own meals, rather than to eat in the mess hall (Higbie 2003:106). Artifacts from other personal activities, including recreation, hygiene, and health, can provide information on sociability, health maintenance, and medical treatment in the camp.

Landscaping in the form of decorative or subsistence gardens and terracing may indicate an effort by either the camp management or the residents to enhance their quality of living (Figure 78). Subsistence gardening may have been done either for pleasure or to supplement meals provided by the company. Gardens, fruit trees, and landscaping may also indicate seasonal occupation of a camp, the presence of families, or an investment of time in a camp that was occupied for longer periods.

Figure 73. Granite-strewn tent pad, Drum-Spaulding Hydroelectric construction camp, Nevada County, 1910s. *(Photograph by PAR Environmental Services, Inc.)*

Figure 74. Dugout, Chloride Cliff/Chloride City (CA-INY-5461H), Death Valley National Park, ca. 1905–1920s. *(Photograph by Karen Swope.)*

Figure 75. Bunkhouse foundation, Valley View Mine/Mill, San Bernardino County, 1940s. *(Photograph by Archaeological Research Unit, University of California, Riverside.)*

Figure 76. Collapsed house, Chloride Cliff/Chloride City (CA-INY-5461H), Death Valley National Park, ca. 1905–1920s. *(Photograph by Karen Swope.)*

Figure 77. Portable skid shack, probably at Success Dam construction camp near Porterville, Tulare County, 1958. *(Photograph by Statistical Research, Inc.)*

Figure 78. Rock garden at former residence, Valley View Mine/Mill, San Bernardino County, 1940s. *(Photograph by Archaeological Research Unit, University of California, Riverside.)*

SUPPORT PROPERTY TYPES

Support property types include sites, features, and artifacts associated with administrative or support functions. Support facilities were designed to provide (1) board for the workers, as evidenced by a cookhouse or kitchen, mess hall, and food storage facilities; (2) hygiene, as indicated by lavatories, showers, or bathhouses; (3) administrative facilities such as offices, commissaries, and medical clinics or hospitals; and (4) corrals and barns for horses and other livestock. Food, including storage and preparation, was a central concern of work camp life. The diet was probably one of the few redeeming features of life in logging camps throughout the United States; by most accounts, it was plentiful and even healthful (Cornford 1987; Brashler 1991; Franzen 1992; Higbie 2003). Residents of other types of work camps, such as agricultural workers, were not necessarily so fortunate. In the crowded and often unhygienic conditions of work camps, facilities for washing and bathing were a true luxury.

The material remains of support features can include a wide range of building types, such as tents, cabins, wood-frame offices, sheds, privy pits, or dugouts, particularly for food storage (Figure 79). Other food-related features include kitchens and mess halls (Figure 80). Artifacts indicative of boarding support features include wares for food storage, preparation, and serving.

Figure 79. Food-storage dugout associated with a mining camp, Hart Townsite (CA-SBR-3060/H), San Bernardino County, ca. 1907–1920. *(Photograph by Karen Swope.)*

Archaeological evidence associated with diet and with the availability of bathing facilities can vary greatly, because these amenities varied among camps, as has been described in Chapter 2. Artifacts found in association with lavatories and privies, showers, and bathhouses, besides pipes, plumbing, and related items, often include those related to personal hygiene (Figure 81). Administrative buildings may be found near residential areas or in a separate part of the camp (Figure 82). Archaeological deposits associated with administrative offices may include writing implements and other office supplies. At commissary facilities, a variety of material culture could be present, encompassing the full spectrum of domestic and personal items. Artifacts associated with medical offices and camp hospitals may include a variety of items, such as medicine containers and medical equipment, commonly found or distributed in such facilities. Features and deposits related to livestock can include corrals, barns, pens, coops, and related structures. Livestock implies both working animals such as horses, mules, and donkeys, as well as animals that provide food products, like milk cows and chickens, or were food products themselves.

Figure 80. Cookhouse foundation at a hydroelectric camp near Pinecrest, Tuolumne County, early 1920s. *(Photograph by PAR.)*

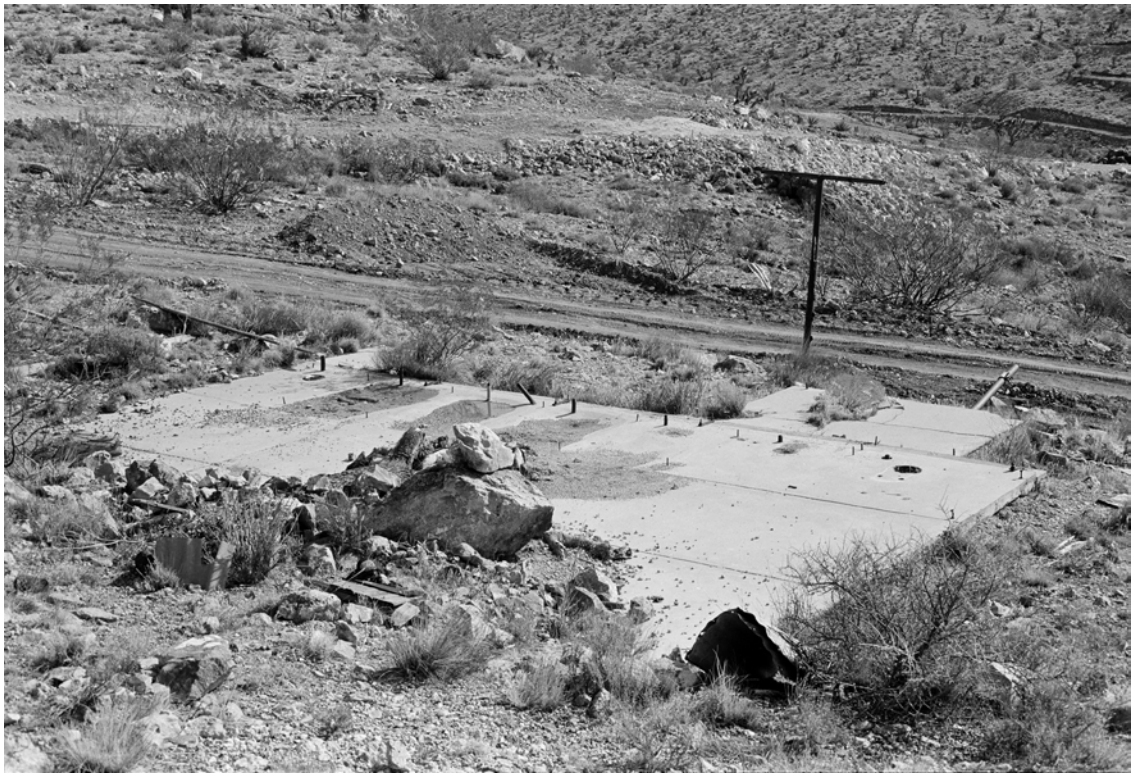

Figure 81. Shower house/lavatory foundation, Valley View Mine/Mill, San Bernardino County, 1940s. *(Photograph by Archaeological Research Unit, University of California, Riverside.)*

Figure 82. Foundation of administrative building, C&K Mine (CA-SBR-6307H), Providence Mountains State Recreation Area, San Bernardino County, 1880s–1950. *(Photograph by Karen Swope.)*

INFRASTRUCTURE PROPERTY TYPES

Infrastructure property types consist of features reflecting the improvements necessary for the successful function of the camp as a whole. These include utility and communication lines, roads, and trails, as well as water, gas, and sewer lines, sumps, and septic tanks or cesspools (Figures 83 and 84). Railroads, roads, and trails are particularly important in interpreting the broader patterns of commerce, trade, and site access, although this type of feature generally extends beyond the boundaries of the work camp (Figures 85–87). Also included in this category are quarries or borrow areas used to supply materials for the construction of roads, structures, and other forms of infrastructure. The presence, type, and scale of the infrastructure can provide information on amenities, such as electricity or running water, and may be used as an indicator of camp conditions with regard to sanitation and personal hygiene. Insufficient drainage, unpaved roads, or poorly ventilated housing and privies may indicate a low level of investment in a camp and its workers. Archaeological evidence of these property types may include disarticulated parts of a system. Depending on the temporal period and industry, some companies, particularly those under the jurisdiction of the State Railroad Commission, were required to inventory all their assets. Archaeologists have been able to use these inventories when recording sites (Baker and Maniery 1997; Baker 2001). Agencies such as the CCIH carried out investigations regarding matters of health and sanitation at various camps throughout California. Those records are available at the California State Archives in Sacramento, and may provide first-hand accounts of specific work camps and work camp conditions.

Figure 83. Depression/drain, Coleman Powerhouse, Shasta County, 1920s. *(Photograph by PAR.)*

Figure 84. Wood-stave pipe (utility line) from a logging camp associated with the Fruit Growers Supply Company, Lassen County, 1920s and 1930s. *(Photograph by PAR.)*

Figure 85. Fordyce Camp road associated with a hydroelectric camp, Nevada County, 1911. *(Photograph by PAR.)*

Figure 86. Trail, Beveridge Mining District, Inyo County, 1877–1930s. *(Photograph by Karen Swope.)*

Figure 87. Railway for a dam construction camp west of Lake Almanor, Plumas County, 1919–1921. *(Photograph by PAR.)*

INDUSTRIAL PROPERTY TYPES

The term "industrial" in "industrial property types" does not refer to the industry that employed the workers but to industrial features, such as buildings, structures, or objects, intended to support the function of the camp itself. They may be present within the camp or off-site, depending on the camp's function and the nature of the project. Elements may include stables or corrals where work animals were contained, blacksmith or machine shops where tools and equipment were manufactured and maintained, warehouses or storage facilities where industrial wares were stockpiled, work buildings (such as packing houses) used to carry out certain tasks, rock or sand quarries, and other industry-specific buildings or structures associated with work at the camp (Figure 88). Dugouts and bunkers were often used for safe storage of explosives in camps where work required their use (Figure 89). Industrial work areas may include waste products, such as tailings, sawdust, metal shavings, slag, cinders and coke, scrap metal, and discarded tools.

Figure 88. Foundation of a work building, Coleman Powerhouse, Shasta County, 1920s. *(Photograph by PAR.)*

Figure 89. Powder storage, Birthday Mine, San Bernardino County, 1924–1951. *(Photograph by Statistical Research, Inc.)*

RECREATION PROPERTY TYPES

Recreation property types include features that range from formal or designed activity areas or facilities to informal activity areas where workers spent leisure time. In some work camps, social activity was facilitated through construction of a communal hall or outdoor facility that had multiple functions, such as for dances, meetings, and sports activities. In other cases, some buildings had multiple functions, where camp workers, management, and their families both ate and socialized. In less formal camps, workers sometimes created simple features for leisure activity, such as horseshoe pits (Figure 90). Archaeological evidence of leisure and recreation activity areas could range from structural remains to outdoor sporting features to something as ephemeral as a scatter of pocket tobacco tins and liquor bottles. Found less frequently, but also important and potentially informative, are artifacts that represent acts of self expression, such as incised names and dates in concrete walkways or foundations, or structural remains with names or other such personal iconography on interior spaces.

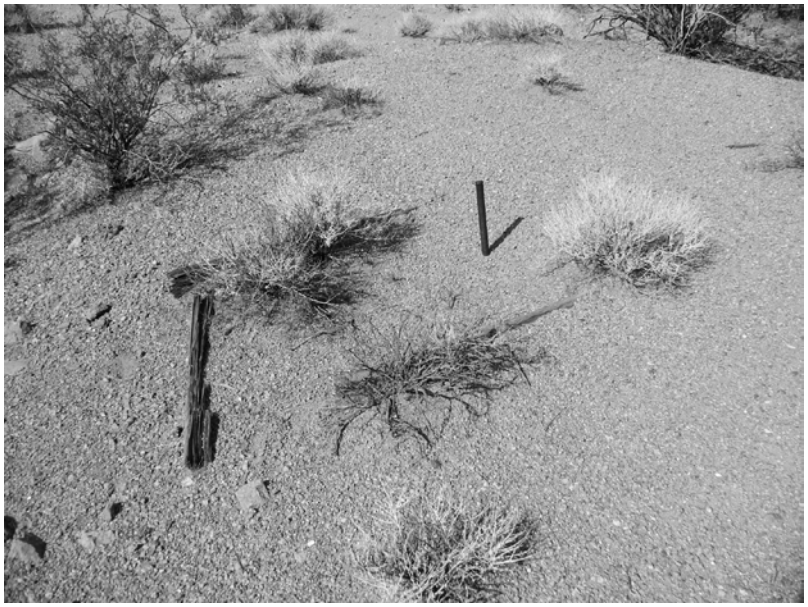

Figure 90. Horseshoe pit, Boulder Electrical transmission line construction camp, Roach Lake, Clark County, Nevada, ca. 1930. *(Photograph by Statistical Research, Inc.)*

REFUSE DISPOSAL PROPERTY TYPES

Refuse disposal property types have great potential to provide important data on work camps. Refuse features in this category may have been created by several of the activities outlined in the property types previously discussed. Evidence of refuse disposal practices may take the form of hollow pit features or surface disposal areas, such as sheet refuse or surface dumps (Figure 91). In addition, features not originally designed for refuse disposal, such as wells, privies, cesspools (Figure 92), and food storage pits, were often repurposed as convenient receptacles for refuse at the end of their use life or upon the seasonal close or abandonment of camp. Such features reflect the refuse disposal activity more than their original function. In some camps, refuse was burned on-site or was collected and discarded along the borders of the camp itself or even several miles away. Some camps used periodic garbage collection, disposing some of the refuse off site.

Figure 91. Dump for a mining camp, Valley View Mine/Mill, Coors and Standard Sanitary Company, Clay Mine/Mill, San Bernardino County, early 1940s. *(Photograph by Karen Swope.)*

Figure 92. Privy from mining camp, Chloride Cliff/Chloride City (CA-INY-5461H), Death Valley National Park, ca. 1905–1920s. *(Photograph by Karen Swope.)*

Unlike more permanent settlements, refuse disposal at work camps was generally communal. The artifacts usually cannot be associated with individual households but represent the refuse of the entire camp. This lack of association is counterbalanced by the short time span of most camps and, relative to most urban settings, a relatively homogeneous residential occupation. The association for a 1922 work camp dump is much tighter than the association for a municipal dump; thus, the refuse can yield significant information. Artifact types found in work camp refuse features may represent activities such as food preparation, consumption, and personal hygiene or may represent industrial activities such as blacksmithing and welding. For some camps, the function of nearby residential or support features could be interpreted by identifying the activities represented by the contents of refuse deposits. Refuse deposits are likely to yield some of the most reliable chronological information that can be collected at work camps, and temporally diagnostic information retrieved from them can be used to elucidate the sequence of activities within a camp or to place a set of camps into proper chronological order. Refuse deposits may also yield data regarding camp demographics (e.g., gender, age, and ethnicity).

CHAPTER 4. RESEARCH THEMES

Building on the broad historic context presented in Chapter 2, including industry-specific overviews, this chapter introduces key research themes and questions. The research themes are further examined by linking research questions with the property types presented in Chapter 3. Work camps share many common elements expressed in the historical and archaeological record; consequently, archaeological research questions intersect many, if not all, of the major research themes.

Although, as a whole, the histories of many of California's industries have documented the technologies that generated work camps, little attention has been devoted to the laborers themselves or to the camps that were established to house and feed them and, often, their families. Even fewer data exist for the archaeological remains of work camps that represent both employee and employer.

In addition to the physical remains and material culture that are the basis of historical archaeology, research themes and questions depend on thoughtful evaluation of documentary information and oral histories, whenever available. Archival documents, archaeological evidence, and oral history are independent lines of evidence that can assist in comparative analysis and address biases and gaps present in each individual source. Poorly documented remains are sometimes assumed, inappropriately, to have little value for addressing important historical research questions. Archaeological sites and features may be able to inform and validate important research questions regardless of the availability of historical documentation. Although limited documentation may make sharply focused associations difficult to define, one of historical archaeology's strengths is its ability to illuminate poorly documented themes. The individual researcher must clearly identify both the strengths and weaknesses of the data when evaluating a site. The implementation plan in Chapter 5 presents additional guidance on using the research themes and questions to evaluate the information potential of archaeological properties.

Work camps were the product of the industry they supported and the amount of capital invested. They may have been part of a large industrial landscape, were often ephemeral and archaeologically distinct. Most research has focused on work camps for specific industries, such as logging, mining, dam construction, and railroads. Until the first few decades of the 20th century, information about work camps and labor issues in California had been limited to newspaper accounts, journals, diaries, and first-person accounts. Information about work camps from the first two decades of the 20th century may be interpreted, in part, through government reports that resulted from labor legislation.

Work camps may be treated both as a distinct property type and as a broader phenomenon, associated with industrialization, the demand for reduced labor costs, and government intervention, such as New Deal federal assistance programs (Van Bueren 2002a, 2002c). Identifying commonalities and distinctions between work camps in different industries and geographic areas (such as oil camps in Kern County, agricultural camps in Imperial County, and water development-related camps in Imperial County) is crucial towards a broader interpretation

of this type of property. As Baxter (2002) noted, oil field workers at Squaw Flat in Ventura County created an intentional spatial separation between work space and domestic space that was not designed into the work camp's structure. Van Bueren (2002b) examined ethnic and class differences at the Alabama Gates Aqueduct construction camp. Maniery (2002) studied health and sanitation at the 1920s Butt Valley Dam construction camp, particularly in relation to corporate compliance with the 1915 Labor Camp Act. Outside California, McGuire and Reckner (2002) focused on the 1914 strike at the Ludlow coal-mining camp in Colorado, stressing the importance of class struggle and worker agency in effecting material change.

Historical studies that address work camps generally do so as part of broader discussions of rural labor history. Most of these studies focus on agricultural labor but are also relevant to the study of work camps as a whole. Street's (2004) *Beasts of the Field: A Narrative History of California Farmworkers, 1769–1913* focuses on agricultural labor and includes information on immigrant groups such as Chinese, Japanese, Europeans, and Native Americans. Street's study is also important because of its descriptions of work camps and its approach to interpreting everyday life among rural laborers.

Mitchell's (1996) historical geography of farmworkers, *The Lie of the Land: Migrant Workers and the California Landscape*, is of particular interest to archaeologists because of its focus on the material conditions of rural labor and on how agriculturists, workers, and government agencies, such as the CCIH, sought to create and recreate the landscape and work camps according to their own interests. Though focused outside California, Higbie's (2003) study of midwestern "hoboes," *Indispensable Outcasts: Hobo Workers and Community in the American Midwest, 1880–1930*, contains valuable information on the transient workforce and its material conditions, including work camps. Higbie's emphasis on this class of worker, rather than on workers associated with specific industries, provides a unified consideration of the rural workforce. Woirol (1992) edited notes compiled by Frederick C. Mills, a CCIH investigator in California, who went "undercover" as a transient laborer working at a packing plant and a logging camp.

