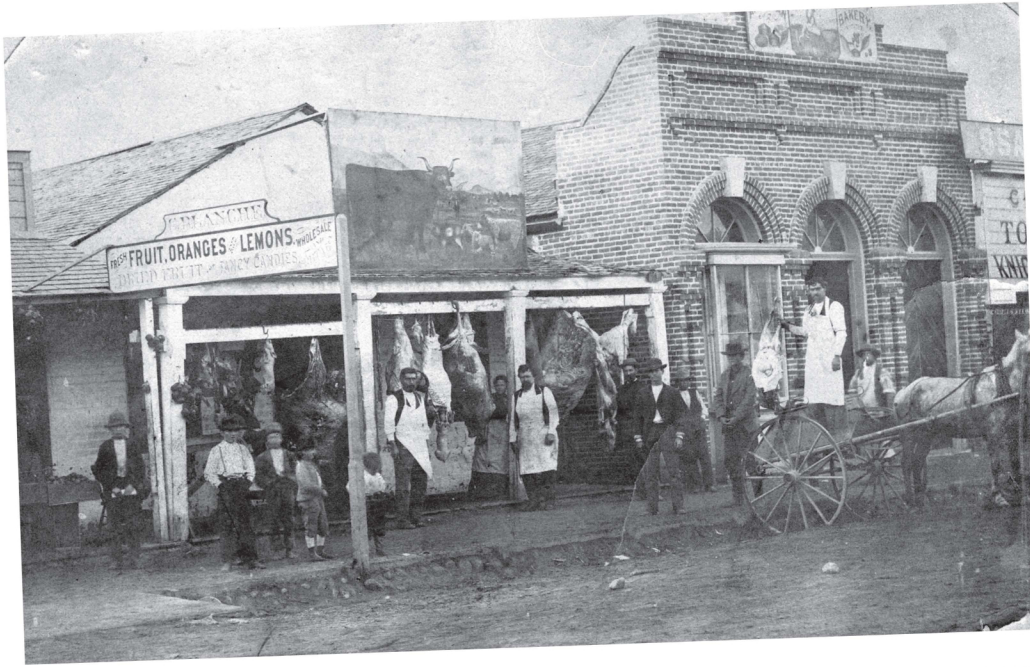


A Historical Context and Archaeological Research Design for Townsite Properties in California



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MANAGEMENT SUMMARY

The California Department of Transportation (Caltrans), in cooperation with the Federal Highway Administration, California Division (FHWA), 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 towns in California, that is, for their eligibility for listing in the National Register of Historic Places under Criterion D or the California Register of Historical Resources under Criterion 4. 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 history or prehistory, and the information must be considered important. 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.

Although this document provides a framework for evaluating most types of townsite properties found in California, 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 townsite theme in terms of their ability to yield important information. Researchers should also consider carefully whether additional National Register criteria may apply to individual sites, although those other possible values are not discussed in this study. Other National Register criteria consist of A (important events), B (important people), and C (architecture and engineering achievements).

The historic context presented here is a broad overview that addresses the major themes of townsite development in California during the period from statehood in 1850 to circa 1920, or roughly the end of the Progressive Era. Future researchers are encouraged to use this context as a starting point when assessing the National Register values of townsites, particularly in California.

Archaeological evidence collected during previous studies suggests that townsite properties have the potential to address the following research themes within a contextual or interpretive approach: Structure of a Community: Townsite Establishment and Evolution and Infrastructure Development; Industry: Social and Technological Implications; Commercial Behavior: Service Industries and Mercantilism; and Domestic Behavior: Townsite Residents. Research is not necessarily limited to these themes, however, and individual researchers may follow other theoretical approaches or find alternative research themes relevant to specific sites. In addition, this document includes an implementation plan that advocates specific methods to follow when assessing the information value of townsite properties, in an effort to improve consistency and thereby facilitate better intersite 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.