PROPOSED THEORETICAL ORIENTATION: CONTEXTUAL ARCHAEOLOGY

Although historical archaeologists approach the interpretation of material culture from many contemporary intellectual frameworks, the orientation presented in this volume is based on contextual archaeology. Postprocessual theory, first put forth in the mid-1980s by Ian Hodder (1986), was, in part, a reaction to the perceived objectivism of processual archaeologies. Based on postprocessual thought, contextual archaeology emphasizes interpretation of material culture within the specific historical, social, and cultural contexts of behavior rather than in the context of the universal influences sought by practitioners of processual archaeology. This approach parallels the general trend in the social sciences toward problems of "contextuality, the meaning of social life to those who enact it, and the explanation of exception and indeterminants rather than the regularities in phenomena observed" (Marcus and Fischer 1986:8). Structuralism, symbolism, critical theory, and "meaning" (Leone 1986) are stressed in interpretation. Contextual archaeology also recognizes the active role of both material culture and the archaeologist in the interpretation of the past.

Many archaeologists have found the processualist hypothetico-deductive model useful in achieving methodological rigor. Others find that the approach has solidified into a canon that does not tolerate alternative ways of knowing. An important element of the contextual approach is that the research issues it emphasizes are not as amenable to hypothesis testing as those of processual archaeology. Philosophers of science have been insisting for several decades that rigor in archaeology does not require an exclusively hypothetico-deductive approach (Feyerabend 1988; Wylie 1992, 2002). Wylie (1992, 2002)was critical of the perspective that archaeological data are important to the degree that they allow scholars to "answer questions" about the past; he said that this is based on a naive and misleading model of historical archaeology as a set of techniques for discovering specific facts—missing tidbits of chronologies.

Deetz (1988:367) characterized research in archaeology as follows:

> In the nonexperimental sciences (if archaeology is indeed a science), precise certainty is rarely achieved. Rather, research takes the form of a gradual refinement of explanation, as more and more factors are incorporated into the construction of the past that one is attempting to create. In historical archaeology, this refinement is best accomplished by maintaining a balance between the documentary and the material evidence, being always mindful that, to be a productive exercise, the results should provide a more satisfactory explanation than would be forthcoming from either set of data alone.

For archaeologists and historians alike, questions guide research rather than constrain it. Questions are not answered in the conventional meaning of the word, for "there is no final and definitive account of the past as it was" (Shanks and Hodder 1998:70). Archaeologists have embraced this outlook, desiring to "seek alternative models of science that resolve the problems of positivism" while retaining "general scientific goals" (Whitley 1998:24). Contextual or interpretive archaeology is such an approach.

The differences between processual and postprocessual models reflect dissimilar ideas about what artifacts mean. Whereas processual archaeologists strive to predict human behavior through scientific models, postprocessualists insist that this is a vain effort—that the meaning of artifacts changes with the context of their use (Hodder 1986; for several California examples, see Praetzellis and Praetzellis 2001). Van Bueren and Wooten (2009) proposed an approach for achieving a theoretical balance between the necessity of contextualizing findings and the need for comparative analysis, arguing that study of intersite patterning is imperative if archaeologists are to look beyond idiosyncrasies and arrive at appropriate interpretations. A comparative-analytical approach allows consideration of sites in regional, national, and world systems that may have relevance to the property under study. Among others, Hardesty (1988:1–5) has successfully applied this approach in the investigation of historical work camps. Comparison of sites to those in other spheres would prove particularly useful for investigating work camps that were created by corporate or government entities.

Archaeologists who apply processual theory are concerned with the development of general principles in relation to large-scale explanatory models in which individual cases are seen only as means to an end. Postprocessualists often work in very different territory: they examine, at the smallest of scales, the (re)constructed experiences of groups, families, and individuals within elements of contemporary social life to which they had access, in the researcher's opinion. The

contextual approach is based on something that historical archaeologists have known for years: some of the most effective work is done at the small scale, emphasizing the commonplace, giving a voice to those whose history is not reported in written records, and bringing the lives of the disfranchised into focus. This very characteristic of the data—their placement in the realm of the small-scale, mundane, and personal—puts historical archaeology into a position to call into question and offer an alternative to universal interpretive models. According to Johnson (1999), processual archaeologists' insistence on finding coherence and pattern in human history through large-scale and normative analyses has unforeseen consequences. This approach, he suggested, tends to mask and homogenize the diversity of past human experience that can emerge only through small-scale analyses. In a parallel trend beginning in the 1970s, many historians have also moved away from "global perspectives and meta-narratives," focusing instead on events, biographies, and local vantage in what has been termed "microhistory" (Iggers 2005; School for Advanced Research 2006:28). A contextual approach to historical archaeology provides access to "a space between often very powerful master narratives of cultural and social identity and much smaller, stranger and potentially subversive narratives of archaeological material" (Johnson 1999:34).

RESEARCH THEMES FOR WORK CAMP PROPERTIES

California work camps share many common traits, which allow researchers to examine them through broad research themes. The following research themes incorporate the major topics addressed in the historic context presented in Chapter 2:

- Camp Function, Design, and Conditions
- Household Composition and Lifeways
- Labor Organization and Management Policy
- Immigration and Ethnicity
- Technology

These themes focus on the physical characteristics of a work camp as well as the cultural or social composition of the camp, the camp's organizational structure and the relations between employees and employers, the employment of immigrant and native laborers, and the application of technology at the camp.

Work camps resulted from a situation relatively unfamiliar to most contemporary Americans: the construction and operation of living spaces, as well as the provision of food and other services, by employers for their employees. This situation enmeshed employees, contractors or intermediaries, and, sometimes, employers in relationships that deviated from the idealized contractual relation of wage labor: individuals in the marketplace, exchanging a set amount of labor for a set amount of money. The isolation and mobility of most work camps compelled employers to offer housing, food, and other services to their employees. Employers, on occasion, had to invest valuable capital in a physical plant for which little or no continued financial return was possible, and employees found themselves subject to workplace relationships even outside the workplace. The differing ways in which this employee-employer relationship evolved and its struggles and successes, are a central theme in the study of work camps.

CAMP FUNCTION, DESIGN, AND CONDITIONS

The theme of Camp Function, Design, and Conditions focuses on how and why work camps were organized, why certain settings were chosen, and how the camps were used. This theme also establishes the building blocks necessary to address more-complex research questions. Proximity to work, environmental constraints, and comfort were among the variables contributing to choices of particular locations for camps. Camps ranged from tents to vernacular or folk architecture to prefabricated standard designs that could be quickly laid out to meet the needs of a particular project. Work camp organization often reflected management philosophy, laws and regulations, cultural issues, economic factors, and environmental constraints. Understanding camp function and design is an important part of any study and helps address other themes.

At the most basic level, reconstructing the history of an individual camp is essential for the interpretation of archaeological data and, thus, of the lives of the camp's occupants. Dates of construction, configuration, use, modification, and abandonment of site structures provide important information on the history of the camp and the behaviors of its inhabitants. Understanding work camp conditions should inform some of the research questions that address how camp inhabitants adapted living and working spaces for industrial purposes, personal needs, health issues, or cultural values.

Camp conditions have been revealed in the archaeological record in a number of ways. For example, Conners (1997) discovered privies and outdoor toilets at logging camps in the central Sierra Nevada. Van Bueren (2005) and Van Bueren and Wooten (2009) identified similar property types during studies of farm labor housing in Amador County, California. Rogge et al. (1994) were able to trace changing sanitation conditions through time at dam construction camps in Arizona. Maniery and Compas (2002) identified sanitation features associated with different classes of workers at Camp Almanor, a dam construction camp in the northern Sierra Nevada, where management was afforded running water and sewer connections but workers used a communal latrine and an outdoor spigot. Rogge et al. (1994) identified improved living standards, particularly with respect to housing, at Arizona dam construction camps.

A study of layout at several work camps, including Lava Caves railroad logging camp in Oregon (Ross and Sekora 1995) and Butt Valley (Maniery 1999) and Almanor dam construction camps in California (Maniery and Compas 2002), identified industrial features near the camp center and residential areas around the perimeter. Studies at oil work camps have revealed that workers and their families lived alongside the oil-drilling location and that when a division of space existed, it was informally created by the workers themselves (Hamusek et al. 1997:85–88; Baxter 2002). Case (2001) studied segregation based on class, ethnicity, and gender at an Oregon railroad camp and found that segregation appeared to be based on marital status or labor rank. The presence of schools and community centers has been noted at long-term work camps such as dam construction camps in central Arizona (Ayres et al. 1994; Rogge et al. 1994; Rogge et al. 1995), and at relocation camps for migrant workers.

Several studies of railroad logging camps (Vaughan 1985a, 1985b, 1990; Sawyer 1987, 1988; Elliott 1990) have assessed spatial organization and layout. The presence of large food cans is indicative of food preparation for large groups (Van Bueren 1989). In studies of camps where no cookhouse was provided, the presence of household refuse indicative of a more typical domestic situation has been observed (Ross and Sekora 1995; Maniery et al. 1996:88–98). Work camp

research may also involve contrasting archaeological data from corporate camps with those from independent operations (Maniery et al. 1996:95–98).

The following research questions on the Camp Function, Design and Conditions theme have been derived from archaeological and historical literature and are offered here to stimulate creativity in constructing site-specific questions. Some are unlikely to be addressed solely through archaeological research, but archaeological findings can inform other avenues of inquiry. This research theme is essentially a building block that provides important information for addressing the subsequent themes.

- How long was the camp occupied and how many people lived there? Was the camp occupied for a single task, seasonally or sporadically (repeatedly)? How does the archaeological record reflect the period or periods of occupation?

- What is the layout of the camp? Was it designed or vernacular, formal or informal? What were the physical, economic, or sociocultural constraints and opportunities that affected the location and design of the camp and its structures? What types of landscaping elements were present, and where are they located? What adaptations to specific environmental/work conditions are evident in the camp's layout?

- Was the camp operated by a corporation, company, government agency, or contractor or by the workers themselves? Is responsibility for operations reflected in the infrastructure; if so, how? How did the industry, corporation, or government affect the layout and location of camps?

- What type of housing was provided at the camp? What were the dimensions of the structures? How were they constructed? How many people lived in each structure? What can be learned about camp members from the features or material culture? How does the archaeological record reveal the homes of laborers and administrative personnel? How do remains of building or structural features and associated materials reveal site-specific activities such as cooking, eating, bathing, washing, recreation, and home health care?

- What support facilities (e.g., outhouses, bathhouses, schools, churches, commissaries, mess hall, meat house, or company or corporate office) existed at the camp? Was a machine shop or blacksmith shop present at the camp; if so, how was it organized? What types of fabrication and repair were performed on-site? What kinds of adaptations and innovations, if any, are indicated? Did the camp have a communal dining structure and central facilities for food storage and preparation, or did workers prepare their own food?

- What utilities did the camp offer? What drainage systems were created? How were water, gas, and electricity supplied? What were electricity and gas used for at the camp? What parts of the camp were equipped with utilities? What type of power was used for cooking and for lighting the camp?

- What building or structural features, such as pads, foundations, or footings, indicate the camp's function and permanence in relation to other camps in the area? For example, was it a main camp or a satellite camp, such as a surveyor's camp? Was the camp portable? How can the remains of a permanent building or structure be distinguished from the

archaeological evidence of a mobile building or structure? What permanent or semi-permanent structures were present at the camp?

- What evidence, if any, indicates that the inhabitants altered or adapted the housing to suit their own needs or desires (e.g., informal features and efforts to personalize residential spaces)?

- What kinds of health and sanitation practices were employed at the camp? How was human and gray-water waste handled (e.g., privies, septic tanks, cesspools)? What were the facilities for cleaning, washing, and showering? How many sanitation units were provided, e.g., the number of indoor toilets, privies, etc.? What differences are apparent between sanitation facilities for workers and those for administrative staff? Is a camp medical facility evident? If so, what kinds of medical procedures and treatments are indicated by features and material culture?

- Were roads and paths within the camp engineered, or were they constructed without a specific design? How do the transportation features and landscaping relate to the physical or spatial arrangement of structures in the camp or between camps? Was material for transportation improvements gathered on site or imported? What types of materials (oil, macadam, gravel) were used to construct transportation features?

- How was refuse disposed of at the camp (burned, buried, dumped, scattered)? Was refuse dumped at a central location or near specific buildings? What was the spatial relationship of housing and refuse? Can different dumps at, or near, the camp identify feature function and activity loci?

- How is employee turnover reflected in camp conditions as revealed in the archaeological record? Do existing documents indicate the rate of employee turnover?

- How did the nature and scale of the institution affect work camp conditions? What differences can be identified between camp conditions at this site and those at larger or smaller operations? How did camp conditions change through time? Did camp composition, health, sanitation, and other conditions change during economic fluctuations; if so, how? Did they vary according to the labor market (i.e., did they decline in times of labor surplus and improve in tight markets) or in response to labor laws?

- How many people lived at the camp? How does the site reflect the population size? What features can be attributed to day laborers who did not live at the camp? How do the physical construction and layout of the camp reflect the duration of residence?

- What forms of communication were in use at the camp (e.g., telegraph, telephone, railroad, road)? Where was communication equipment used at the camp?

- What kinds of work areas were present? Were work areas segregated from or integral to residential areas in the camp, and how did this spatial association influence the quality of life for workers?

HOUSEHOLD COMPOSITION AND LIFEWAYS

The theme of Household Composition and Lifeways addresses domestic activities, the identification and construction of gender (male or female), camp demographics (e.g., the presence of families or extended families), and household lifeways and adaptations, particularly with respect to diet and health. This theme overlaps with the first in terms of work camp conditions. More-general research issues in historical archaeology, such as those relating to consumerism, can also be addressed under this theme.

The study of household composition and lifeways has been conducted at mining sites (Swope 1993:222–225; Hardesty 1994), dam construction camps (Rogge et al. 1995), logging camps (Brashler 1991), and aqueduct construction camps (Van Bueren et al. 1999). Libbon (2011:97–102), for example, determined that CCC camp laborers maintained their discretionary spending habits on nonessential goods during their time in the camp. Rogge et al. (1994) studied demography and daily life at dam construction camps in Arizona by using documentary evidence to identify the multicultural makeup of the camps and stratification of jobs: supervisors were usually Anglo males and laborer positions were occupied by Mexicans, recent European immigrants, and Apaches.

Abundant archaeological evidence has identified a range of after-work leisure activities in California work camps. Praetzellis and Praetzellis (1993) found evidence that such activities, including consumption of alcohol, were tolerated by lax management at a small, independently owned sawmill in Sierra County, as opposed to larger, corporate camps. Praetzellis and Praetzellis were addressing issues of management's control over leisure activities, such as alcohol consumption, that might decrease worker productivity and damage relationships. In other studies, archaeologists have noted that corporate-run camps provided workers with a number of leisure activities, such as baseball, horseshoe pitching, and boxing matches (Hanft 1980; Maniery and Baker 1997; Olsen 2001).

Spude (2005, 2006; Spude et al. 2011) studied bachelor households at several Klondike gold rush sites in Alaska. She found that while the men slept in their boarding or lodging accommodations, they were reluctant to undertake the household tasks traditionally performed by women. Bachelors typically hired the services provided by barbers, tailors, brothels, saloons, and dining halls. Through these studies, Spude developed a testable, statistical approach to the identification of gender markers that has applicability in work camp studies.

The following research questions on the Household Composition and Lifeways theme have been derived from archaeological and historical literature and are offered here to stimulate creativity in constructing site-specific research questions. Some are unlikely to be addressed solely through archaeological research and may require documentary data to inform other avenues of inquiry.

- How is the presence of families related to other variables, such as job, ethnicity, or class? What class positions (e.g., laborer, manager, professional) were afforded the perquisite of having a family in camp? What does existing evidence suggest that workers placed importance on the presence or absence of women, families, and children in camp? How did housing for families differ from that for single men? Did the company encourage married workers and families or prefer single workers, and why? What schools or play areas were provided for families with children? Were families and single workers treated

differently? If so, how? Does any evidence suggest that single workers were monitored more closely than married workers?

- How did the material culture of the camp reflect participation in the creation and maintenance of gender roles (e.g., notions of working-class sociability and masculinity)? What were the class backgrounds of camp residents? Were the dominant notions of appropriate gender behavior reflected in camp layout and architecture, or were they ignored? Did women members of work camps serve in a support or non-support role (e.g., factory worker, part of a family unit, cook, teacher, medical provider). Does evidence suggest that single women had an active role in work camps in California? What was the relationship of women's roles in work camps to the issue of recreation and leisure activities (sanctioned and unsanctioned)?

- What types of food did camp residents eat, and what do these food types reveal about the balance struck among quality, volume, and cost? How was food obtained and supplied? How and where was food prepared? Was meat butchered at the camp? If so, what can be inferred about dietary uses of animals within the camp? What animals were kept at the camp to be slaughtered for consumption or to provide other products, such as milk and eggs? What methods were used to preserve and store food? How significant was spoilage and waste of foodstuffs? Does evidence suggest that gardens were cultivated by the company, the workers, or both? If so, what role did it have in the diets of those at the camp?

- How did workers supplement their diets with purchases or local procurement (i.e., hunting, fishing, and gathering)? What is the context of this augmentation (e.g., local berries were collected and preserved, or the camp operator was not providing adequate food and workers went to greater lengths to augment their supply)? What interaction is apparent between the camp and local markets? Between the camp and distant markets?

- What do clothing and personal items in the artifact assemblage reveal about the ethnicity, class status, and personal taste of camp residents? What details are suggested by the personal artifacts in the assemblage regarding the health of camp occupants? What can be determined regarding home health care practices?

- What recreational facilities were provided by camp management? How did workers create informal spaces and facilities for recreation? Does any evidence suggest management or laborer control of behavior during nonworking hours?

- How rapidly did advances in the technology of food and beverage containers reach work camp? Did management take advantage of new technologies?

LABOR ORGANIZATION AND MANAGEMENT POLICY

The theme of Labor Organization and Management Policy places work camps in the broader framework of California's rural labor history related to unionization and legislation. This theme focuses on the relationships between employers and employees. Management policies might arise from factors such as a genuine concern for employees' well-being, attempts to ensure health and safety, racial or class ideologies, or compliance with labor laws, sometimes following

labor disputes. The theme also focuses on how company policies and attitudes toward employees influenced the design of the camp. It addresses complex questions of divisions among workers, including issues of ethnicity, gender, and skills. Camp policies may have been established to complete a particular job on schedule, to prevent labor unrest in response to racial or class ideologies, or to comply with labor legislation. An important aspect of this theme is the differences between the often ideal world of corporate planning (as depicted in blueprints, plans, and regulations) and on-the-ground realities reflecting practical compromises to, or simple indifference toward, those corporate plans. Although corporate planning may have been based on ideology, it may have been driven by the company's perception of potential economic benefits. Comparative data are an essential component of this theme.

Large-volume, bulk food cans found in refuse deposits during archaeological investigation of California convict labor camps indicate institutional or communal forms of food preparation intended for larger groups (Schinke and Huddleson 2004; Hamusek et al. 2009). An archaeological context for CCC and WPA sites prepared by Goodfellow et al. (2009) provides guidance specific to this type of government or institutional work camp. Government-sponsored work or labor camps in several western states have been studied archaeologically and have provided useful comparative data (Smith 2001; Schoen 2004; Howe 2009a, 2009b; Libbon 2011; Tuck 2011). Case (2001) studied corporate provisioning and forms of control through segregation of employees at the 1880s Hogg Railroad camp in Oregon.