ACKNOWLEDGMENTS

An interdisciplinary team of consultants prepared the initial draft of this document. The Anthropological Studies Center (ASC) at Sonoma State University was the coordinating institution, with Mary Praetzellis acting as the project manager. The principal authors of this volume were (in alphabetical order) Anmarie Medin (Caltrans), Adrian Praetzellis (ASC), Mary Praetzellis (ASC), and Stephen Wee of JRP Historical Consulting Services, LLC (JRP). Thad Van Bueren and Judith D. Tordoff, both of Caltrans, provided much useful advice along the way. The study was prepared under the overall direction of Greg King, former Chief of the Caltrans Cultural and Community Studies Office, with Anmarie Medin acting as the project manager.

Because the contracted scope of work limited the breadth of the study, Caltrans staff augmented the consultant-prepared report. Primary authors for Caltrans included Dana Supernowicz and Anmarie Medin, with assistance from Julia Huddleson and Kimberly Wooten. Maya Bineli, Ed Carroll, and Nathan Wilson, Sacramento State Public History program graduate students, contributed to the historic context. Michael D. Meyer and Adrian Praetzellis of the ASC provided additional content. Peer review of the second draft was provided by Judy Tordoff, Mark Walker (ASC), Steven Wee (JRP), and Thad Van Bueren. Further peer review was provided by Marlesa Gray, Karen Swope, and Scott Thompson of Statistical Research, Inc. Caltrans staff reviewing this study included Dicken Everson, Blossom Hamusek, Julia Huddleson, Anmarie Medin, Wendy Nettles, Dana Supernowicz, Tom Wheeler, and Kimberly Wooten.

The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716) state that historic contexts should be constructed by an interdisciplinary process that considers the comments of the interested public and scholars. To facilitate public comment and peer input, the authors presented their approach in symposia at the 2006 annual conference of the California Council for the Promotion of History. A similar presentation was made at the Society for California Archaeology's 2006 northern data-sharing meeting. A review draft was posted online, and comments were received from professionals in the cultural resources field. The townsites study was also discussed in a session on thematic studies at the 2008 Society for Historical Archaeology conference.

This townsites study is the third in the Caltrans historical archaeology thematic studies series; the first discusses agricultural properties, and the second discusses mining properties. 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.

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APPENDICES

- Appendix A. Research Themes and Questions for Townsites
- Appendix B. References for the Historical Archaeology Lab

CHAPTER 1: INTRODUCTION

The purpose of this research design is to provide general guidance for evaluating the data potential of historic-era archaeological features associated with former and current townsites, including towns that are currently encompassed by large metropolitan areas. It includes an historic context outlining significant themes in California history, identification of property types, and important archaeological research themes and questions relevant to townsites.

This volume covers townsites for the period from 1850 to circa 1920. Statehood was chosen as the beginning point because of the massive influx of people and resources and a divergence from the settlement patterns of the Mexican era. The close of the Progressive Era, circa 1920, was chosen as the ending point because of significant changes in personal and municipal behaviors that altered living conditions and lifestyles and thus influenced archaeological formation processes (e.g., municipal trash collection, enforcement of sanitation codes, etc.) and the questions researchers might pose. The context does not include company or corporately owned towns because they were established for markedly different economic reasons.

According to *Webster's New World Dictionary* (3rd ed.), a town is a distinct location with a place-name, compactly settled as opposed to the surrounding countryside, larger than a village but smaller than a city, and of an urban character when contrasted with its rural environment. A city is, by definition, larger, more diverse, and more economically important than its surrounding towns. Thus, the definitions are relative to each other, and the status of towns and cities shift in time and place according to criteria of size and importance. Both, however, are clearly urban as opposed to rural places. U.S. Bureau of the Census (1975) defines "urban" as a place containing 2,500 inhabitants or more. In California in 1885, fully one-half of the state's population lived in cities and towns by these definitions. It was a highly "urbanized" state in comparison with other western states.