The potential for evidence of divisiveness or class conflicts among camp workers should not be overlooked. Forms of segregation have been identified at several California dam construction camps, including Butt Valley and Camp Almanor (Maniery and Compas 2002). Van Bueren (1989) found archaeological evidence of workers' bunkhouses and wood-frame houses for managers and a doctor at a Tuolumne County work camp. Refuse deposits associated with the camp housing reflected differential status among workers. Additionally, Wurst (1999) and McGuire and Reckner (2002) explored relational class as an alternative way to study labor camps. In this approach, classes are defined by their relationship to the means of production and to each other (McGuire and Reckner 2002:46).

Paternalism and corporate control were addressed in archaeological investigations at dam construction sites in Arizona (Rogge et al. 1995) and the textile manufacturing industry in Massachusetts (Mrozowski et al. 1996). Resistance to corporate control might have taken the form of sloppy work or outright sabotage, particularly at camps where documentary data or oral history suggests unrest or contention.

To date, no archaeological studies of California labor strikes have been conducted. An archaeological study was performed at the site of the 1914 Ludlow Massacre in Colorado (Margolis 1984; Ludlow Collective 2001; Simmons and Simmons 2008). An undergraduate teaching tool based on that investigation has been developed (Teach Ludlow CO 2012). As part of the United Mine Workers of America's effort to unionize the Colorado mining industry, this strike camp housed some 1,000 striking coal miners and their families after eviction from company housing. A battle between the Colorado militia and the strikers resulted in 19–25 deaths (including those of two women and 11 children) and the destruction of the tent encampment by fire. West Virginia was the location of a similar battle in 1921: thousands of striking coal miners engaged the U.S. Army Air Corps at Blair Mountain (West Virginia State Archives 2012). Archaeological studies at the site have revealed details about the battle and the

miners involved, including the magnitude and ferocity of the struggle, types of weaponry, amount of ammunition used, direction of fire, and the movement and approximate location of miners and troops (Nida and Adkins 2011; Pringle 2010; Patel 2012).

The following questions on the Labor Organization and Management Policy theme have been derived from archaeological and historical literature and are offered here to stimulate creativity in constructing site-specific research questions. Some are unlikely to be addressed solely through archaeological research; archaeological findings can be used in concert with other types of data to inform other avenues of inquiry.

- Were workers transient or seasonal? Did ethnicity play a role in transience or seasonality? Were the workers skilled or unskilled? Were they segregated, and if so, by ethnicity or religion, or by skill?

- Did the camp reflect the labor market of the period in which it was occupied? What efforts were made to attract and secure labor through improvements in housing, diet, and other amenities (flush toilets, hot/cold showers)? Were the costs of these amenities passed on to the members of the work camp?

- What plans and regulations guided the camp's operation? What was the impact of legislation and state involvement regarding camp conditions? How do material remains indicate compliance with regulations? If the real situation deviated from that prescribed through law or policy, what are the differences, and what can be said about their causes? How does the camp reflect corporate/institutional policies with respect to formal layout, sanitation, amenities, and conformity to legislation, such as the 1915 Labor Act?

- In what ways did the corporation or institution impose a moral or disciplinary regimen on its workers (e.g., control of alcoholic-beverage consumption or sexual conduct)? How is this control reflected in the material culture? For example, are liquor bottles (or liquor-related medicinal bottles) lacking or other bottles and jars prevalent from camps occupied during Prohibition (1919–1933)?

- How do camp layout and design reflect management approaches to labor (e.g., paternalistic, laissez-faire, or based on racial ideologies)? How did management ideologies and approaches vary with the scale of the operation? For example, was a laissez-faire approach to worker morality more common among smaller operations than among large ones? How did management approaches vary with respect to the workers in question: for example, benevolent paternalism toward skilled workers and "benign neglect" toward unskilled or migrant workers? How did work camp conditions vary with different management approaches? For example, in what aspects of work camp life did paternalistic institutions invested? What aspects were not affected by paternalism?

- Did work camps within different regions, industrial sectors, or institutions change over time in different ways, and, if so, how? Did work camp conditions vary among industries? How did different institutions and industries emphasize different improvements or exhibit differences in decline?

- Was the work camp stratified by skill, class, or ethnicity, and if so, how was it reflected in artifact types, housing, and camp layout? Was stratification strictly institutional, or did

workers self-segregate or segregate other workers? How are tensions among groups of workers reflected in the material record? How do patterns of stratification among different groups of workers vary through time? What distinctions in living conditions are apparent for workers with different positions? Does the material record indicate that some jobs, such as cook, afforded higher status within the camp, and, if so, how?

- How was the workforce hired (e.g., though labor contractors, employment agencies, government relief)? What material differences can be observed among camps with different operator types (e.g., labor contractors and companies)?

- How was the workforce organized? Was the organization ethnic or class based? How is the organization of the workforce reflected in the material culture through, for example, improvements to housing conditions, support facilities, or diet?

- What was the impact of episodes of labor struggle on camp conditions (improvements, increased surveillance, nothing)? What differences can be observed in camp conditions between periods of labor organization and lack of organization? Does evidence indicate that differences in labor activism among industries are related to differences in camp conditions?

- What evidence indicates that workers strayed or resisted efforts of management to structure their time by, for example, drinking on the job? Is there archaeological or documentary evidence of sabotage in workplaces: for example, broken tools and equipment? How did labor and management respond to labor disputes, and did this influence work camps? How were work camps used by industries or private contractors to control communication and influence dispute resolution?

- Did camp authorities obtain food and supplies locally, or were items imported? Was fresh or freshly packaged food provided for workers, or did management opt for non-perishable foodstuffs?

IMMIGRATION AND ETHNICITY

The theme of Immigration and Ethnicity highlights the important role of work camps in understanding immigrant labor in California. This theme concentrates on immigrants as part of the labor force, but each immigrant group also has a range of research issues specific to its cultural experience. Immigration and ethnicity were key factors in the state's historical-period labor force, the proliferation of contract laborers and labor contractors, and legislation that was designed to protect laborers from sometimes ruthless and predatory practices in hiring, unfair wages, and poor working conditions. The discussion of labor and immigration in Chapter 2 presents an overview of variations in camp housing with respect to the immigration status of workers. The topic of intolerance and prejudicial treatment directed toward minority groups in California is addressed in several overviews (Heizer and Almquist 1971; Ramsey and Lewis 1988; Chatterjee 1998) Although relationships among ethnic groups were not always adversarial (Amaro 2004; Barba 2004), conflicts among specific ethnic groups in work camps, and between camp workers and their employers, are documented.

The Labor and Immigration section of Chapter 2 contains information about archaeological studies that have focused on work camps occupied by specific ethnic groups. Information about ethnic groups may have to be obtained through research specific to the industries in which those groups are represented.

The archaeology of Chinese workers has been studied at railroad construction camps (Chew 2004; Baxter and Allen 2008; Merritt 2010), mining work camps (Hardesty and Hattori 1982, 1983; Cameron 1985; Blanford 1987, 1989; Hardesty 1988, 1989; Cheney 1992; Earls et al. 1993; Bell 1995; Dixon and Prouty 2001), and fishing camps (Hatheway and Greenwood 1981; Axford 1984, 1987; Schulz and Lortie 1985; Schulz 1996; Braje and Erlandson 2006; Braje et al. 2007; Julian 2010; Williams 2011), for example. Archaeologists have demonstrated that Chinese camps provide information about social behavior and cultural geography (Chace and Evans 1969; Wrobleski 1996; Rogers 1997; Mires and Hutchins 1998).

Data recovery excavations at the Brown and Sanderson Farm, Amador County, focused on the material culture of Native American and Chinese and other immigrant laborers (Van Bueren 2005; Van Bueren and Wooten 2009). An archaeological study of charcoal-production sites in four coastal California counties was devoted to Italian immigrants (Whatford 2000). Work camps associated with Chinese colliers in Truckee yielded material culture frequently associated with Chinese (Elston and Hardesty 1981:96–97; Elston et al. 1982; Sharon Waechter 2006, pers. comm.). Material culture associated with specific ethnic groups have been used to contrast the lives of European American and Chinese workers in logging camps (Douglass 2002) and to identify the presence of a Chinese cook at a dam construction camp on the Santa Ana River (Foster et al. 1988). The changing ethnic composition of logging camps, as one example, may reflect different refuse-disposal practices based on ethnicity and tradition (Ayres 1983).

The following questions on the Immigration and Ethnicity theme have been derived from archaeological and historical literature and are offered here to stimulate creativity in constructing site-specific research questions. Some are unlikely to be addressed solely through archaeological research; archaeological findings may be combined with data gleaned from documentary sources to inform other avenues of inquiry.

- What were the ethnic, racial, or cultural backgrounds of the workers? Were any of the workers migrants; if so, from where? If migrants were present, what was the type of migration (e.g., chain, circular), and is this reflected in the material culture? How did people travel from job to job (e.g., single men traveling light, families with household possessions)?

- Were ethnic food preferences and cooking techniques practiced in work camp settings, and, if so, how? Does evidence indicate that workers at the camp obtained ethnic foodstuffs and supplies from local or non-local sources?

- In what ways do clothing-related and personal artifacts reflect ethnic or cultural backgrounds of workers, or management?

- Are nativist, racial, or other ideologies expressed in work camp design and conditions; if so, how? Were ethnic groups segregated within the camp? Do camp features reflect cultural accommodations to the workforce, such as bathhouses or religious facilities?

- Were efforts made to foster certain kinds of worker behavior through, for example, programs of "Americanization" by acculturation and assimilation? Does evidence indicate efforts to control or oversee the workers and their families during unpaid time?

- Can improvements or declines in camp conditions be attributed to changes in dominant social attitudes (e.g., during periods of nativism or of greater concern over labor strife), and, if so, how?

TECHNOLOGY

The theme of Technology reflects the nexus among labor, equipment, machinery, tools, and techniques specific to a particular industry and how they function together to increase productivity and efficiency in a particular work camp environment. Although improved technology increased efficiency and productivity, it sometimes had an inverse effect on the prospects of workers, whose jobs often depended on the demand for less-skilled labor. Better technologies often led to a smaller labor pool that was more highly skilled and received higher wages.

Teague (1987) suggested that archaeologists attempting to understand the social impacts of industry should search for evidence of spatial segregation and clustering in housing, as well as evidence of differential access to goods, including food. In addition, "if evidence for status differentiation can be persuasively demonstrated, [do] these differences hold for large and small industry alike, and at what stage and in what circumstances [do] they appear in the archaeological record[?]" (Teague 1987:212).

Many archaeological investigations have focused on industry-specific aspects of work camp sites. At some work camps, identification of specific technological activities may be possible. For example, Vaughan (1990) concluded that a railroad camp blacksmith was doing general-purpose blacksmithing, not repairing rail. Buckles (1983:216–217) interpreted that the blacksmith at a railroad camp along the San Pedro, Los Angeles, and Salt Lake Railroad was resharpening drill rod tips. Investigations may be able to determine whether the latest technologies were employed at a camp and why or why not. For example, studies by Hayes and Purser (1990) and Praetzellis and Praetzellis (1993) of the Coles-Nelson sawmill work camp in Sierra County showed that sturdy but dated equipment and local materials were employed because they were readily available. The decision apparently allowed a greater investment in labor. Although it is not work camp, Purser (1987 and1992) studies of rural 19th century Paradise Valley in Nevada are useful because they examine the changing preferences for machinery and other goods in an isolated rural context.

Archaeologists working on national forest lands have studied logging work camps (Vaughan 1985a, 1985b, 1990; Sawyer 1987, 1988; Maniery and Baker 1997). Maniery and Baker (1997) identified various types of railroad logging camps that served different functions. The U.S. Forest Service, Pacific Southwest Region, prepared a thematic study of railroad logging camps (Tamez et al. 1983; Lux 1989) that numerous researchers have applied to the determination of significance under NRHP Criterion D (Tamez et al. 1983; Isaacs 1989; Conners 1990; Maniery and Baker 1997).

Charcoal-production sites were studied by Wallace and Wallace (1981), Hattori et al. (1984), and Zeier (1985), and regional variation in technological adaptations for this industry have been noted (Reno 1994, 1996; Hildebrandt et al. 2000; Ruby and Hildebrandt 2004).

A large body of cultural resource reports focuses on the archaeology of mining work camps. When selecting previous research to be used for contrast and comparison with current investigations, researchers should consider sites, independent of location, where the same commodity was extracted or processed, as well as regional sites, independent of the commodity sought, where work was performed during a similar time frame. Considerable differences exist in mining and ore-processing technologies used in placer vs. hard-rock mining, for example, and these differences are expressed in the morphology and function of mining camps. Studies of small-scale mining work camps, particularly those established during the California gold rush and through the Great Depression of the 1930s, provide an opportunity to study temporal differences related to extraction techniques, living conditions, and ethnicity, among other variables. Some industries required a variety of work camps: for example, for railroad and hydroelectric projects, advance survey crews might create a camp very different from one used by construction crews (Buckles 1983).

The following questions on the Technology theme have been derived from archaeological and historical literature and are offered here to stimulate creativity in constructing site-specific research questions. Some are unlikely to be addressed solely through archaeological research; archaeological findings may be combined with other sources of information to inform other avenues of inquiry.

- Did the work camp employ current or outdated technology? What determines if equipment is outdated? How did management and workers respond to changes in industrial technology, and how are these responses reflected in the work camp? Was equipment abandoned at the camp when work was completed, or was it transported away for reuse?

- What kinds of technological adaptations and innovations are indicated, if any? Does evidence reveal “making do” with supplies and tools at hand? Is the reuse and recycling of materials and tools evidenced? Were materials and tools adapted for other purposes? What does this adaptation indicate about the availability of equipment and supplies at the camp? About economic conditions? About the company or corporation or the government entity?

- What animals or equipment were kept at the camp for use in industrial applications (e.g., mules, horses, tractors, graders, steam shovels and donkey engines)? What is the nature of housing and feeding structures for the animals, and what were the maintenance requirements for equipment?

DATA REQUIREMENTS FOR WORK CAMP RESEARCH THEMES

Data requirements, often referred to as data sets or data needs, are classes of data necessary for addressing the questions explored in the research design. These data are derived from a combination of archaeological inquiry and archival research. The specific questions elicited by research themes, as well as the themes themselves, evolve over time. Through the thoughtful

interpretation of a site's material culture, archaeological data contribute significantly to these evolving discussions. By using these data to elicit answers to research questions—the source of the site's interpretive or informational value—archaeologists can ultimately evaluate a resource's eligibility for listing in the NRHP under Criterion D.

Historical archaeologists rely on a number of complementary data requirements to address the gap between theoretical research and archaeology. These data sets fall into two basic categories of data: archaeological and documentary, or archival. Archaeological data include site-specific information ranging from physical features (such as foundations or landscape features) to artifact-filled deposits (including privies, refuse pits, and other hollow features that have been filled). Information about these deposits can be provided by both the feature and the artifacts or other materials, such as sterile soils. The information contained in both individual classes of artifacts, such as ceramics, and entire assemblages can be used to address research questions. In addition, although not all artifacts or features contain information that is applicable to each research question, archaeological data often can inform more than one question. For example, a refuse dump on the edge of a work camp has the potential to address questions under the theme of Camp Function, Design, and Conditions as well as the themes of Household Composition and Lifeways, and even Immigration and Ethnicity.

Documentary data can be derived from a wide variety of primary and secondary resources and can include any document that sheds light on an archaeological site's history, material culture, or place the site in a broader context. Oral histories, diaries, photographs, and personal letters also are critical resources for researchers. Contextual histories, such as the one provided in Chapter 2, allow researchers to place sites within the broader context of the history of California and beyond. Chapter 5 offers a practical application of data requirements as well as discussions of thresholds and redundancy in data requirements. The discussion here focuses on several categories of data used to interpret a site's material culture in the context of social, cultural, and historical issues.

ARCHAEOLOGICAL DATA SETS

Archaeological data sets include all potential features, such as foundations, other structural remains, and landscaping, as well as deposits containing artifacts. The latter may take the form of hollow, artifact-filled features; surface deposits; sheet refuse reflecting an individual's, family's, or group's use of a property; or camp dumps. Ideally, these features should have depositional integrity, known function, and identifiable associations. Although a tightly dated assemblage is also ideal and may have a higher interpretive value with respect to research themes, a feature or deposit does not have to be tightly dated to contain information. Data requirements for features include but are not limited to the following:

- Deposits with sufficient quantity and variety of materials to support statistically valid analyses
- The locations of features and deposits with identifiable functions, ethnic affiliations, and/or periods of use
- Hollow, refuse-filled features with distinguishable depositional integrity and identifiable association

- Horizontal distribution of features (such as foundations) indicating spatial organization, or sheet refuse indicative of specific activities and refuse pits associated with individual or group disposal patterns
- Landscape features
- Specialized-activity areas such as outdoor ovens, kitchen gardens, cellars/cold-storage areas, or recreational areas
- Layout of features and deposits indicating different residential and/or industrial activity areas

Chapter 3 presents the features and assemblages specific to work camps. Table 5 in that chapter provides a quick reference to property-type features.

An archaeological site's artifact assemblage is the source of primary materials that an historical archaeologist uses to address research themes. Interpreted along with documentary data, these materials reflect aspects of technology, personal economics (such as self-sufficiency), use of commercial products, or ethnic affiliation or cultural traditions. Data requirements related to individual artifacts, artifact classes, and larger assemblages include but are not limited to the following:

- Artifacts in identifiable features
- Sufficient variety of distinctive materials
- Materials associated with specific activities
- A frequency/proportion for minimum number of items (MNI) sufficient to support interpretation
- Materials reflective of self-sufficiency (e.g., canning jars, homemade items)
- Proportion of materials demonstrating repair or refurbishment vs. items showing little use
- Proportion of decorative vs. functional items
- Proportion of items indicative of home manufacture vs. commercial manufacture
- Relative costs of materials purchased
- Materials reflective of ethnic identities or origins
- Materials that are not specific to a particular ethnic group
- Materials that can be identified as to place of origin or manufacture
- Evidence of repair or reuse
- Medicines indicative of health status
- Hidden items indicative of surreptitious behavior
- Artifacts attributable to specific demographic groups
- Abundance, type, and manufacture dates of different artifact classes (e.g., ceramics)

Ecofacts, a subcategory of artifacts, include both faunal and floral remains. Usually, these remains inform questions regarding diet, but not always in expected ways. Parasite studies, one form of specialized investigation, can provide information about the health of community

residents. Other ecofacts can provide information on such topics as commercial vs. home butchering practices, hunting and foraging for resources available near the camp, ethnic dietary preferences and the retention of traditional dietary practices, and the spatial organization of kitchen gardens and truck gardens. Ecofacts include the remains of both wild and domestic species of plants and animals, such as butchered bones as well as processed and whole botanical remains (e.g., seeds, pits, pollen, kernels) that are indicative of diet.