This document is divided into five chapters:

- Chapter 1 consists of this introduction, which outlines the document's purpose, authorship, structure, and orientation.
- Chapter 2 contains the historic context: a broad study of towns in California providing information on the varying themes of California history.
- Chapter 3 describes archaeological property types created by the processes presented in Chapter 2. These are 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 begins with a brief historiography of towns. Research themes for the property types are then presented from the perspective of history and archaeology. Per the Secretary of the Interior's Standards and Guidelines (48 FR 44716–44742), this cross-disciplinary review of current scholarship informs the archaeological research themes and questions that follow.
- Chapter 5 offers an implementation plan that presents standardized methods that will enhance comparative research and guide evaluation under Criterion D of the National Register of Historic Places (NRHP) without hampering the intellectual process. It concludes with suggestions for future research and an admonition that this document requires regular reconsideration.

RESEARCH DESIGN SERIES

This study is third in a series of statewide, thematic archaeological research designs developed by the California Department of Transportation (Caltrans). Its purpose is to help archaeologists assess the importance of historic-era archaeological sites commonly encountered on Caltrans projects. Caltrans has produced, or is producing, other volumes in this series, cited throughout this study as the agriculture, mining sites, and work camps thematic studies. The agriculture study was finalized in 2007 and the mining study was finished in 2008. Both are posted on the Caltrans Division of Environmental Analysis Web site (www.dot.ca.gov/ser/guidance.htm#agstudy). The work camps study is currently in draft form and is being finalized by Caltrans. Table 1 at the end of this chapter contains a list of historic-era archaeological features and indicates in which volume each is addressed.

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

THE NATIONAL REGISTER EVALUATION PROCESS UNDER CRITERION D

To be eligible for listing in the NRHP, a property must be significant in American history, architecture, engineering, or culture and possess integrity of location, design, materials, workmanship, feeling, setting, and association. In addition, the property must meet one or more of the four NRHP criteria (36 CFR 60.4):

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

This document concerns itself solely with eligibility under Criterion D; however, researchers should consider which of the other NRHP criteria might be applicable to the property they are evaluating.

National Register Bulletin 15 provides important guidance on applying Criterion D, which has two requirements that must both be met for a property to qualify: "the property must have, or have had, information to contribute to our understanding of human history or prehistory, and the information must be considered important" (National Park Service [NPS] 1991:21). An integral part of this study is a research design that explicitly demonstrates the connection between the information and the property and helps define whether the information that a property contains is

important or not. A good research design “specifies not only the questions to be asked, but also the types of data needed to supply the answers” (NPS 1991:22).

Little and Seibert (2000:29) define five basic steps necessary to evaluate properties under Criterion D:

1. Determine site structure, content, and classes of data 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. Considering the property’s integrity, structure, and content, assess 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. Chapter 2 presents an historic context for townsites in California between statehood (1850) and circa 1920, roughly the end of the Progressive Era in California. It can provide the basis of a context statement for evaluation, but it must be supplemented by property-specific research to provide the relevant focus. The NPS revised thematic framework, *History in the National Park Service: Themes and Concepts*, offers eight themes and many subthemes that are useful for developing historic contexts for specific properties (NPS 1996). The historic context is linked to an individual property by property types—groupings of individual properties that have shared physical characteristics or associations. Property types are discussed in Chapter 3. To make the connection between specific archaeological resources and the property types identified in the historic context, Donald Hardesty (1988) developed the concept of “feature system,” a cluster of archaeological features that are the products of an identifiable process or activity. This approach focuses the evaluation effort on historically significant units.

To be eligible for listing in the NRHP under Criterion D, a property must contain information that can contribute to our understanding of some aspect of human history and the information must be considered important. Chapter 4 contains research themes and associated questions that can be applied to specific property types. The importance of a good research design and interdisciplinary research cannot be overstated. The need for integrated and holistic approaches to site-specific research has proven to be a key tool in reaching defensible arguments regarding eligibility.

Archaeological facts are not intrinsically valuable; they achieve importance in relation to their ability to advance our understanding of human history. We can define what constitutes important information by reviewing current scholarship in disciplines such as history, geography, anthropology, and archaeology. As change in research orientation is a normal part of social science, important issues are moving targets that must be frequently reassessed. We recommend that historical archaeologists consider both the scientific and humanistic contributions of the discipline as they design and conduct their work. Some questions have definitive answers, such as those designed to gather baseline information about the structure, content, and integrity of a property. Some questions will have less conclusive or quantifiable answers, as they are designed to help incrementally reveal large-scale historical and cultural processes significant or important in our history. Individual properties often contribute by illustrating how a diversity of processes played out in specific contexts, deepening our understanding of their effects on Californians in the past.