DOCUMENTARY DATA SETS

The information that a site provides through its material culture can be understood best when interpreted in concert with a variety of documentary sources. Primary documentary sources can include, but are not limited to the following:

- Federal census data
- Property tax assessments
- Probate records
- Maps
- Blueprints
- Newspapers
- Letters, journals and diaries
- Family histories
- Church, school, and organizational records
- Vital statistics, including birth, death and marriage records
- Oral histories
- Photographs

Data from comparable archaeological sites, in published and unpublished reports, can put a site into a broader historical context, making the resource more valuable as a research tool. Written documentation and oral history can provide both specific and contextual data that reveal the historical associations of archaeological data extracted from features, deposits, or artifact assemblages at a site. Contextual sources may include primary and secondary source material on California's work camps (see Chapter 2). Archaeological and anthropological literature should be consulted; published and unpublished studies on similar property types are also a critical resource when addressing research questions. These modes of inquiry provide a solid starting point for studies addressing work camps. Both historical and archaeological research must be conducted by a trained professional and at a level of effort appropriate to project goals.

CHAPTER 5. IMPLEMENTATION PLAN

The preceding historic context and archaeological research design are intentionally broad in scope. Designed as a foundation, these chapters provide the kinds of essential context that is impractical to develop for initial archaeological investigations. In most cases, that contextual and thematic framework will need to be supported by additional research focused on the specific archaeological resources being investigated. This chapter offers guidance on how to implement the research design presented in Chapter 4 to evaluate a work camp property under NRHP Criterion D, providing the reader with a five-step process for assessing research potential. Each step is followed by simple examples to illustrate the process. Recommended methods of historical research, archaeological fieldwork focusing on the treatment of work camp property types, and laboratory analysis are then discussed. The methods outlined below are intended to encourage consistency and efficiency during studies of work camps.

HOW TO ASSESS RESEARCH POTENTIAL

The crux of every evaluation under Criterion D of the NRHP or Criterion 4 of the CRHR is an assessment of the property's research potential. Since eligibility under this criterion requires the potential to yield "information important in … history" (36 CFR 60.4[d]), the evaluator must identify the kinds of important information—the data requirements—that are sought, as well as demonstrate that the property is likely to contain that information. National Register Bulletin (NRB) 36, *Guidelines for Evaluating and Registering Archaeological Properties* (Little et al. 2000:29), presents a five-step process for determining the research potential of an archaeological site:

1. Determine the property's structure, content, and classes of data that it may contain.
2. Identify the appropriate historic context by which to evaluate it.
3. Identify important research themes and questions that the data it contains may be able to address.
4. Determine whether the data it contains are of sufficient quality to address these important research issues.
5. Identify the important information that the property is likely to contain.

Each of these steps is explained below with reference to the historic context and research design presented in earlier chapters. It is important to recognize that these five steps do not necessarily constitute a linear process. Often, a researcher garners additional information regarding a property's integrity while researching site-specific history to further define the appropriate historic context for evaluation. Steps 1, 2, and 3 collectively are the process of identifying data requirements: that is, what will be necessary for addressing the research questions that have been identified as important. Steps 4 and 5 address the actual evaluation of the property, a process assisted by the AIMS-R criteria described below. Examples under each step demonstrate how the

steps interrelate. Identifying data appropriate for addressing important research issues is crucial to assessing NRHP eligibility; therefore, this issue must be treated before explaining how the five steps are applied.

DATA SETS AND DATA REQUIREMENTS

As discussed in Chapter 4, data requirements are the categories of data that are necessary to address a given research question. Examples of the range of archaeological and documentary data sets can be found at the conclusion of that chapter. The discussion here focuses on the practical application of data requirements. To determine the construction dates of a series of buildings through archaeology, for example, requires the presence of associated time-sensitive artifacts or stratigraphic integrity or both. To address questions about subsistence requires associated food remains. As Chapter 4 notes, more than one research question may be addressed by a single data set. To avoid redundancy, research designs may present some data requirements in a table or matrix. Although the required quality and quantity of specific classes of data depend on context and research issues, general thresholds of importance are offered later in this chapter.

As archaeological data sets are the sources of the important information required for assessing eligibility for listing in the NRHP under Criterion D, an evaluation must determine whether a site contains or is likely to contain these data sets. Tightly dated assemblages may have higher interpretive value with respect to research themes, but a feature or deposit need not be tightly dated to contain information. Data requirements often include but are not limited to (1) deposits with sufficient quantity and variety of materials to support statistically valid analyses; (2) the locations of features and deposits with identifiable functions, ethnic affiliations, and/or periods of use; (3) hollow, refuse-filled features with distinguishable depositional integrity and identifiable association; (4) horizontal distributions of features indicating spatial organization, or sheet refuse, indicative of specific activities; (5) trash pits associated with individual or group disposal patterns; (6) landscape features; (7) specialized-activity areas; and (8) the layout of features and deposits, indicating different residential and/or industrial activity areas.

EVALUATIVE FRAMEWORKS

Guides to archaeological methods contain many evaluative schemes that use the concept of integrity to work through a set of principles in assessing the archaeological research potential of a specific property or feature. The AIMS-R (Association, Integrity, Materials, Stratigraphy, Rarity) model, adapted from McIlroy and Praetzellis (1997:277), is one of these tools. Although AIMS-R was originally designed to help assess the potential of domestic artifact caches, in particular those found at larger urban centers, the system is broadly applicable to different types of archaeological properties. The sparse nature of the deposits and material culture found at many work camps and their rarity as a resource make careful application of the following criteria critical. The AIMS-R tool and other evaluative frameworks may assist archaeologists in determining the eligibility of a site as a whole or, on a feature-by-feature basis, in determining contributing or noncontributing elements.

- *Association.* The research potential of an archaeological deposit that has reliable sociocultural, historical, and chronological associations is greater than one whose associations are less certain. However, for work camps it is not necessary to know the name of every person in every tent in order to have an association. Association at a work camp is rarely as clear as it is at an urban, residential site. At a work camp, association may refer to a socioeconomic or ethnic group of individuals as a whole. The archaeology itself may in fact be key to identifying associations that have poor documentation.

- *Integrity.* An archaeological feature that is relatively intact has more research potential than one whose physical condition has been compromised. At a rural site, this integrity includes spatial integrity as well as the condition of features.

- *Materials.* The research potential of an artifact cache from a deposit increases with the number and variety of items represented. Work camps have fewer artifacts than are typically found at urban sites. Like rural residents, whose access to town is often limited by distance, those living at work camps tend to reuse and adapt objects to suit their needs. Therefore, work camps do not have the same thresholds for minimum number of artifacts that characterize urban sites.

- *Stratigraphy.* A feature or site that has discrete vertical or horizontal depositional units has greater research potential than an unstratified deposit. An archaeological feature with a complex stratigraphic sequence may provide an independent chronological check on artifact analysis as well as the opportunity to reconstruct the sequence of events that created the deposit. Work camps sites frequently have horizontal stratigraphy; because vertical layering is rarely present their stratigraphy is more aptly about the preservation of the work camp's structure (design) and layout (location).

- *Rarity.* Remains that represent uncommon content or activities have more research potential than remains of well-represented entities. Their scarcity may give these remains significance even when they fail to meet other thresholds of importance. Unique sites, though they have special importance, are not easily compared with more common site types, and their interpretation and evaluation require independent research and creativity.

APPLYING THE FIVE-STEP PROCESS

The initial assessment of an archaeological site may involve several steps, depending on the complexity, condition, and expected research potential of the property, as well as the investigation's legal context (e.g., 36 CFR 800, Caltrans Section 106 Programmatic Agreement, or the California Environmental Quality Act [CEQA]).

STEP 1: DETERMINE THE PROPERTY'S STRUCTURE, CONTENT, AND CLASSES OF DATA

The first step involves gathering baseline data by (1) conducting preliminary historical research to define the site's function, temporal occupation, and associations and (2) recording and identifying the constituents of the site to assess whether potential for information-bearing

features or deposits exists. The historic context (Chapter 2) provides baseline data for the initial assessment of the site. In certain cases, further research or site documentation, along with archaeological investigation, will be necessary, depending on the complexity of the site and the temporal period of occupation. The features and deposits that make up the site are often linked through associated property types that allow researchers to build inferences and to understand a site's history (Chapter 3). Archaeological documentation may include detailed mapping of features and site boundaries, an artifact inventory, or more-involved test excavation. As archaeological excavation is both costly and an impact to the resource, limit the excavation to what is necessary for the evaluation or for preparation of an adequate data recovery plan.

Once a work camp site has been located, base field strategies on expectations of the site's identifiable stratigraphy or features, baseline historical research, and any previous investigations. When appropriate, nondestructive remote-sensing techniques may be useful in identifying artifact-filled pits, foundations, and other subsurface features. The level of site-specific research must be appropriate to the complexity of the site and its data potential. Use the least intrusive and most cost-effective methods—such as simple probing or remote sensing—rather than excavation where they will produce the required information without disturbing intact deposits. Specific approaches and methods that may be applicable are discussed below in the Methodological Consistency section.

James Deetz (1996:128) applied the concept of archaeological focus to assess the research potential of archaeological sites. By *focus*, Deetz referred to the level of clarity with which remains at a site can be determined to represent a particular historical activity. Remains that represent a number of activities or other components that cannot be separated from one another are said to lack focus. A site that has no focus effectively lacks integrity. *Visibility* is the prominence or abundance of the surviving physical remains of a property. Data requirements for Step 1 are archaeological features with identifiable functions as well as artifacts with identifiable functions and production dates. Without these categories of data, the site or feature may lack archaeological focus and visibility. Historical data such as employment records, official camp maps, and oral histories are usually necessary to link the remains to events, processes, and individuals.

In summary, the goal of Step 1 is to establish some basic facts about the characteristics of the site and the discrete deposits and features that it contains. Establishing the essential groundwork for later analyses, the researcher must ascertain the "what, who, when, and where." At this stage, the quality and quantity of archaeological remains at the site are assessed by addressing the following basic questions:

- What is the temporal period or periods of occupation?
- What is the site function?
- What are the site's physical features?
- What classes and quantities of artifacts and ecofacts contained in the various components of the site might contribute data sets for future analysis?
- Who created the site?

- What is the site's horizontal and vertical extent?
- Does the site have physical integrity?

A combination of archaeological observation and documentary research is necessary to answer these questions and to place the site into its appropriate historic context. At the initial phase of study, only preliminary documentary research is necessary to determine the potential for further investigation. Although they provide crucial data, in most cases the answers to these questions do not constitute the *important* information required by NRHP Criterion D. Archaeologists use these questions as building blocks to help assess whether a site has the archaeological focus and integrity necessary for addressing more specific research questions.

In some instances, a site could be determined ineligible for listing in the NRHP after the conclusion of Step 1 if (1) potentially eligible archaeological remains are unlikely to exist at the site (e.g., occupation was ephemeral; septic tanks rather than earth privies were used; refuse was disposed of off-site) or (2) the site's integrity has been compromised by post-depositional disturbance (as evidenced, for example, by a lack of stratigraphic integrity and mixing of deposits from different periods). Again, it is important to consider that work camps were often short-term occupations that might retain integrity and be eligible for listing in the NRHP despite the absence of long-term, stratified deposits.

To move on to Step 2, the data must be supported by analysis indicating that the property retains vital characteristics as previously defined and that further investigation is likely to yield important data. With very few exceptions, properties that clearly lack archaeological focus and integrity of association do not require further study, as they probably do not meet NRHP eligibility criteria.

The following archaeological scenarios exemplify Step 1, including consideration of data sets and data requirements:

THE FIRE RING CAMP

- *The Archaeology*: A stone fire ring containing three sanitary cans is found during an archaeological survey. Recent logging has extensively disturbed the area, and no other features are evident.
- *The History*: A review of secondary sources and previous cultural resource studies suggests that activities in the area included recreational hunting and a surveyor's camp for a water system that dates to ca. 1911.
- *The Analysis*: Physical evidence alone does not allow determination of a precise date for the surface artifacts. Although the property's physical integrity may be intact, the association remains ambiguous. The AIMS-R criteria are not met if the property does not have association, and the fire ring is unlikely be determined eligible for listing in the NRHP under Criterion D. A different conclusion regarding site eligibility may be reached, however, if the feature is part of a distinctive pattern of similar fire rings and surface can concentrations over a large area. In that situation, association may be easier to determine, and ultimately the property may be eligible under Criterion D.

THE REFUSE PIT

- *The Archaeology*: A refuse pit is discovered during a survey for a bicycle trail. Initial analysis indicates that the feature contains a variety of datable artifacts—consisting mainly of cans and bottle and ceramic fragments—that suggest production dates ranging from the 1870s to the 1880s. A terrace just upslope from the refuse pit contains a sparse scatter of tent parts.

- *The History*: Secondary sources provide only scant information regarding mining and other activities in the vicinity. Historical maps from the late 19th century depict a water-conveyance ditch but no other related features. Approximately 50 feet downslope, outside the project area, is a substantial ditch that was constructed in 1878 to convey water to mine workings in the foothills.

- *The Analysis*: Inferring that the refuse pit and tent pad are from a temporary occupation on the terrace is reasonable. As determined from the dates and the lack of other occupation in the area, these features probably indicate a work camp for the construction of the ditch or a ditch tender's cabin. The initial data are adequate for inferring that the feature retains integrity of association, has focus, and has the potential to meet the AIMS-R criteria. Therefore, its research potential is worth pursuing.

DATA REQUIREMENTS

- *Documentary Sources*: Begin with secondary sources that provide a broad understanding of the type of resource and its major constituents. If secondary sources fail to provide sufficient data, conduct limited primary-source research, which may include a review of maps, photographs, government reports, and newspaper accounts.

- *Archaeological Data*: Archaeological features with identifiable functions; archaeological artifacts with identifiable functions and dates.

STEP 2: IDENTIFY THE APPROPRIATE HISTORIC CONTEXT

Moving beyond the initial research outlined in Step 1, Step 2 seeks more focused, site-specific data—both historical and archaeological—and, if necessary, enlarges the scale of research to assess the site's place within a broader historic context. At this stage, the researcher seeks to answer questions such as the following:

- What was the site's role in local, regional, national, or international history?

- What activities are known to have been carried out at the site?

- Who occupied the site?

- Was it affiliated with a company?

- How well does the site represent important historical events identified in the historic context? Is this site representative or unique in comparison to other sites where similar activities were carried out?

- To what extent has the site been disturbed?
- Which of the site's components have archaeological focus?

As noted above, the answers to these simple questions do not constitute the important information required by NRHP Criterion D. Instead, they are an essential step toward determining whether the property contains data that may be used to address important research questions. The archaeologist's goal at this stage is to assess the quality and quantity of archaeological remains at the site. This stage often requires test excavation and laboratory analysis to reveal the site's structure and content. The field strategy needs to be based on expectations of the site's structure from its surface characteristics, previous investigations, and historical research. The level of testing must be appropriate to the objective. Archaeologists are encouraged to use the least intrusive and most cost-effective methods—such as simple probing or ground-penetrating radar—rather than excavation, if they will produce the required information. Research and analysis must be carried out by qualified individuals experienced with the types of sources associated with the category of site that is being investigated.

The historic context presented in Chapter 2 provides a broad foundation for understanding the evolution of California's work camps from the 1850s through the early 1940s. To evaluate a particular property, additional archival research must be conducted to place the property within its site-specific context. This more focused historic context consists of three elements: theme, place, and time. "Theme" implies the principal industry for which the site was developed, its function, and its cultural constituents, such as ethnicity, race, and gender, which can be derived from the categories presented in Chapter 4. "Place" means the geographical location where the activity was carried out and may be identified at a local, state, national, or, perhaps, international scale, depending on the nature of the site. "Time" indicates the period during which the site was occupied or made its contribution to California history. For example, the historic context for the remains of a logging camp near Eureka might be Labor and Logging in Northern California, 1860–1880; for a Filipino agricultural camp, the historic context might be The Role of Contracted Filipino Agricultural Laborers in California's Central Valley, 1920–1940. The formulation of appropriate themes and research domains based on the historic context is addressed more thoroughly in Step 3.

To create the site-specific context, focus archival research on the period represented by the archaeological remains. Secondary and primary sources, including oral accounts, may contribute to development of the historic context. Concentrate historical research on the most cost-effective sources of the information: in general, secondary sources followed by primary documents at a level of detail in keeping with the project scope. Certain records, particularly those published by the government, may be biased because of restrictions placed on those who gathered the data and the constraints applied by political entities, such as legislative bodies or agencies.

One of the goals of historical research is to establish the property's period of significance, defined in NRB 36 (Little et al. 2000:34) as "the time range during which the property was occupied or used and for which the property is likely to yield important information." For example, an archaeologist may determine that a cache of domestic artifacts includes items made in the 1830s, whereas the project historian discovers that a particular family occupied the site at a period beginning with the discovery of gold in California. The artifacts with earlier manufacturing dates, then, are interpreted as heirloom pieces deposited decades after manufacture. The property's period of significance corresponds to the family's occupation from

1849 to 1859. Periods of significance do not necessarily have to have consecutive dates. The essential task is to present an argument why the property is significant and during what period or periods it gained significance. NRB 15 (National Park Service 2002) contains an extensive discussion of this concept.

The following archaeological scenarios exemplify Step 2:

THE CHINESE CONSTRUCTION CAMP

- *The Archaeology*: During a survey, archaeologists identify a series of flats and pads on a steep hillside along with an extensive scatter of 19th- and 20th-century artifacts. The site lies above the filled-in mouth of the Grand Tunnel, an old river-diversion sluice tunnel that was converted to hydroelectric-power generation. An 1880 promotional map for the Grand Tunnel and Mining Company shows the West Portal Camp at this location.

- *The History:* Background and archival research indicates that the Grand Tunnel was constructed between 1880 and 1883 to divert water from the Grand River so that the riverbed could be mined. Local histories record that the Grand Tunnel and Mining Company employed Chinese laborers for this enterprise; consequently, researchers explore secondary data regarding the history of Chinese labor in California. The Grand Tunnel and Mining Company went bankrupt in 1888, and the Grand Power Corporation purchased the tunnel in 1893 for use in hydroelectric generation. The tunnel was widened in 1905 and was enlarged and extended in 1927–1929.

- *The Analysis*: Initially, the archaeologists are excited about the possibility of using the West Portal Camp site to reconstruct conditions for Chinese workers in the years when anti-Chinese sentiment in the United States was at its peak. Artifacts noted on the site surface, including several of Chinese manufacture, represent production dates ranging from the mid-19th century to about 1935. However, this location was also the site of subsequent work camps for the 1905 and 1927 alterations to the tunnel. These subsequent occupations have compromised the integrity of the original camp to the extent that no features can be positively associated with a 19th-century occupation. As a source of data about the conditions for Chinese workers, the site lacks integrity of association and materials. Primary-source research regarding Chinese workers at the site is not warranted, given that no archaeological remains can be positively attributed to their presence.

THE LOGGING CAMPS, PART 1

- *The Archaeology*: An archaeological survey in an area forested with redwoods identifies nine sites, each consisting of various numbers of flats and “can dumps.” The diagnostic artifacts indicate production dates in the 1920s–1930s.

- *The History*: Documentary evidence indicates that this land became part of the holdings of the North Coast Redwood Company in the 1920s. Research into published secondary sources has revealed that this short-lived lumber and milling operation folded by 1939. Only scant primary documentary evidence of this company or its operations exists.

- *The Analysis*: Although little documentary evidence exists, chronological information from the archaeological sites, coupled with the nature of site components (tent pads and refuse from meals) suggests that the sites are logging camps for the North Coast Redwood Company. Mapping the sites in detail and identifying the property types within each site would provide data on the variation among them. Comparison of these camps may provide information on different aspects of the logging operations lacking in archival sources. Collection of information on differing morphologies of central camps vs. satellite camps might be possible, and this information would be useful in future identification and interpretation of similar sites. Changing camp conditions for laborers from the 1920s to the Great Depression may be better understood by analyzing the archaeological remains of these camps within the context of the California lumber industry during the early 20th century.

DATA REQUIREMENTS

- *Documentary Sources*: During the research phase of the project, consider using the following types of documentation : local histories, company records, oral history, local newspapers, tax assessors' records, and historical maps, photographs, and aerial photographs.

- *Archaeological Data*: Sufficient data to determine the spatial arrangement and configuration of buildings, structures, and objects, their functions, and their sizes; sufficient data to determine the presence or absence of associated features, such as refuse-disposal areas; a sufficient sample of artifacts to address questions of camp demographics, material culture, diet, and health.

STEP 3: IDENTIFY IMPORTANT RESEARCH THEMES AND QUESTIONS

At this point, the researcher has identified the archaeological property types that exist or are likely to exist on the site through a combination of archaeological fieldwork and historical research, as well as the appropriate historic context within which to assess the site. The next step is to determine the applicable research themes and questions that the properties may be able to address. Chapter 4 provides example sets of research questions that correspond to each theme and relate to specific archaeological property types. These lists may be used to derive the important research themes and questions relevant to the property under evaluation. Archaeologists are encouraged to use these research questions but keep in mind that they are only a sample of questions that can be posed.

The primary goal of Step 3 is to devise research questions that can be substantively addressed by applying methods of historical archaeology. Research questions must be *pertinent* and *important*. To be pertinent, a question must reflect the research themes and the appropriate historic context that is represented by the property. A question is important if it has the potential to significantly contribute to a better understanding of the theme and the historic context through the methods of historical archaeology. New facts about the past do not have to be derived exclusively from archaeological data. However, the archaeological contribution to new understandings must be substantial enough to justify the significance of the site as a repository of "information important in … history" (36 CFR 60.4[d]).

Research questions developed under this step address substantive scholarly issues at various scales of analysis. The researcher must use information gained in Steps 1 and 2 regarding the structure and content of the site and its appropriate historic context to assess whether archaeological data can make a useful contribution to important research themes and questions. Questions to consider include the following:

- What research themes are relevant to this site?
- What research questions can be developed from these themes?
- What types and quantities of archaeological data must be present to address these research questions?
- Does the site contain these data sets?

If the same information can be derived more directly and more cost-effectively from another source—such as oral history, historical documents, or previous archaeological studies—pursuing it through advanced archaeological investigation would be inefficient. These frameworks are also the sources of relevant research questions when they are applied to the site's historic context. The historic context is useful in assessing gaps and biases in existing information as well as areas where archaeological interpretation may complement or contribute to the reassessment of ideas about the past.

To develop questions that are both pertinent and important, the researcher must consider the site's historic context and make a realistic assessment of the quality and quantity of the archaeological data present. As the importance of a site under Criterion D is measured by its ability to contribute important information, specify the archaeological data requirements necessary to address particular questions. Different research questions will require differing types and quantities of data and thresholds need to be explicit so that the determination of whether the site actually contains the necessary data sets is clear. Some practical guidelines to help assess these thresholds are presented later in this chapter.

The following archaeological scenarios exemplify Step 3:

THE LOGGING CAMPS, PART 2

- *Background*: The North Coast Redwood Company was a small logging company that operated in the 1920s and 1930s; it went out of business in 1939 because of the Great Depression. A review of company records reveals the locations of nine remote or woods logging camps. Three of these camps are in areas slated for development and require significance evaluations. Detailed recording shows that these three sites are, in fact, three of the camps identified in the historical records of the company. Property types identified within each site include 6 to 10 residential flats, a larger flat that might have been a mess hall/kitchen, probable privy depressions, and refuse deposits. Based on chronological data gleaned from surface artifacts, two of the camps date to the 1920s and the third was occupied during the 1930s.
- *Identifying a Research Theme*: The camps, which reflect similar property types, are related to a single company or corporate entity and range in age from the 1920s to the

Depression era of the 1930s. The period of occupation of each camp is important in addressing research questions associated with camp structure, labor, gender, camp conditions, and daily life.

- *Identifying Research Questions*: Given the intersite comparison, a review of the Camp Function, Design, and Conditions theme in Chapter 4, with multiple camps as the relevant property type, indicates the following questions as a likely avenue for research: How did camp conditions change through time? Did work camp conditions change in accord with changes in the labor market (i.e., decline in times of labor surplus and improvement in tight markets), and is this situation observable at the sites (evidence of fewer employees, decrease in variety/quality of foodstuffs, presence of families)? Collectively, these sites provide an opportunity for a controlled study focusing on the actions taken by logging or lumber companies to deal with decreasing business and productivity during the Great Depression.

Intersite comparison of camp conditions requires that each site must retain data sufficient for comparison and that the same methods must be applied in the treatment of each site. Addressing the broader question of the impact of the Great Depression on work camp conditions in the logging industry requires that a more specific set of questions be answered for each work camp.

DATA REQUIREMENTS

- *Documentary Sources*: The following types of documentation need to be considered during the research phase of the project: local histories, company records, oral history, local newspapers, tax assessors' records, and historical maps, photographs, and aerial photographs.

- *Archaeological Data*: Sufficient data to determine the spatial arrangement and configuration of buildings, structures, and objects, their functions, and their sizes; sufficient data to determine the presence or absence of associated features, such as refuse-disposal areas; a sufficient sample of artifacts to address questions of camp demographics, material culture, diet, and health.

STEP 4: ASSESS QUALITY OF THE DATA

Step 4 of the evaluation process requires the archaeologist to assess the relationship between a site's physical characteristics and a more abstract dimension—its contribution to substantive research. The NRHP uses the concept of integrity to bridge this conceptual divide. NRB 15 (National Park Service 2002) defines integrity as the "ability of a property to convey its significance." A site must have integrity to be eligible for listing in the NRHP. Although archaeologists often take the concept at face value to mean merely a site's physical condition, for a site that is being evaluated under Criterion D, integrity is actually a measure of the property's ability to yield important information: that is, whether the site has the necessary qualities to meet the data requirements of a particular research question. Even a disturbed site will meet this test if intact stratigraphy is not necessary to meet data requirements, particularly when certain diagnostic artifacts are present.

The NRHP criteria for evaluation identify seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. NRBs 15 (National Park Service 2002) and 36

(Little et al. 2000) provide detailed, practical guidance on how to determine each of these aspects of integrity (Table 6). In general, archaeological properties should retain integrity of location, design, materials, and association to be important under Criterion D (Hardesty and Little [2009]). Addressing setting and feeling is usually not necessary, as retention of these characteristics rarely affects a site's information value, unless buildings, structures, or objects are present. Every evaluation of NRHP eligibility must discuss the aspects of integrity that are relevant to the important qualities of the site under assessment.

LOCATION

The relationship between an archaeological site and its location can reveal why a property was created or why an event took place. It can also elucidate the importance of a historic property. Archaeological sites, by nature, usually have integrity of location, yet secondary deposits can contribute to the eligibility of a property if the redeposition is important as part of the site-formation process.

Table 6. Aspects of Integrity

Criteria for Evaluation	Description
Location	The place where the property was constructed.
Design	The combination of elements that create the form, place, space, structure, and style of a property.
Setting	The physical environment of a property.
Materials	The physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.
Workmanship	The physical evidence of the crafts of a particular culture or people during any given period in history.
Feeling	A property's expression of the aesthetic or historic sense of a particular period.
Association	The direct link between an important historic event or person and a property.

Source: Little et al. (2000:36)

DESIGN

Integrity of design involves retention of the elements that convey the form, plan, layout, and structure of a historic property. Considerations include the apparent organization of space, scale, technology, and materials.

Because work camp integrity tends to be horizontal and spatial rather than vertical and stratigraphic, integrity of design is an important part of determining the integrity of a work camp site. The typically limited duration of occupation at the camps results in shallowness of work camp features and deposits, making them fragile and easily displaced or otherwise compromised through factors such as off-road vehicular traffic, recreational camping, or erosion. Building flats may disappear, and formerly discrete artifact deposits may be merged into dispersed and indistinct scatters. Integrity of design requires that the camp must retain significant portions of its layout and internal structure.

MATERIALS

Integrity of materials involves retention of the physical elements that were deposited during a particular period to create the historic property. When integrity of materials is retained, details of preference, choice, and availability of goods and technologies are typically conveyed.

The shallowness of work camp deposits is an important factor in the integrity of materials. Surface or shallow refuse deposits are highly visible and often attract looters. With refuse deposits at work camps, stratigraphic integrity often is not a primary concern, as the deposits usually were created rapidly with little or no internal stratigraphy. In this case, looting can result in the underrepresentation of certain classes of artifacts, such as whole bottles. In addition, faunal remains are frequently underrepresented because of the scavenging activity of wildlife.

Lack of integrity of materials may also result from salvage operations or cleanup and demolition after the camp served its purpose, especially if heavy equipment was involved. The work camp site may also lack the full range of materials used at the camp, either because of refuse disposal policies in which garbage was removed far enough from the camp that association is uncertain, or because occupants never discarded enough for the material to have research potential.

ASSOCIATION

Integrity of association requires that a site must be the place where specific historical activities occurred and that it retain physical features that convey the historic character to an observer. The work camp itself is the property type. The number of employees working there may have been just a handful of individuals to hundreds of laborers. Because of the temporary nature or seasonality of work camps, identifying specific individuals who occupied the camp is often difficult. With centralized or communal refuse-disposal practices at many work camps, refuse deposits may have a camp wide association that cannot be linked to individual households, although in other instances privies may have dedicated spatial patterns that can be linked directly to certain buildings, structures, and, perhaps, occupants. Historical records suggest that refuse disposal among work camps associated with some industries, such as oil, involved outside trash collection and disposal, including the incineration of trash off-site and recycling certain items of value, such as scrap metal.

Identifying a historical association for each work camp is important. Integrity of association entails that the work camp needs to be relatively "pristine," with little later occupation, unless the occupation is sequential or directly related to the original camp function and use. This is true of farm work camps or migrant work camps that were occupied by different farm workers and their families seasonally, sometimes for as many as 50 years. The deposits need to have enough spatial or chronological separation to be distinguishable from each other, unless the research design identifies issues about work camps in general to which the site can make an important contribution. In addition, the integrity of association can be affected by subsequent occupations.

STEP 5: IDENTIFY THE IMPORTANT INFORMATION THAT A PROPERTY CONTAINS

At this point, the archaeologist has identified a specific property, devised a context for evaluation with applicable research themes and questions, and determined that the property is likely to contain the needed data sets. The final stage requires the evaluator to condense this process into a

statement that makes clear what important information the property is likely to contain. The statement must explain how applying the methods of historical archaeology to the site data will inform our understanding of an important research theme.

This statement probably will involve demonstrating the relationship between the archaeological and the documentary data that pertain to the property. Barbara Little (1992), former NRHP staff archaeologist, has written that these two sources of information are used together in at least five ways: contradictory, complementary, as sources for hypotheses, to debunk misconceptions of the past, and for context. In Deetz's (1988) view, historical archaeology is not tasked with making exclusively archaeological discoveries of fact, but with weaving data from a variety of sources into a richer interpretation of the past. In this way, the archaeologist who seeks to evaluate research potential must demonstrate that the expected results will "provide a more satisfactory explanation than would be forthcoming from either set [archaeological or documentary] of data alone" (Deetz 1988:367).

The five steps delineated above lead the archaeologist through the process of determining whether a site meets the AIMS-R criteria, when appropriately applied, and thus contains important information and meets NRHP Criterion D. An important aspect of determining whether a site meets data requirements is to compare it to sites of a similar type. To facilitate such comparisons in the future, the following section on methodological consistency is offered. Adhering to currently accepted best practices will improve the profession's ability to contribute to our collective understanding of the past, ensuring that our findings continue to provide important information for identifying and interpreting 19th- and 20th-century work camps and their inhabitants.

METHODOLOGICAL CONSISTENCY

To make a successful argument for a site's eligibility for listing in the NRHP under Criterion D, the investigator must show that the property can contribute important information either as a unique resource, in comparison with other sites, or as a significant contributor to data accumulated from similar sites on important research issues. In each of these cases, the archaeologist's interpretation of the site—and assessment of its importance—are only as reliable as the quality and consistency of the data on which they are based. The Secretary of the Interior's Standards for Archeological Documentation emphasizes that uniform methods, appropriately applied, will allow future researchers to replicate the analytical processes employed and "to address problems not recognized at the time the data were recovered" (United States Department of the Interior 1983). This section provides guidelines for methodological consistency in the areas of historical research, archaeological fieldwork, and archaeological laboratory analysis.

HISTORICAL RESEARCH

Archival research is a process that needs to be conducted by qualified individuals in concert with archaeologists familiar with the nuances of the property being evaluated. Depending on the nature of the work camp and the industry with which it was associated, different resources and archives need to be consulted. Investigations at an1880s camp for Chinese railroad workers would require an archival research strategy and a set of sources different from those required by a 1930s CCC camp. However, some basic approaches can be laid out.

Initially, consult secondary sources to begin the development of an appropriate historic context for the site. This research may focus on the following:

- The industry or enterprise for which the work camp was constructed; its economics, environmental and other constraints, the nature of the work, and its labor history

- The economic, political, and social conditions during the time of the work camp's occupation that may have had an impact on design and operation of the work camp (e.g., economic depression, periods of social reform, labor tensions, tight labor market)

The agency or company and its work camps will be the object of more focused research, including primary-source materials that focus on the following:

- The overall history of the operating company or agency
- The scale of the company and the nature of its operations
- The company's policies and interactions with regard to its labor force
- The demographics of the labor force (ideally, those within the camp), including ethnicity, presence of families, gender of workers, job structure, and pay rates, among other characteristics
- Plans for the layout and construction of the camp, including applicable governmental regulations and guidelines

In certain instances, secondary source materials may contain some of this camp specific information. Depending on the period and the industry, government investigations and agency reports, such as those of the CCIH, the CIR, or the FSA, can also provide valuable information. Government investigations often yield testimony from working class occupants of the camps, a group that is less likely to leave their reminiscences to posterity than more privileged employees. Some libraries maintain large oral history archives. The University of California, Berkeley, and the University of California, Santa Cruz, to name just two, house collections of oral histories on a variety of subjects, including agricultural laborers and contractors who were engaged in work camps along the Central Coast. Oral history interviews may provide valuable information on life in the camps that would not appear in published accounts.

Consult corporate or agency archives, if they exist and are accessible. These may contain plans of the work camps, construction blueprints and ledgers, payroll records, purchase records for supplies, photographs, and material on employee relations. Companies or agencies that might remain active, such as utilities or railroads, sometimes maintain archives. Examples include Pacific Gas and Electric Company (PG&E) and Sunkist. The corporate records of some defunct companies can be found at various libraries throughout California; as previously noted, records of state and federal agencies are available at various archival branches. The journal *California Highway and Public Works* contains many articles and information about large construction projects and camps (e.g., prison labor, dam and irrigation, or hospitals). The journal was first published in the late 1910s and continued throughout the period of interest for this volume.

Corporate records, in particular, housed at the California State Archives, Sacramento, may provide information on the corporation itself, such as capitalization, holdings, the makeup of the board of directors, and years of operation. Additional sources, such as individual and corporate

archives and regulatory reports, may provide further information. Census records may be useful if the work camp was in existence when the census was taken; failing that, they may give an idea of the corporation's workforce when the census was taken. Local newspaper archives, including those now available online, may have accounts of the camps and reports on the progress of the work, as well as general information on the company's local operations. Local historians and historical society archives may also be important sources of information.

ARCHAEOLOGICAL FIELDWORK

The Secretary of the Interior's Standards for Archeological Documentation provide general guidance on the conduct of archaeological investigations (United States Department of the Interior 1983). Although field investigation methods vary with site structure and the overall goals of the work, archaeologists need to use generally accepted professional standards, or best practices, to evaluate the information potential of historical archaeological sites. This section offers guidance on these standards. Its goal is to foster common standards without constraining genuine innovation.

One of the more important and noninvasive routes for subsurface identification at an archaeological site is geophysical survey (ground-penetrating radar [GPR], magnetometry, or resistivity). These methods may provide a subsurface image of features at an archaeological site. Ideally, this type of survey can be done before test excavations, allowing archaeologists to focus limited resources as efficiently as possible. Information gained through geophysical survey may aid in the identification of a site and in the evaluation of its NRHP eligibility and CEQA significance by gathering context-related data on subsurface components. This option can be especially helpful in the identification of historical structures and other features (e.g., privies or millraces) that are buried beneath parking lots, streets, or fill. Chapter 5 of *The Caltrans Standard Environmental Reference* (Caltrans 2012) contains a discussion of the requirements for and benefits of incorporating a geophysical survey into project schedules.

No hard-and-fast rule dictates how much excavation is necessary to determine eligibility. Subsurface investigation may not be necessary to gather sufficient data for evaluation. Little et al. (2000:31) noted that

> The patterning of artifacts and features on the ground surface of some properties may be sufficient to warrant nominating them to the National Register. If this is the case, then demonstrating the presence of intact subsurface artifacts or features patterning through test excavations may not be required.

Archaeologists should conduct the minimum amount of research necessary to determine NRHP eligibility. Researchers carrying out evaluation or data recovery excavations in compliance with CEQA or Section 106 of the National Historic Preservation Act (NHPA) need to limit their excavations to portions of the site that will be impacted by the proposed undertaking. Keep in mind that the research themes in Chapter 4 provide for comparisons at the intersite level where significant information might not be present at the individual site level (Camp 2011).

Historical maps, memory maps, and other sources can be used to reconstruct the locations of buildings, structures, use areas, and parcel boundaries, where these sources are available. To improve cost efficiency, these locations can be pinpointed before excavation begins so that fieldwork can be focused on potentially productive areas. For example, distinguishing among the

structural remains of domestic, administrative, and support buildings is often difficult. Formal mapping created by camp owners or administrators would provide detailed information to help researchers make these distinctions. Government camps are more likely to have maps than are private ventures. Use remote sensing where the method is likely to reveal potentially important resources with less impact to the property or at less expense than conventional exposure techniques. Although a range of tools and techniques—from hand excavation to auguring to

mechanical scraping or trenching with heavy equipment—can be used to remove modern overburden and to expose archaeological features. Approach fieldwork with concern for efficiency in cost, time, and preservation. A note of caution: Although mechanical trenching has positive applications in archaeological investigations, it can also be very destructive to historical features, which are better located by surface stripping. Finally, in addition to the danger of working around heavy equipment, some historical deposits have the potential for hazardous waste issues; this possibility should be addressed before fieldwork begins.