Furthermore, an archaeological site must be able to convey its significance to those for whom it has value. In the case of Criterion D, these are scholars and others who may seek to use the information the site contains. The ability of a property to convey this information is measured by assessing its integrity. The appraisal of integrity accompanies an assessment of significance: significance + integrity = eligibility. This topic is discussed in Chapter 5.

Applying the NRHP criteria for evaluation is a complex undertaking. It requires that researchers follow a set process and understand certain professional standards and practices. The National Register Bulletin series is an essential reference. Of particular importance are Bulletin 15 *How to Apply the National Register Criteria for Evaluation* (NPS 1991) and Bulletin 36 *Guidelines for Evaluating and Registering Archeological Properties* (Little and Siebert 2000). Bulletin 42 *Guidelines for Identifying, Evaluating, and Registering Historic Mining Properties* offers additional useful information (Noble and Spude 1997). All are available online at <http://www.cr.nps.gov/nr>. Donald Hardesty and Barbara Little's book *Assessing Site Significance: A Guide for Archaeologists and Historians* (2000) offers practical advice and many informative case studies.

THE CALIFORNIA REGISTER OF HISTORICAL RESOURCES

The eligibility criteria for the California Register of Historical Resources (CRHR) closely follow those of the NRHP (e.g., NRHP Criterion A = CRHR Criterion 1 and so forth), although some properties that are ineligible for listing in the NRHP may qualify for the CRHR (Office of Historic Preservation [OHP] 2001:ii). The Caltrans series of research designs may be used to help evaluate properties' eligibility to the CRHR for the purposes of complying with the California Environmental Quality Act (CEQA) within the requirements of the CRHR's implementing regulations at California Code of Regulation (CCR) Section 4850 et seq. Again, this research design focuses on assessing information value, which corresponds to CRHR Criterion 4.

RESEARCH DESIGNS IN URBAN ARCHAEOLOGY

Many of the research questions developed for cities apply equally well to towns because both are occupied by people living in domestic units. An important area of study for historical archaeologists is, in fact, assessing the differences in material culture between residents of the countryside, towns, and cities. There is a great deal of overlap between the agriculture, townsites, mining sites, and work camps research designs in the areas of domestic remains and the archaeology of infrastructure. Table 1 at the end of this chapter guides the reader to the research design that is most relevant for their property type. Not all property types or contexts are covered in this series.

There have been several attempts to encourage the creation of integrated historical archaeological research designs for American towns and cities. The most significant was the NPS Resource Protection Planning Process (RP3). Devised in response to the rate of urban renewal in the 1970s, RP3 encouraged state and federal agencies to organize cultural resource information into a framework that advanced both scholarly research and addressed the concerns of urban planners. Nationally, RP3 led to the construction of research designs for several cities including Alexandria, Virginia; Pittsburgh, Pennsylvania; and Charleston, West Virginia. In 1979, the city of Sacramento worked with archaeologist Peter Schulz and historian Marvin Brienens to create a series of research designs for redevelopment blocks in the city's downtown (Brienens et al. 1981) based on the archival research of a team of historians led by Joseph McGowan (McGowan et al. 1979). Later, in

the early 1980s as part of the RP3 process, the California OHP sponsored a series of workshops with the goal of developing statewide and regional research designs or research priorities. Nevertheless, in California there were few practical outcomes of the RP3 planning effort.

Historical archaeological research designs continued to be oriented toward individual sites rather than urban areas in general. Exceptions tended to concern larger undertakings such as the construction of reservoirs, for example, Lake Sonoma (Greenwood et al. 1980), and urban renewal projects from San Diego to Sacramento. In 1986, the Society for Historical Archaeology's Committee for City Archaeology commissioned a survey of the status of urban archaeology. Thirty-three towns and cities across the United States and Canada were represented (Cressey et al. 1986). After the 1989 Loma Prieta earthquake, research designs were written in connection with the replacement of the freeway system in San Francisco (Praetzellis and Praetzellis 1993) and Oakland (Praetzellis 1994).