Where discernible layers and features are present, excavation must be undertaken stratigraphically. Use arbitrary levels as a measure of control within unstratified deposits or very large deposits. Use the Harris Matrix (Harris 1989) to record stratigraphy during the excavation and to interpret the stratigraphic sequence. The matrix helps to define meaningful analytical units from contexts (layers and features) associated with various phases of site occupation. This analysis may assist the archaeologist in distinguishing elements of the site that contribute to its significance from noncontributing elements. Each context, including the original cut and subsequent fill episodes, must be assigned a unique designation and must be recorded on a standard form.

As cultural features and stratification are identified during the test investigation, they should be exposed in plan view by hand, photographed, and mapped in relation to a permanent datum. An appropriate portion should be exposed and hand excavated to assess each feature's structure, content, and physical integrity. An artifact filled pit, for example, may be sectioned and half excavated to extract an adequate sample; the other half would then remain in place until a determination of eligibility can be made. Excavated soils need to be screened through $^{1}/_{4}$- or $^{1}/_{8}$-inch screen, as appropriate, to extract and document the presence of all classes of artifacts. Column samples may be collected if smaller materials are likely to be present and may contribute to addressing research questions. Analysis of macrobotanical and microbotanical remains from column samples and features can yield important information about diet and health, the surrounding landscape, and myriad other topics. The research potential of some classes of artifacts within defined features or areas may be exhausted by recording them in the field or by taking only a sample. Archaeologists may record and discard all but an appropriate sample of certain items according to an approved record/discard plan contained in the project research design.

TREATMENT OF WORK CAMP PROPERTY TYPES

An understanding of the boundaries and internal structure of the camp can be accomplished through systematic surface reconnaissance, possibly in combination with metal detection. The reconnaissance should identify and map the site limits and all visible features. A property type such as a bunkhouse may have an archaeological signature consisting of multiple features; recording and numbering methods need to be sufficiently flexible to accommodate this fact.

In addition to identifying features within the camp, define the camp's overall layout, including the street plan and different areas of the camp (e.g., work areas, residential areas, or refuse disposal areas). Also, map relevant landscape features that may have been important for the camp's location and layout. These might include water sources, roads, railroads, and topography.

At camps where the architectural foundations (such as wooden tent or building platforms) were ephemeral, few surface remains may be visible, and the entire camp may appear as an indistinct smear of artifacts. In that case, the internal layout of the camp, or even whether such a layout exists, may have to be determined through systematic sampling, such as artifact counts on transects or a grid.

Residential Property Types

Identifying ephemeral architecture at work camps presents special challenges. The archaeological signature of this property type (tents, boxcars, movable cabins) includes cut and/or filled level areas (flats); stake holes; postholes; drip lines; drainage ditches or gutters; and concentrations of nails and other structural components, such as screws or window glass. Camp structures and buildings that were on artificial flats or pads are relatively easy to identify on the surface. Those that were on wooden platforms or on unmodified ground may be visible only as concentrations of nails. Barring outstanding surface visibility, at such sites a systematic metal detector survey may be necessary, using nail concentrations to determine the location of structural remains.

Archaeological work on residential features should attempt to recover the original dimensions of the building. Sometimes this recovery may not be possible or may be possible only within very general limits. Historical documentation on the population of the camp may allow estimation of how many people lived in the building and how cramped or spacious conditions were.

Identify the type, construction methods, and materials of the buildings if possible. Were they tents, boxcars, lean-tos, dugouts, or portable cabins? Sometimes, building characteristics can be determined from documentation, such as camp plans, corporate construction and maintenance ledgers, and contemporary photos. If such information is lacking, the nature of the buildings must be determined from the architectural features and artifacts. Even when good documentation exists for the camp, the researcher need to bear in mind the distinction between the ideals of planning and on-the-ground realities. This distinction can itself be an important research issue.

In addition to flats and pads, archaeological features such as postholes and stake holes are obviously important evidence for construction, indicating tent posts and stakes, platforms, anchoring for portable architecture, and local modifications such as porches and ramadas. Do not ignore the potential presence of subterranean storage features and hidden storage.

Some artifacts that are usually of little research value at urban sites acquire importance at work camp sites. For example, the presence of window glass and nails at an urban site would probably indicate little more than the presence of buildings that had windows and wooden architectural elements. At a work camp site, however, window glass and nails, corrugated iron, milled lumber, fragments of door screen, and tent grommets are important evidence for the presence of specific types of architecture.

Record nails in detail. The technology of wire and cut nails has obvious chronological implications. The tight dating of many work camp sites can refine our understanding of the transition from cut to wire nails and thus assist in the dating of other archaeological sites. Nevertheless, the function of the nails is most important for reconstructing architecture. Specialized nails (roofing nails, for example) can be identified through their shape, but nail pennyweight provides the main clue for ephemeral architecture (Fontana and Greenleaf 1962; Otto 1984; Sutton and Arkush 1996:163). Although nail catalogs contain very detailed information as to what pennyweight is appropriate for what task, on the average archaeological site the functions assigned to nails needs to be as general as possible, as the nails may have been used for tasks for which they were not designed.

A work camp building rarely has a substantial associated refuse deposit(s), because refuse was normally disposed of in a designated camp dump. In addition, sheet refuse or artifact scatters can result from the loss of small objects (buttons and the like) in the building and small-scale, localized refuse disposal, such as sweeping trash out the door, dumping ashes, or just tossing a bottle under the steps. The presence of artifacts such as toys or women's clothing articles has implications for the demographics of the household. Other items, such as sewing articles, recreational artifacts, bottles, and food remains, can inform on activities that took place outside of working hours: for example, clothing repair, drinking, gaming, or segregated eating.

Archaeologists should examine a sufficient sample of residential property types to assess variation within the camp and to address questions of segregation and stratification along ethnic, racial, gender, or class lines. Even if the camp is relatively homogeneous, it may have research potential in relation to other camps—for example, by containing information on conditions in camps occupied by different ethnic groups or on changes in camp conditions in one industry through time.

Support Property Types

The architecture of the support buildings and structures can be reconstructed with the same methods used for residential buildings. Although, in general, detailed architectural information may not be necessary, at some work camps it could be used to detect differences between facilities provided for management and for workers or to elucidate construction technology through time. The research significance for many support facilities lies primarily in their presence or absence in the camp and their numbers. Were showers or a bathhouse present? A commissary? Gardens? Centralized cooking and dining facilities? Were these facilities sufficient for the number of people in the camp? For example, determining whether the mess hall was sufficient for the camp would entail some understanding of the building's size, as well as the number of camp occupants. Detailed data on architecture can inform if cultural accommodations may have been made in the architecture of certain buildings, such as bathhouses or places of worship. If the surviving architectural remains are of sufficient quality that they can be compared to contemporary blueprints—such as those of the CCIH pamphlets—determination of conformity to legislation may be possible.

Some support facilities may be associated with artifact deposits. These would include cookhouses, mess halls, medical facilities, and commissaries and offices. Typically, these deposits would have been generated in much the same way as the residential deposits were—through localized cleanup, casual disposal, and loss. Early 20th-century investigators did note, however, that kitchen refuse was often broadcast straight out the back door of the cookhouse

(Commission of Immigration and Housing, State of California 1919:44; Higbie 2003:39). Deposits of cooking and dining remains are rich resources for study and are addressed as part of the refuse disposal property type, below. Artifacts from medical facilities have the potential to inform on general health conditions among camp occupants, as well as the realities of corporate treatment. Artifacts from commissaries and stores are likely to be scant but may give some indication of the items available.

Infrastructure Property Types

Assessing the associated infrastructure at a work camp can reveal much about living conditions. Drainage of wastewater and sewage, access to fresh water, transportation and supply roads, the availability of electricity or natural gas, and telephones or telegraphs are significant for quality of life in work camps.

Details on the construction of some of these features, particularly with respect to water supply and drainage, can be informative. Key questions include what the source of water for the camp was, where the source lay in relation to potential sources of contamination (e.g., was it downhill from outhouses? upstream from trash disposal?), whether and how the water was treated, and, if the source was distant, how water was transported to the camp. If drainage features were present in the camp, the nature of their construction and maintenance should be determined. For example, does the construction indicate that the drainage features were part of a planned network, or did the inhabitants informally construct them?

Transportation features and technology, both within the camp and linking the camp to the outside world, can be significant indicators of living conditions. The presence of pavement indicates considerable investment by management in the efficiency of camp roads. Whether camp roads and pathways followed a formal pattern or developed without specific plans can inform on the level of planning undertaken. Evidence of other infrastructural improvements, such as the presence of electricity, natural gas, or telephone lines, may exist only in the form of artifacts like copper wire or insulators.

Industrial Property Types

In the absence of historical documentation, artifacts and architectural information from work-related property types can aid in identifying the function of the camp and specific activity loci. In other cases, the archaeological data are a critical physical manifestation of the existing historical record. The location of industrial work areas in relation to residential and dining areas can contribute to our understanding of camp conditions and sanitation. In addition to avoiding odor, noise, and industrial waste, simply maintaining a separation of work and home life was often important for workers (e.g., Baxter 2002).

Archaeologists should note the presence, location, and size of industrial features such as stables, corrals, storehouses, and warehouses. Detailed architectural reconstruction is unnecessary. Places of work—such as packing houses, canning sheds, or blacksmith shops—may reveal information on work processes, control of labor, and, sometimes, gendered or stratified labor (Taksa 2005). Certain artifacts found in association with places of work may indicate covert activities like on-the-job drinking or isolated areas for socializing. If industrial waste is associated with the workplace, evidence of industrial processes, sabotage, or individual innovation may be indicated (Nassaney and Abel 1993; Van Bueren et al. 1999).

Recreation Property Types

Archaeological features for recreational property types include the architectural remains of formal social activity centers and informal gathering places where workers spent their leisure time. The location of buildings or outdoor recreation facilities, including uncontrolled spaces used by workers, can inform on camp organization. The level of formality (for example, use of recycled materials vs. manufactured sporting equipment) may indicate the level of effort invested by the company. Firepits, particularly in the absence of food waste, might indicate outdoor gathering spaces. Artifact scatters associated with recreation may reveal the availability of items such as tobacco or liquor at the camp.

Refuse Disposal Property Types

Refuse disposal property types are consistently one of the most important features in archaeological investigation. Refuse deposits at most work camps lack diversity, consisting, as they often do, of large dumps of tin cans. Occasionally, work camp refuse was deposited in hollow features, such as privies and refuse pits, or, during post-abandonment cleanup, in wells and sumps. Ideally, hollow, refuse-filled features should have depositional integrity, known function, and identifiable associations. More often, work camp refuse is present as surface deposits made in nearby drainages, convenient depressions, or a specified dumping area. These surface disposal features, which can range from diffuse scatters to dense deposits several feet thick, are discussed here.

Refuse disposal features have research potential for what they are and for what they contain. First, such features can reveal information about refuse disposal, sanitation, and hygiene practices at the site, which in turn inform on living conditions; conformity to prevailing regulations, if any; and (in comparison with other camps) changing attitudes toward these practices.

Both the location and the type of refuse disposal needs to be considered. The location of the refuse disposal in relation to residence, workspaces, and infrastructure (water supply, in particular) suggests its potential impact on health and sanitation. Are privies located uphill from wells? Was refuse disposed of away from the water supply for drinking or bathing? Does evidence indicate an effort to remove the refuse from residential and cooking areas?

The type of trash disposal needs to be characterized. Is the deposit the result of community-wide dumping, or is it associated with individual households or industrial activity loci? Is it sweepings, sheet refuse, or a dump? Is the deposit informal or the result of formal policy? Were measures such as burning, liming, or burial taken to render the deposit less offensive? How do these methods compare with contemporary ideas and regulations about health and sanitation?

Refuse deposits are also important for the artifacts that they contain. Once the type of deposit has been defined (e.g., communitywide dump, household sweepings, privy), determine its dimensions (area and depth) to the extent possible. For many surface refuse deposits, great precision in defining boundaries may not be possible, as deposits often spread diffusely from a central concentration. A time lag can exist between the purchase and the subsequent disposal of an item, and not all artifact types are retained for the same period. Although glass vessels are often disposed of quickly, Adams (2003) found that ceramic artifacts can be owned for as long as 15 years before being discarded.

Complete recovery or recording of the cultural material constituting a refuse deposit is rarely possible. A statistically valid sample of the material is necessary for comparison with that of other deposits. The literature on sampling in archaeology is extensive (e.g., Binford 1964; Mueller 1975; Lewarch and O'Brien 1981; Redman 1987; Shennan 1988; Drennan 1996; Hester et al. 1997; Orton 2000a, 2000b) and is not reviewed here. No single approach is best for all circumstances; the archaeologist's judgment and knowledge of the specific conditions must be applied. For example, a small, well-defined deposit might be bisected or quartered, whereas a systematic grid of small sample units might be the best sampling method for an extensive, intermittent spread of refuse. A large deposit that is considered internally heterogeneous may require some sort of stratified sampling. Whatever the specific conditions, the sampling strategy needs to be explicit so it will yield an unbiased sample of the deposit that can be compared to those from other deposits or sites.

As the diversity of artifacts at work camp sites usually is limited, this material culture lends itself to in-field recording on prepared forms. Archaeologists tasked with in-field recording need to be familiar with historic-era material culture and well trained in the collection of pertinent data. For work camps, a familiarity with the manufacturing details, dating, and contents of tin cans is strongly recommended, along with a working knowledge of the tools and products used in the industry specific to that camp.

LABORATORY PROCEDURES

Analysis of historic-era artifacts has two goals: to allow investigators to address questions identified in the research design and to generate comparative data for other researchers to use. To meet these goals, treatment must be consistent throughout the process, from analytical unit to analytical unit and from site to site, so that intra- and intersite comparisons can be made. Data must be collected from the artifacts and standardized in a master database in such a manner that queries can be run to answer a variety of research questions. An example of such a database is the free, relational Sonoma Historic Artifact Research Database (SHARD; available online at http://www.sonoma.edu/asc/shard/index.html), used to catalog historic-era artifacts. Laboratory and cataloging procedures must be clearly detailed and explained so that other researchers can easily use the assembled information. Presented below are suggestions for how to process and catalog artifacts, enter the information in a database, and prepare tables. In addition, Appendix D provides selected references useful for historical archaeology laboratories for identification of specific artifact types.

CLEANING AND LABELING

From the time artifacts arrive in the laboratory, care must be taken to preserve all associated information that may be extracted from them. Typically arriving in bags, boxes, and buckets, artifacts need to be sorted and grouped by associated proveniences (e.g., all levels or contexts from a single feature). Next, draw up a master sheet recording each provenience and the quantity of associated boxes/bags. From this, a tracking sheet can be constructed so that laboratory processing can be recorded and provenience information is not lost. One at a time, spread out material from each provenience and sort it for hand cleaning. Different treatments are used for different kinds of artifacts, and each needs to be individually inspected before cleaning begins. Take extra care to avoid brushing off or washing away and destroying any diagnostic details or residues. For example, bottles often retain fragments of paper labels that fall off when washed;

painted or gilded ceramic decoration may be inadvertently scrubbed away; some ceramics are so friable that they will fall apart in water. Occasionally, bottle contents are still intact and, if safe to handle, remove and preserve the contents for later analysis. Shell and bone disintegrates if left to soak in water. Dry brush the bone to remove as much residual dirt as possible and then, if not too fragile, quickly washed; shell is simply dry brushed. Carefully inspect textiles by very gently rinsing them in running water to remove as much dirt as possible, and laying them flat to dry. Dry-brush metal with a toothbrush or a wire brush to remove as much encrustation as possible without destroying useful information. The goal is to clean the artifacts as much as possible without losing any information; too often, data are inadvertently destroyed by carelessness at this stage. Washed artifacts need to be placed in drying trays clearly labeled with all provenience information.

Provide each artifact with, at a minimum, a catalog number. A provenience-based system, in which each provenience has its own number, is by far the simplest, allowing the cataloger/analyst to know exactly where the artifact came from by reading the numbered label. Regardless of the size or duration of the project, catalogers should not duplicate these numbers, even across sites, to avoid accidental mixing of artifacts in the laboratory. A subcatalog number or lot number should be added after cataloging. This assigned sequential number begins with 1 for each artifact or lot (group of like artifacts) within a single provenience. Label the artifact in an area as inconspicuous as possible without obscuring diagnostic attributes. Write catalog numbers as small and legibly as possible, in either white or black ink, depending on the color of the item being labeled. Label all ceramic and glass specimens with this number near an edge; cover labels for glass specimens with a clear coat, such as nail polish, to prevent the numbers from being rubbed off. Some metal objects can be labeled; most cannot. Use paper tags with string if necessary. Items that cannot be labeled or tagged can be bagged with paper tags marked with the catalog number. Every effort must be made to keep the provenience information with the artifact.

CATALOGING

Once artifacts are labeled, the cataloging process can begin. One material class (e.g., ceramics, glass, metal) and one analytical unit (e.g., feature, grid unit, shovel-test unit) at a time, labeled artifacts can be spread out and sorted. Sort ceramics first by material (e.g., porcelain, WIE, Chinese brown-glazed stoneware, yellowware) and then by form (e.g., plate, saucer, pitcher) and decoration (e.g., plain, molded, blue transfer print, gilded). Note the vessel form and part, along with any maker's marks. Sort glass first by color (e.g., dark olive, cobalt, aqua, colorless) and then by maker's marks and product embossments, form, and part (e.g., bottle, drinking vessel, lamp chimney; finish, base, body). Sort metal by material (e.g., ferrous, copper alloy, zinc) and function (e.g., nail, button, canning jar lid). Sort other items (e.g., buttons, bone artifacts, clay pipes) by material and function. Appendix D offers several suggestions for artifact identification references.

Classify artifacts into functional categories and calculate MNI (both discussed below). Classes of data may be saved and analyzed differently on the basis of the research questions being asked. For example, although nail sizes and quantity of window glass usually are not particularly helpful at urban sites, except in connection with remodeling, they can be important at rural sites. The presence of window glass in work camps might be a gauge of relative permanence; the pennyweight sizes and clustering of nails might suggest building sizes and perimeters.

Faunal analysis, which must be conducted by an experienced investigator, needs to include, at a minimum, scientific name, common name, number of identifiable specimens, and minimum number of individuals represented. The count and weight of unidentified bone are also important. Should butchered bone be recovered and meat-weight/price analysis undertaken, the methods must be clearly explained so that other researchers may be able to use the data in comparative studies.

A catalog is only as good as its creators. If catalogers are unfamiliar with the various material types and artifacts recovered, identification errors can quickly multiply, rendering the data tenuous at best. For example, the presence of porcelain on a site is often an indicator of wealth; if porcelain is misidentified as WIE, the error skews the data and interpretations. Similarly, analysts must be familiar with specific research questions identified for the project, so that appropriate and adequate information can be gleaned to address those issues.

FUNCTIONAL CATEGORIES

Artifacts can be cataloged using a general functional classification based on South's (1977) categories, which have been modified and expanded for use with mid-19th- to early-20th-century sites in the western United States. The materials are separated into broad *Group* divisions and then are further split into *Class* and *Subclass*. For the purposes of analytical research and intersite comparison, the Class division is most versatile, allowing a comprehensive range of functions while maintaining a manageable aggregate of categories (Table 7). Another advantage of this classification system is that additions can be made as necessary to accommodate a variety of site types and research questions.