These early research designs anticipated that historical archaeology would develop a continuity of approach and that the RP3 process would assist the evolution of cultural resource management (CRM) practice from a series of ad hoc undertakings into an articulated system whereby practitioners would investigate important issues and create products of lasting public benefit. This document is a step in that direction.

USING THIS DOCUMENT FOR SECTION 106 CONSULTATION

Caltrans' ultimate goal in producing this document is to streamline eligibility determination consultations with the SHPO under Section 106. To that end, researchers are encouraged to cite relevant sections of this document and apply specific research questions that relate to the townsite property being evaluated.

California SHPO staff reviewed early drafts of this study, commented on its fundamental scope, and find it provides useful guidance when assessing information values of townsite historical archaeological sites. However, as with all guidance, the SHPO staff will review individual submittals for appropriate application of research questions and recommended methods. The researcher must explain how the selected research questions apply to the site being evaluated, that is, what information is contained within the individual site and why it is important. Other theoretical orientations, research issues, or individual research questions not discussed herein may be identified as relevant to the site under study. If so, they would require further development for SHPO consultation.

INDEX TO STUDIES

Table 1 provides an index to many of the property types that appear in the thematic studies series Caltrans is producing. A "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 "2" indicates a secondary discourse, where a property type is discussed but perhaps to a lesser degree. As of the publishing of this townsites study, the work camps thematic study is in draft form.

Table 1. Index to Property Types in Thematic Studies.

Property Type Category	Property Subtype	Agriculture	Mining	Townsites	Work Camps
Residential structure	house (e.g., basement, cellar)	1	2	1	2
	boardinghouse	—	2	1	—
	hotel	—	2	1	—
	bunkhouse	1	2	—	1
	lean-to/tent	—	2	—	1
	improvised (e.g., boxcar, dugout)	—	2	—	1
Vertical interfaces, hollow-filled features: artifact caches (domes- tic, business, industrial)	privy, pit, well	1	2	1	2
Horizontal interfaces, fill layers: artifact accumulation (domestic, business, industrial)	sheet refuse	1	2	1	1
Gardens, yards, landscapes (private)		1	1	1	2
Activity buildings/structures	line camp	—	—	—	1
	shed	1	2	—	1
	blacksmith shop	1	2	1	2
	barn	1	—	2	1
	corral	1	2	2	1
	stable	1	2	2	—
	bake oven/outdoor kitchen	1	1	—	2
Placer tailing piles		—	1	—	—
Cut banks, channels, tailings		—	1	—	—
River diversions		—	1	—	—
Dredge tailings		—	1	—	—
Equipment mounts/foundations		—	1	—	2
Head frames (collapsed)		—	1	—	—
Adits and tailings		—	1	—	—
Retaining walls/platforms		—	1	2	2
Tramways/tracks		—	1	—	2
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	<i>arrastra</i> , foundation, pad, ma- chine mount	—	1	—	—
Ore processing tailings		—	1	—	—
Transportation, private (activity specific)	road, trail, railway	—	2	2	2
Transportation, intra-site	road, trail, railway	—	2	2	2
Transportation, extra-site		—	2	2	2
Water conveyance systems, intra-site	ditch, drain, containment	—	1	—	2
Electrical utilities	generation and transmission feature	—	2	—	2

Property Type Category	Property Subtype	Agriculture	Mining	Townsites	Work Camps
Public infrastructure building	school, church, hospital	—	—	1	2
	office, dining hall, cookhouse, showers, bunkhouse	2	2	2	1
Refuse dumps (municipal, not household/activity specific)		—	—	1	1
Townsite creation features	fill, levee, terrace, waterway	—	—	1	—
Townsite infrastructure features	sewer, water, electricity, natu- ral gas	—	—	1	—
Industrial buildings/structures	forge, casting floor	—	1	1	2
Industrial processes by-products	waster, raw materials, refuse	—	2	1	2
Mercantile building	store, shop, warehouse	—	2	1	—
Mercantile activities	merchandise/stock	—	2	1	—
Service business building/structure	laundry boiler/drying rack	—	—	1	—

(Note: 1 indicates the highest applicability of a study to a property type; 2 indicates secondary applicability of a study to a property type).