MINIMUM NUMBER OF ITEMS (MNI)

Once the artifacts have been sorted, they can be physically crossmended within the analytical unit (feature/context) using masking or painters tape (if used for a short time). There are several reasons to use tape instead of glue to hold the pieces together:: gluing is too time-consuming, inevitably the missing piece is found after the item has been mended, and the resulting bulkier items increase curation costs substantially. Refitting the objects allows for more-accurate MNI counts and, for discrete features (e.g., wells, privies), for delineation of any stratigraphy. MNI counts help calculate the minimum number of individual items, not the number of fragments, represented. For example, 10 pieces of a broken bottle are counted as one bottle. Likewise, weight usually is not important: the critical information is not that one plate weighs 10 ounces and the other eight, but that two plates are present.

After crossmending is completed, the artifacts can be cataloged and the MNI determined. For each intact object (e.g., a complete, unbroken bottle), an MNI of 1 is assigned. Items that crossmend and can be reconstructed, with no missing pieces, also receive an MNI of 1. The remaining items are carefully studied to ascertain whether non-crossmending pieces might be parts of the same item. For example, saucer rim fragments that do not physically mend but are of the same material, curvature, thickness, glaze type, and decoration may collectively receive an MNI of one. Similarly, each fragment representing a unique form or decorative pattern is assigned an MNI of one (e.g., the only fragment of blue transfer print in the analytical unit). All items with makers' marks that cannot be associated with other items in the feature receive a

Table 7. Functional Categories of Artifacts

Group	Class	Subclass Examples
Activities	advertising	pins, signs
	collecting	coral, stalactites, petrified wood, shell
	commerce	banks, coins, scale pans, coins
	entertainment	music (e.g., harmonicas), games (e.g., checker pieces, dominoes)
	firearms	guns, ammunition
	painting	paintbrushes, paint cans
	pets	bird feeders, dog collars
	tools	axes, files, folding rulers
	writing	pens, pencils, ink bottles
Domestic	clothing/footwear maintenance	needles, thimbles, bluing balls, shoe polish bottles
	food	retail food containers (e.g., pickle bottles, Worcestershire sauce bottles)
	food preparation/ consumption	kitchen (e.g., baking pans, skillets), serving (e.g., platters, teapots), tableware (e.g., plates, forks), drinking vessels (e.g., tumblers, stemware, cups)
	food storage	canning jars, crocks
	furnishings	furniture, decorative items (e.g., flowerpots, vases, mirrors)
	heating/lighting	lamps and chimneys, lightbulbs, candleholders, lanterns, stove parts
Indefinite Use		identified items with more than one potential original use
	miscellaneous beads	beads with more than one potential original use
	miscellaneous closures	closures associated with contents of indefinite use
	miscellaneous containers	bottles, jars, and cans with unidentified contents
	miscellaneous metal items	hardware metal artifacts (e.g., wire, sheet metal), items with more than one potential original use (e.g., bells)
Industrial		machinery, spark plugs, gears
Personal	accoutrements	purses, eyeglasses, jewelry
	clothing	garments, buttons
	footwear	shoes, eyelets, shoe buttons
	grooming/health	toiletry items (e.g., perfume bottles, brushes, chamber pots), medicine bottles (e.g., patent/proprietary, pharmacy, bitters, vials), syringes
	social drugs	retail alcoholic-beverage containers and closures (e.g., wine, beer, champagne, distilled beverages); spittoons; pipes; tobacco tins; opium pipes, lamps, and tins
	toys	dolls, tea sets, marbles
Structural	fixtures	sinks, toilets, faucets
	hardware	hinges, brackets, nails
	materials	bricks, window glass
Undefined Use		unidentified items (e.g., melted glass, amorphous metal), slag, coal

separate MNI count. Unmarked/nondiagnostic fragments that might be associated with marked/diagnostic items do not receive an MNI count.

Artifacts that always would have been used together receive an MNI of 1 (e.g., a teapot and its lid or a soap dish with its drainer and lid). On the basis of this criterion, objects of different materials can be combined and given a single MNI. For example, a glass nursing bottle and its associated ceramic cap would have an MNI of 1, as would a brown glass beer bottle with its ferrous crown cap or an aqua glass canning jar and its zinc lid. For items that are often considered a set but are not always purchased or used together, such as a cup and saucer or a slop bowl and pitcher, each is given a separate MNI. Shoes are given MNIs based on pairs (e.g., three shoes of the same type and size, two left and one right = MNI 2); shoe-related paraphernalia, such as eyelets, are not given an MNI when located in deposits with shoes. Similarly, individual buttons are given MNIs, as it is not feasible to assign button counts to separate items of clothing. Another artifact for which it is difficult to determine MNI counts is beads: for example, a single lamp whimsy can contain hundreds of beads of various styles and colors; thus, beads are counted in the same way as buttons.

MNI assignment is one of the most important aspects of cataloging, and it is important to avoid over estimating MNI calculations. If artifacts are quantified in this standard analytical manner, they can be used for intrasite and intersite comparison and analysis. Decisions on assignments of MNIs must be clearly explained so that others can use the data presented. Not all analytical units may be studied in detail. If a deposit has been severely disturbed and too much information has been lost, its research potential will be diminished. This decision typically is made in the field at the time of survey or excavation. Some deposits may appear to have little research potential (e.g., looted or partially destroyed deposits) but retain enough information to warrant further study. Deposits with too low an MNI may not merit additional study. Depending on the project, it may be useful to set a minimum MNI threshold for artifact analysis and faunal analysis.

In a final note, with sites that have a large number of surface features where the boundaries are not neatly contained, the analytical unit for which the MNI is to be calculated should be given careful thought. With some work camps, it is appropriate for the MNIs to be calculated across the entire site. For others, the appropriate analytical unit might be the feature, or even the sampling unit.

DISCARD POLICY

Especially important in historical archaeology is a comprehensive discard policy. Give serious consideration to what materials will be retained, will be discarded, or will not be collected during field excavation. Once artifacts and ecofacts have been thoroughly catalogued for purposes of data analysis, many materials with low research value (e.g., nails, nondiagnostic fragments of glass) may be appropriately discarded. In such cases, the discard policies that will be used during fieldwork need to be explicit. A discussion of discard policies for California historical sites can be found in Praetzellis and Costello (2002). Clearly define items to be discarded and quantify discards by both count and weight. Fully explain and document the reasons for discard, with reference to the discard policy approved for the project.

DATING

Study each artifact to determine if it is temporally diagnostic. Makers' marks are the first and most obvious tool to use and can be combined with temporally diagnostic manufacturing techniques and decorative patterns to arrive at a production date range. Also, include an entry in the catalog for the period of deposition for the feature/context where the artifact was recovered. This may be the known period of camp occupation or a more specific date if one can be determined from historical data or the dating of all artifacts found within the context. The date of camp abandonment should generally be the end date for all artifacts from a camp unless subsequent use was made of the area. At camps that were reoccupied, the admixture of materials from different episodes of occupation compromises their ability to yield important information.

Glass containers with embossments (typically on bottle sides) and makers' marks (typically found on the heel or base of the bottle) should be noted and researched to determine place of origin, contents, and production date ranges. Date ranges are based on when a company was formed, when it changed ownership or moved to a new address as listed in the embossment, and when the product was patented. By means of both the bottle manufacturer and the bottle contents manufacturer (often not the same), date ranges can be refined. For example, two different companies manufactured Lea and Perrins Worcestershire sauce bottles between 1840 and 1920: Aire and Calder Bottle Company between 1840 and 1877 and thereafter by John Duncan and Sons. Temporally diagnostic manufacturing techniques are also used for dating. Use trained laboratory technicians who are familiar with these techniques and knows what to look for when cataloging. For instance, the crown bottle cap was introduced in 1892; if a bottle company was in business from 1880 through 1900 and the bottle has a crown finish, a beginning date of 1892 is assigned. Take care to note all diagnostic bottle attributes, such as mold seams, pontil marks, finishes, and suction scars. Other marked glass items might include insulators and canning jar lid liners. Occasionally, glass items are embossed with patent dates (e.g., glass illuminators, some food containers). Often, tableware and serving vessels are decorated with pressed patterns. These patterns should be studied and identified where possible, as they can often be assigned to a manufacturer and dated.

Frequently, small finds retain marks or patent dates. For instance, hard rubber buttons are often embossed with company information, clothing fasteners have patent names and dates, and lamp thumb wheels are stamped with patent information. Dolls, ammunition, and coins all frequently provide date information. Attention to these items can lead to determination of a *terminus post quem* (TPQ) for a deposit. A single deposit may have dozens of items with differing date ranges. The TPQ is typically determined by the latest beginning date of manufacture from all datable items recovered from deposit. This date becomes the earliest date when the feature could have been deposited.

Carefully document marks and enter the information into the database exactly as the marks appear on the artifact so that other researchers know the basis of the assigned dates. If letters are missing and can be extrapolated, use brackets around extrapolated text (e.g., IRONSTO[NE]); if they cannot be interpreted, use two dots ("..") in their place. A slash ("/") indicates a new line of text, two slashes ("//") indicate a new side of the bottle, and three slashes ("///") indicate the base. Symbols and mark placement (e.g., around shoulder, upper arch) should be placed in

parentheses. Manufacturing techniques used for date determinations also must be clearly explained.

Databases and Data Entry

Once artifacts have been sorted, mended, assigned functional categories and MNIs, dated, cataloged, and analyzed, enter the information in a database for table generation and statistical analysis. The more information that is included, the more useful the database is for different purposes. Minimal information to include is presented in Table 8.

As is true for other aspects of cataloging, data entry must be standardized. Databases are a practical way to store and retrieve data, but they are only as good as the information entered. Simple things like typographic errors (e.g., "palte" instead of plate) create havoc for running statistics. Creating a series of pull-down menus from which to choose artifact descriptors can prevent these types of errors. What is cataloged one way for one deposit must be cataloged the same way for a different deposit (e.g., a canning jar must always be entered under the class of food storage, not food). Depending on the deposit to be studied and the research questions to be answered, new artifact descriptors may be added, or placement of artifacts may be slightly changed. For example, the deposit may be associated with a laundry. A new artifact group, Laundry, may be created, and buttons may be moved from Personal to Laundry. These types of changes must be documented and carefully explained in the methods section of the report.

Generating Tables

When all pertinent information has been gleaned from the artifacts and entered into a database, it is time to generate tables. Care and thought should be given to what data are to be presented and how. A data table presenting all datable artifacts, their marks and manufacturing techniques, maker, origin, date range, MNI, and pertinent references is an important inclusion in any report. A simple list of artifact descriptions, with counts and MNIs, assembled by material and type within group and category will give a quick look at what was in the deposit and is far easier to sort through than the entire artifact catalog printed out in numerical order (though this also should be included, usually as an appendix). Additional summary tables—by group and by category with counts, MNIs, and percentages—are useful for rough comparisons among analytical units. In urban contexts, archaeologists often look at food preparation/consumption artifacts to answer questions about social status and wealth. For work camp sites, however, artifacts from all functional categories can help determine feature function and contribute to the interpretation of activities. Presentation of these attributes in a series of tables can be beneficial in answering these types of research questions.

Other tables may be displayed as necessary. A faunal remains table (including one for fish or shellfish) may include common name, scientific name, number of identifiable specimens, and MNI. For deposits with clear evidence of butchering, meat weight may be added. For these types of deposits, a second table might include meat type, relative price, cut, weight, percentage within type, and percentage within price.

Table 8. Basic Data Fields for Artifact Catalogs

Field	Information
Catalog Number	Individual provenience number.
Lot Number	Number assigned during cataloging.
Site	Site trinomial.
Provenience	Provenience (e.g., feature number, layer, shovel-test unit, survey area). This can be split into additional fields as needed.
Artifact Group	Functional group (e.g., activities, domestic, personal).
Artifact Class	Functional class (e.g., entertainment, food preparation/consumption, grooming/health).
Artifact Type	Functional subclass (e.g., games, kitchen, toiletry).
Artifact Description	What the artifact actually is (e.g., domino, skillet, basin).
Material	What the artifact is made of (e.g., porcelain, aqua glass, ferrous).
Maker's Mark/Dating Information	Enter the maker's mark exactly as it appears. If item is being dated by manufacturing techniques, enter the technique (e.g., two-piece mold, crown finish) as well.
Maker	Maker of item and, if needed, contents; last name first.
Origin	Origin of item (e.g., East Liverpool, Ohio; Tunstall, England).
Beginning Date	Earliest possible date of manufacture.
End Date	Latest possible date of manufacture.
References	References, as appropriate, for sources used to date the artifact.
Whole Count	Number of whole/intact items.
Fragment Count	Number of fragments.
MNI	Minimum Number of Items.
Remarks	More-thorough description of the item. Include part of artifact represented by fragment (e.g., base, rim, finish), shape (e.g., oval, circular), decoration (e.g., molded–Fig Pattern, painted), size (e.g., diameter, height, volume), and crossmending information, including catalog number(s) of mending item(s). The data for this field can be split into additional fields as needed.
Percent Complete	Vessel completeness (e.g., <25%, 50%–75%).
Association	Function of feature/context where this artifact was found; details about the people who produced this deposit, if known (e.g., ethnicity, position in labor hierarchy, gender, race).
Deposit Date	Period of deposition for the context where the artifact was recovered. Normally, this would be the dates when the camp was in use but could be even more specific.

Throughout the laboratory process, two guiding principles are of paramount importance. First is consistency. Careful thought should be given to the research questions asked and data needed to answer them before anything is done in the laboratory. Making substantive changes after starting significantly increases the potential for human error and increases time spent in the laboratory. Equally important is the need to explain exactly what was done, how, and why. Data that are not comparable to those from other archaeological sites are good only for intrasite analysis, and then only if the data are collected and analyzed consistently across analytical units.

CURATION

Prior to excavation, prepare a curation agreement with a reputable facility for the permanent curation of artifacts, as well as field notes, photographs, and reports. Guidelines for curation are found in *Curation of Federally-Owned and Administered Archeological Collections* (36 CFR 79). California (State Historical Resources Commission 1993) has also adopted state curation guidelines that should be consulted when preparing a curation plan. If a site has been determined not eligible for listing in the NRHP, then it typically is not necessary to curate the artifacts and associated documentation.

DISSEMINATION OF RESEARCH RESULTS

One of the goals of archaeological research is the dissemination of information to other professionals and the broader public. At a minimum, the excavation methods, findings, and interpretations should be reported in a technical document that is filed at the appropriate information center of the California Historical Resources Information System, which allows access to that information by peers and other interested parties. Archaeologists, however, should make every effort to convey their findings beyond the confines of their immediate peers. For example, present research results at professional conferences or in professional publications. Public outreach in some form is the ideal end result of archaeological research. Often archaeological reports have the potential to be expanded or distilled into publications that reach beyond the borders of professional archaeology and into the realm, and thus the imagination of the public. This outreach can take many forms, several of which are economical, from tours to history pamphlets. Site tours for elementary school children, as well as other interested parties, can encourage a lifetime interest in history and archaeology. The development of permanent or traveling displays can also convey research results to wider audiences.

THRESHOLDS AND REDUNDANCY

This section adds to the discussion of the preceding Data Requirements section as well as offering guidance on redundancy: when enough becomes too much. The authors approach this topic with trepidation; archaeologists of the future will likely chuckle at our attempt to pinpoint just how much data an archaeologist might need to make confident interpretations. In historical archaeology, questions of thresholds (How much is enough?) and redundancy (How much is too much?) in the studies of both the material culture and a particular site type can be difficult to answer. Most archaeological understandings are not amenable to the application of hard-and-fast rules or formulae. In the context of public-funded research, however, it is important for archaeologists to articulate the bases of their interpretations. Experienced professionals must thoughtfully apply the following guidelines in relation to particular archaeological contexts.

QUALITATIVE AND QUANTITATIVE DATA

The application of the first three steps of the Five-Step Process section above elaborates on the first three steps in NRB 36 for assessing the kinds of information contained in an archaeological site. Steps 1 and 2 ask questions addressing simple issues such as the age of the site, its basic structure and content, and its level of physical integrity. Data requirements at this stage are primarily qualitative: descriptions, presence/absence, and datable artifacts. Although

archaeologists may disagree in particular cases, the types of data and the methods used to arrive at an acceptable inference at this level of description are founded on established archaeological principles.

Step 3 calls for research questions that will elicit the kind of important information that is required by NRHP Criterion D or CRHR Criterion 4. In most cases, these questions require more than mere description of the site's structure and content. They must address issues to which the site or feature can be expected to make a useful contribution. Many of these questions are aimed at generalizations about the past based on qualitative and quantitative archaeological data. Qualitative approaches at this level may involve determination of presence/absence, description, and symbolic interpretation, which are valid even when artifacts are few. The success of a quantitative approach, however, is heavily dependent on the available sample size, as a larger sample is statistically more accurate than a smaller one. Some threshold may exist below which the data set is of questionable value.

SAMPLING AND COMPARING ARTIFACT DEPOSITS

James Deetz (1986) pointed out that research potential in historical archaeology is largely "a matter of scale." Archaeological remains should be assessed at the scale (or scales) that will best exploit their research potential. Each scale requires a different level of sampling. For example, a residential site may contain contemporaneous architectural remains, sheet refuse, and an artifact-filled pit. As these features functioned together, they should be evaluated as a group. In addition, each individual feature has research potential and needs to be evaluated separately. The importance of the artifact deposit, which would be most costly to treat, depends on what it can contribute at two scales: the immediate context of its creation (the household that created it) and larger issues that require comparison with other data sets. Quantitative data required at the second scale must be adequate for the task.

Certain classes of material, such as seeds and fish bone, are sometimes present in such large quantities that extracting a sample for analysis is both essential for practical purposes and acceptable for statistical ones. Similarly, archaeologists sometimes uncover a deposit so rich in artifacts that sampling is appropriate. For example, the approximately 1,500 cubic feet of artifacts and ash that accumulated under a backyard platform at Stockton's Sing Lee Laundry site was sampled with a trench that extracted about eight percent of the feature's volume—and more than 9,500 artifacts and faunal remains (Waghorn 2004).

Past a certain point in the study of an individual site, analysis and excavation may produce redundant data. Can archaeological collections that have certain historical associations be considered redundant because, as has been said of historical farmstead sites, "we've got thousands" of those (Wilson 1990:25)?

This question implies that archaeologists can define the research potential of a site if they know its defining characteristic—for example, the national/ethnic origin of its creators. However, this is only partly true. If an archaeologist's goal were to study the immigrant Irish population per se, then a case could be made that a sample would be sufficient. Statistical studies of the archaeological correlates of nativity, ethnicity, wealth, and other characteristics, however, reveal patterns that cannot be explained by reference to conventional analytical categories (Praetzellis and Praetzellis 2004). If such patterns relate intuitively to nativity/ethnicity and do so consistently within and between data sets, they provide strong evidence of behavioral

significance. But other statistical relationships are not so easily understood. These patterns do not appear to be mere statistical coincidences, yet they have no immediately discernible, intuitively satisfactory meaning. Sampling strategies must be justified in relation to specific research issues. If the most important goal is to define 19th-century populations in ways that were not revealed by other analyses, then statistically valid samples must represent both individual sites and classes of sites related to those populations.

To develop the statistically valid data needed by quantitative research agendas, consistent methods are essential in historical research, archaeological excavation, and laboratory analysis. Consistency also requires that a context must contain enough artifacts to be useful for quantitative research. Small data sets may not be representative, whereas overly large ones are unnecessary. The use of size to eliminate data sets must be undertaken with care and an understanding of the feature; not all activities produced large artifact deposits, and certain types of archaeological phenomena should not be eliminated from analysis because of data quantity alone.

To balance the benefits of standardization with those of new information and methods, this document needs to be thoroughly reviewed and revised every 20–25 years. At those intervals, the research orientations, methods, and entire epistemological basis should be reexamined. Individual researchers must modify and add to this work to adapt these general statements to specific contexts. The historic context in Chapter 2 may form the basis of a general understanding of the evolution of work camps in various regions of California, but such an understanding does not make site-specific research unnecessary. Similarly, the archaeological research issues and questions must be modified to respond to the history and characteristics of particular sites. This document is a starting point for the archaeologist who must prepare a research design to examine an historic-era site. This is not a one size fits all product; simply cutting and pasting section will not constitute an adequate research design.

CONCLUSION

Work camps are not the most easily defined of archaeological sites. With little presence in the historical record and material culture deposits that may seem nondescript, work camp sites can appear to be undifferentiated landscapes of features and artifacts. The camps were often designed for cost efficiency and with the concerns of owners and managers in mind, seemingly reflecting neither the culture nor the ethnicity of the inhabitants. Other camps employed no sense of design at all. Ultimately, what constitutes a work camp can be somewhat arbitrary: work camps are a complex site type that ranges from “hobo” camps and Hoovervilles to company towns or more-permanent work settlements. Another complication is that the study of work camps cuts across the standard themes of industrial properties—mining, logging, agriculture—covering a diverse range of work experiences and occupations. Some work camp inhabitants were highly paid professionals, others skilled craftsmen, and many others unskilled laborers. Each of these factors creates challenges for the archaeological study of work camp sites.

Partially because of the regional and industrial specializations of archaeologists, investigations at work camp sites often become narrowly focused. For example, archaeologists may compare logging camps only to other logging camps or mining camps to other mining camps. This narrow focus can result in the loss of information about the broad trends and experiences of this segment

of the specialized, often geographically isolated working class. To maintain coherence in archaeological investigations, the focus of research must be broadened to allow comparisons among industries and eras.

Work camps and the laborers who occupied them were part of an underreported national and transnational economy, and significant gaps exist in our understanding of them. The approach recommended here allows investigations of varying management styles, including the presence and nature of worker militancy among industries and through time, the impacts of progressive legislation, and the effects of unionization. The archaeology of work camps can make important contributions to our understanding of the everyday lives of the working people who contributed to California's economy and infrastructure.

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APPENDIX A

ACRONYM GLOSSARY

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AFL	American Federation of Labor
CAWIU	Cannery and Agricultural Workers Industrial Union
CCC	Civilian Conservation Corps
CCIH	California Commission for Immigration and Housing
CHC	California Highway Commission
CIR	Commission on Industrial Relations
CPRR	California Pacific Railroad
CWA	Civil Works Administration
FERA	Federal Emergency Relief Administration
FSA	Farm Security Administration
HAER	Historic American Engineering Record
IOPA	Independent Oil Producers Agency
IWW	International Workers of the World
JMLA	Japanese-Mexican Labor Association (JMLA)
RA	Resettlement Administration
SDSHPC	South Dakota State Historical Preservation Center
SERA	State Emergency Relief Administration
WACC	Western Agricultural Contracting Company (WACC)
WPA	Works Progress Administration

APPENDIX B

CCIH'S "RULES FOR LABOR CAMPS"

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The *Rules for Labor Camps* bulletin was written by the California Commission of Immigration and Housing (CIH) in 1920, providing guidance to "owners and operators of labor camps" on the requirements for camp design, layout, and sanitation as stipulated in newly written labor camp sanitation act. The 19 rules were intended to improve the living conditions of laborers, in particular hygiene and sleeping quarter conditions, which up until this point, had often been untenable:

> During the nineteenth century and into the early twentieth century, sanitary conditions at typical work camps were appalling, creating disease-infested living quarters for men. As the twentieth century got underway, reform movements began both in urban environments and in rural camps, focusing on upgrading and creating enclosed sewage facilities and transporting water (Bell 1987:57-62). [Maniery 1999:161-163]

For the historical archaeologist especially, the CHI's bulletin provides a starting point from which to approach the physical layout of an early 20th century work camp when planning excavation strategies. In addition, the guidelines present the opportunity for research questions directed at interpreting improvements (or lack thereof) in the quality of living at a camp, as reflected in the adherence to these regulations. The text is presented verbatim below (CCIH 1920:1-4).

TO OWNERS AND OPERATORS OF LABOR CAMPS

In order to advise owners and operators of labor camps of the requirements fixed by the labor camp sanitation act, and the Commission of Immigration and Housing in the application of that act, this bulletin of information has been issued. Owners and operators of labor camps are hereby notified that the requirements set forth herein constitute the minimum of requirements which must be provided, and the Commission will expect to find that these rules have been complied with.

1. Camps should be located on well-drained ground.

2. An adequate supply of pure drinking water must be provided (Statutes 1915). Barrels or tanks containing water should be cleaned out at frequent intervals. Water should be drawn from barrels or tanks by a faucet. Whenever possible, drinking fountains should be installed.

3. Sleeping quarters (tents or houses) should be arranged in rows with adequate spaces between.

4. Toilets should be at least 75 feet from sleeping quarters. The openings of the toilet structures must be either battened or screened and the structure made as fly-proof as possible by automatic drop-seat covers. Lime or ashes should be sprinkled in the pit every day.

5. Toilet must not be located over streams or canals.

6. Wherever possible, stables and corrals should be located at least 600 feet from the living quarters. The direction of the prevailing winds should be considered when the location for corrals and stables is chosen. Manure should be disposed of daily either by hauling it into the field and spreading it in thin layers on the land, or by placing it in fly-proof composting pits, or by burning.

7. Bunkhouses, tents or other sleeping quarters must be provided. Sleeping quarters should have between four and five hundred cubic feet of air space for each occupant. Sleeping quarters (houses or tents) must be in good structural condition. Tents or houses which are in bad repair cannot be used as sleeping quarters. Whenever practicable, sleeping quarters should be screened so as to keep out mosquitoes and flies.

8. Whenever a camp is located on damp ground or when a camp operates in winter, floors must be provided in tents or houses used as sleeping quarters.

9. Bunks or beds must be furnished to all employees. The bunks or beds must be of steel, canvas or other sanitary material. They must be so constructed as to afford reasonable comfort to the occupants. Where straw is used, a container or tick should be provided.

10. Tents or houses used as cooking or dining quarters must have all openings screened and doors should have spring hinges to close automatically.

11. All drainage from kitchen sinks must be run through a covered drain to a covered cesspool or septic tank or otherwise disposed of in such a way as not to become offensive or unsanitary.

12. Garbage and refuse must be kept in fly-proof, covered containers and disposed of at intervals by incineration or by burying or by feeding to hogs. Hogs should not be allowed to roam at large in camp. They should be kept in pens at least 200 yards from living quarters (wherever location will permit). The direction of the prevailing winds should be considered when the location for hog pens is chosen.

13. There must be an adequate number of toilets, affording one seat for every fifteen persons. There must be separate toilets for men and women, marked "Men," "Women."

14. In all ranches (hop, fruit or berry), where people work in the fields throughout the day, there should be a few portable toilets. The openings of the toilet structures must be either battened or screened and the structure made as fly-proof as possible by automatic drop-seat covers. Lime or ashes should be sprinkled in the pit every day.

15. Bathing facilities must be provided at all camps. The use of showers is advised, as they are more sanitary and also cheaper to construct and will accommodate more people. One shower head for every fifteen people should be provided.

16. Interior of dining and sleeping quarters, bathrooms and toilets must be kept in a clean and sanitary manner. The grounds around the camp must be kept free from filth and accumulation of rubbish, etc.

17. At every camp the owner, superintendent or overseer, shall appoint a responsible person to assist in keeping the camp clean.

18. Section 6 of the act regulating sanitation and ventilation in labor camps reads:

    "It shall be the duty of any person, firm or corporation or agent or officer of a firm or corporation employing persons to work in or at camps to which the provisions of this act apply and the superintendent or overseer in charge of this work in or at such camps to carry out the provisions of this act. At every such camp such owner, superintendent, or overseer shall appoint a responsible person to assist in keeping the camp clean."

19. Section 8 of the act regulating sanitation and ventilation in labor camps reads:

    "Any person, firm, corporation, agent or officer of a firm or corporation, or any superintendent or overseer in charge of the work in or at any camp coming under the provision so f this act, who shall violate or fail to comply with the provision of this act, is guilty of a misdemeanor, and shall upon conviction thereof, be punished by a fine of not more than two hundred dollars, or by imprisonment of not more than sixty days, or by both such fine and imprisonment." (Statutes of 1913, page 328; amended 1915, page 497 and 1919, page 244.)

APPENDIX C

CALIFORNIA WATER PROJECTS 1887-1949

CALIFORNIA WATER PROJECTS 1887-1949

This list of California water projects from 1887 to 1949 was compiled from Marc Reisner's *Cadillac Desert: The American West and its Disappearing Water* (1993); Norris Hundley, Jr.'s *The Great Thirst: Californians and a Water History* (2001); USDI, Bureau of Reclamation's *The History of Hydropower in the United States* (2004); and the California Department of Water Resources, Division of Safety of Dams' website www.water.ca.gov/damsafety/damlisting/index.cfm, last accessed in May, 2013. Archaeologists will find this list useful in determining if their site is associated with one of these water projects.

1887 – San Bernardino, High Grove Station, first hydroelectric power plant in the West.

1890 – Buena Vista Lake (earth) Dam completed, Kern County.

1892 – Bodie; 12.5 mile, 2,500 AC line carried power from a hydroelectric plant to an ore mill owned by the Standard Consolidated Mining Company

1892 – San Antonio Creek; Single phase 120-kilowatt power plant, power carried to Pomona over 13 miles along a 5,000 volt line. Voltage increased to 10,000 and line extended 42 miles to San Bernardino within a year. First use of step up and step down transformers in a hydroelectric project.

1893 – Mill Creek; First American three-phase hydroelectric plant. Power carried 8 miles to Redlands on 2,400 volt line

Circa 1895 –Folsom; Three-phase, 60 cycle, 11,000 volt alternators installed at a hydroelectric plant on the American River. Power transmitted 20 miles to Sacramento.

1895 – Lake Hemet (masonry arch) Dam, Riverside County

1898 – Los Angeles; 83 mile line built from Santa Ana River No. 1 hydroelectric plan.

1899 – Nevada City; power from the Nevada City, Yuba, and Colgate hydroelectric plants sold to Sacramento Power & Light Company, over 62 mile line built to Folsom.

1901 – Oakland; 142 mile line built from Colgate hydroelectric plant by Bay County Power Company.

1901 – Big Creek, Madera County; Construction begins on a hydroelectric system that would eventually include eight powerhouses, over a 6,200 foot fall, rated at 685,000 kilowatt.

1901 – S.F. mayor Phelan files for water right to Tuolomne River in Sierra Nevada (federal land)

1902-1908 – Plans postponed (political reasons)

1904-1905 – Owens River targeted by L.A.'s water czar William Mulholland; purchases in Owens Valley by ex-L.A. mayor Fred Eaton; authorized by L.A. Board of Water Commissioners; first bond issue passed by L.A.

1905 – Diversion canals flood, form the Salton Sea

1906 – Ivanhoe Reservoir (earth) Dam, Los Angeles County

1908-1913 – Construction of Los Angeles aqueduct, pumping stations, etc.

1907 – Silver Lake Reservoir (earth) Dam, Los Angeles County

1910 – Clear Lake Reservoir (rock-fill) Dam, Modoc County

1912 – Big Bear (variable radius arch) Dam completed, San Bernardino County

1913 – Hetch Hetchy Project approved, signed by President Wilson

1913/1919 – Huntington Lake (gravity) Dams 1, 2, 3, and 4, Big Creek Project, Fresno County

1913 – Lake Tahoe (gravity) Dam, Truckee River, Placer County

1913 – Spaulding Lake (variable radius arch) Dam, Nevada County

1914 – Clear Lake (gravity) Dam completed, Yolo County

1918 – Lake Hodges (multiple arch) Dam, San Diego County

Circa 1920 – Florence Lake (multiple arch) Dam completed, Fresno County

1922 – Lake Arrowhead (hydraulic fill) Dam, San Bernardino County

1923 – Construction starts on Hetch Hetchy Reservoir/Dam Project

1923 – Lake Henshaw (hydraulic fill) Dam, San Diego County

1924 – Hollywood (gravity) Dam, Los Angeles County

1925 – Calaveras Reservoir (hydraulic fill) Dam completed

1927 – Lake Almanor (hydraulic fill) Dam, Plumas County

1927 – Santa Anita Reservoir (variable radius arch) Dam, Los Angeles County

1927 – Shaver Lake (gravity) Dam, Fresno County

1928 – Bucks Lake (rock-fill) Dam completed, Plumas County

1928 – Canyon Lake/Railroad Canyon (variable radius arch) Dam completed, Riverside County

1929 – East Bay MUD's Mokelumne River Aqueduct is completed.

1929-35 – Hoover Dam construction

1929 – Pacoima Reservoir (variable arch radius) Dam, Los Angeles County

1929 – Pardee Lake (gravity) Dam, Amador County

1931 – Big Tujunga (variable radius arch) Dam completed, Los Angeles County

1931 – Salt Springs Reservoir (rock-fill) Dam, Mokelumne River, Amador County

1933-41 – Parker Dam construction -- diversion for LADWP's Colorado River Aqueduct

1934 – El Capitan Reservoir (hydraulic fill) Dam completed, San Diego County

1934 – San Francisco's Hetch-Hetchy aqueduct is completed

1934 – Bouquet Canyon (earth) Dam completed, Los Angeles County

1934-35 – CA runs to feds for help; FDR authorizes emergency funds; California Valley Project becomes funded fully by the federal government (a big deal for future actions; state doesn't have autonomy; U.S.

1935 – Calero Reservoir (earth) Dam completed, Santa Clara County

1935 – Almaden (earth) Dam completed, Santa Clara County

1935 – Cogswell Reservoir (rock-fill) Dam completed, Los Angeles County

1935 – Guadalupe Reservoir (earth) Dam completed, Santa Clara County

1935 – Stevens Creek Reservoir (earth) Dam, Santa Clara County

1935 – Vasona Reservoir (earth and rock) Dam, Santa Clara County

1936 – Coyote Reservoir (earth and rock) Dam completed, Santa Clara County

1937 – Boca (earth) Reservoir/Dam completed, Nevada County

1937 – Eaton Wash Reservoir (rock-fill) Dam, Los Angeles County

1938 – Lake Havasu/Parker (variable radius dam), San Bernardino and Mohave counties

1938 – Lake Mathews (earth) Dam, Riverside County

1938 – San Gabriel Reservoir (earth and rock) Dam, Los Angeles County

1940 – All American Canal in Imperial County is completed.

1940 – Hansen Flood-Control Reservoir (earth) Dam completed, Los Angeles County

1941 – Colorado River Aqueduct is completed.

1941 – Englebright Lake (variable radius arch) Dam completed, Yuba County

1941 – Prado Reservoir (rock-fill) Dam, Riverside and San Bernardino counties

1941 – Lake Crowley (earth dam), Mono County

1941 – Sepulveda Reservoir (earth) Dam, Los Angeles County

1942 – Brea (earth) Dam completed, Orange County.

1942 – Millerton Lake/Friant (gravity) Dam, Fresno and Madera counties

1943 – San Vincente Reservoir (gravity) Dam, San Diego County

1945 – Lake Loveland (variable arch) Dam, San Diego

1945 – Lake Shasta (gravity) Dam, Shasta County

1949 – Vail Lake (variable radius arch) Dam, Riverside County

APPENDIX D

SUGGESTED REFERENCES FOR

THE HISTORICAL ARCHAEOLOGY LAB

SUGGESTED REFERENCES

FOR THE HISTORICAL ARCHAEOLOGY LAB

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Corcoran Cotton Picker Camp, 1930. Courtesy Kings County Library, San Joaquin Valley Library System.

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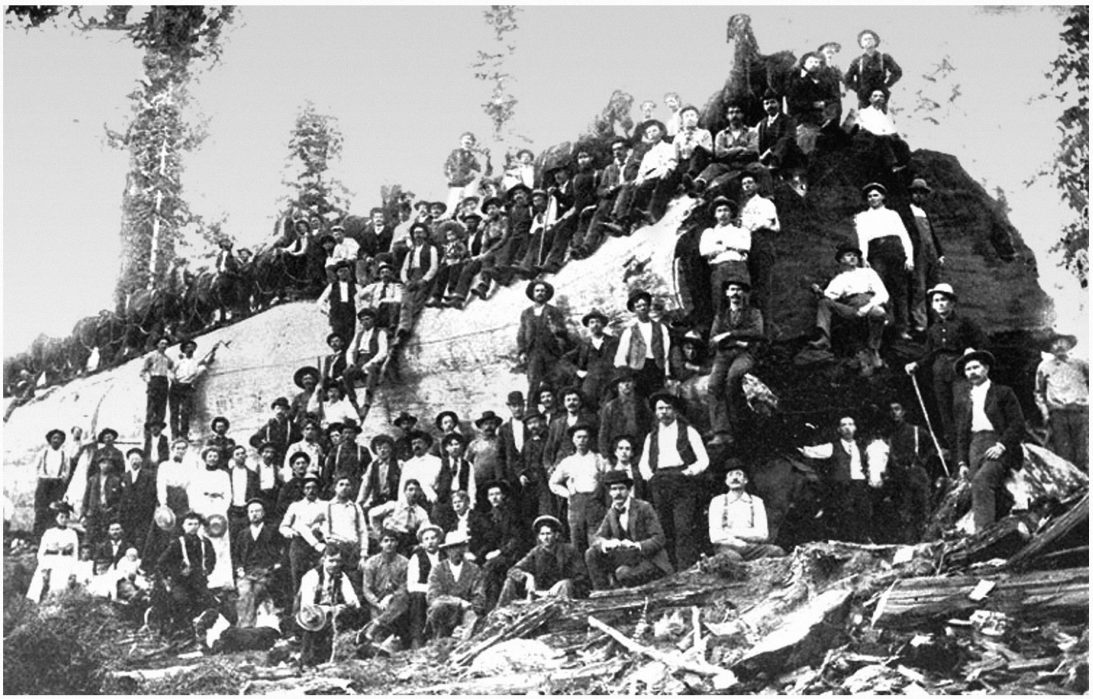

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