CHAPTER 2: HISTORIC CONTEXT

From the founding of this nation until the present, towns have been central to the formation of a democratic society. The creation of towns was fundamental to the establishment of California as a state in 1850 and to fostering a civil society. Not everyone benefited from the creation of towns, particularly Native Americans and Mexican land grantees, but towns provided jobs, education, social and religious institutions, and housing. California's early settlements were, in part, products of capitalism and resource exploitation, many created during the halcyon years of the California gold rush. The state's rapid population and economic expansion would not have been possible without the gold rush, the discovery of silver on the Comstock Lode, offers of cheap land, and later exploitation of forest resources, fisheries, oil, and cultivation of agricultural products (Walker 2001a).

Given the number and diversity of towns spread across California's vast landscape, discussing in detail each town would be impractical. The intent of this historic context is to define important themes in the development of California towns, to help foster a better understanding of the characteristics that shaped many of these communities, and provide the basis in which to pose meaningful research questions based upon town-related historical archaeological properties.

The definition of a town is perhaps less important than the characteristics that shape its identity. Over time, however, the definition of what constitutes a town has changed. Used more generally in the 19th century, authors applied the term "town" to areas of various size and population and later to incorporated areas with various population concentrations (Figure 1). California's original 1850 incorporation law defined towns as settlements of over 200 citizens, and 2,000 residents or more represented a city (Quebedeaux 1992:15–16). A simple, current definition of a town is "an urban area with a fixed boundary that is smaller than a city" (Cognitive Science Laboratory 2008)¹. Townships, not to be confused with towns, are administrative boundaries or divisions of a county. For the purposes of this historic context, towns are synonymous with communities, cities, and in some cases metropolitan areas, but only in the abstract in that cities or metropolitan areas may once have begun as towns. Communities, on the other hand, reflect the interaction between cultures, events, and infrastructure integral to towns, cities, and metropolitan areas. Where differences exist, this study has attempted to explain those differences, particularly as they relate to culture, politics, economy, and infrastructure.

Prior to and after the establishment of statehood, many viewed California as a "frontier," ripe for expansion and colonization. As the cultural landscape evolved over time and as human activity changed, towns gained complexity and acquired certain characteristics or layers of meaning that can be interpreted through historical, archaeological, geographical, and sociological study. Towns are, foremost, living landscapes that evolve as the culture, climate, economy, and natural surroundings change within and around them. The character of a town thus reflects the values

¹ A town has also been defined as those "people living in a municipality smaller than a city" (Cognitive Science Laboratory 2008), and *Webster's Dictionary* defines a town as "any collection of houses larger than a village and not incorporated as a city" (C. & G. Merriam Co. 2008). The U.S. Bureau of the Census currently defines a town as a "place," consisting of "a concentration of population either legally bounded as an incorporated place or delineated for statistical purposes as a census designated place." Furthermore, the U.S. Bureau of the Census defines an "incorporated place" as a type of governmental unit, incorporated under state law as a city, city and borough, municipality, town, or village that has legally prescribed limits, powers, and functions (Redistricting U.S. Census 2000-Glossary, <http://www.census.gov/dmd/www/glossary.html> (accessed 5/24/2010)).

shared by the occupants who have shaped it and those who continue to reside within it. Whether formally or informally, towns can expand or contract as do populations living within them.

Each town has its own sense of place or identity. Defining that sense of place may be both physical and meta-physical, as human experience tends to shape a person's frame of mind. In essence, measuring degrees of adaptation, acculturation, assimilation, and social change is in large part based upon human experience rather than statistical data. John B. Jackson (1984:xxi) argued that the commonplace aspects of the historic or contemporary landscape, "the streets, houses, fields and places of work, can tell us a great deal about history and society; about how we see ourselves and how we relate to the world."

Towns reflect migration and settlement patterns, cultural diversity, creative arts, and cultural expression. While not all towns are composed of similar populations or share a common heritage, each town has its own identity expressed most often in its architecture and culture.

Historical literature and photographs indicate that California's towns share many common elements that give a community its own particular character. In the past, most towns included a city or town hall, post office, hotel, various retail stores or businesses, a residential district, and municipal services, such as police, fire, roads, sewer, and water. Collectively, these elements created a sense of community and provided services necessary for commerce, trade, safety, and public health.

The architectural heritage of towns is particularly compelling. Commercial downtowns, or business districts, and residential neighborhoods may reveal levels of prosperity and also class status and ethnicity. Because commercial downtown districts evolve, often expanding but sometimes contracting over time, understanding the causal events that led to these changes is essential in exploring a town's historic context and formulating research questions that have substance and merit. Similarly, residential districts may reveal class status, changes in aesthetics and taste, and perhaps ethnicity. Additions or alterations to buildings, structures, and objects often reveal changes in popular culture, the availability of new products, and the prevailing economic conditions over time.

California's towns as a whole largely reflect two different schemes. The first is a designed community or designed landscape that includes parks and streets generally formed by even grids. The second is an organic or vernacular landscape defined by the local environment, social, and economic imperatives. For example, many towns in California's relatively flat Central Valley reflect



Figure 1. Looking northeast at Volcano, Amador County, 1866.
Note how the gold placer mines surround the gold rush-era town and intrude along its borders (Thomas Houseworth Stereoview, Library of Congress, Washington, D.C.).

designed landscapes having uniform grids and standard lot sizes. In contrast, foothill or mountainous communities relied upon the natural environment or topography for the town's layout, and towns were often created through a singular event, such as the discovery of gold or other precious metals.

The study of cultural landscapes and geography is useful for interpreting the history of towns. According to Wagner and Mikesell (1962) in *Readings in Cultural Geography*, the discipline of cultural geography has five interconnected themes: culture, culture area, cultural landscape, culture history, and culture ecology. The themes focus on features imposed upon or created from the natural landscape that assist in the investigation of human communities, in this case towns (Figure 2). The theme of cultural landscapes, in particular, focuses on the appearance of areas, assemblages of objects, and the areas themselves (Wagner and Mikesell 1962; Johnston et al. 1994). Cultural landscapes may be divided into sublandscapes that may include ethnic zones. For example, the "Doctrine of First Effective Settlement," in general, posits that the first ethnic group to sustain a viable self-perpetuating settlement in an area establishes characteristics of crucial significance for the later social and cultural geography of the area or community (Conzen 1994:245). This principle seems to have held from the post-gold rush era through the mid-20th century; however, since World War II, demographic shifts have occurred in many metropolitan areas across California, and none so abruptly as the Los Angeles Basin. Ethnic zones may be communities within a larger city, as demonstrated by "Chinatowns" or "Japantowns." In other situations, they may constitute ethnic enclaves or neighborhoods surrounded by other groups, as is the case of Chicanos in the barrios of Los Angeles.

During the California gold rush, the wide variety of cultural groups and mixed classes created a more fluid society where racial status did not always dictate success. As historian Daniel Cornford (1995:2) aptly noted, California's "working people who were hidden from history were not merely victims of inexorable forces, but were important actors who found various ways of exerting countervailing power to protect their interests—and in doing so profoundly shaped the history of California." Whether in cities or farms, how working-class Californians achieved financial independence, shaped the character of communities, and established political alliances are critical to understanding the history of towns.

There is no singular publication that summarizes the evolution of California's diverse towns, but there are numerous published and unpublished studies that document the evolution of particular towns or provide information needed to interpret the causal agents that led to the development of multiple towns or regions.

SETTLEMENT AND THE FORMATION OF TOWNS

There were many determinants for the creation and sustained development of towns in California. Besides economics, sociocultural values, military fortifications, and transportation, topography, climate, and geology were critical factors in town development. Many of the towns that formed during the mid-to-late-19th century in California remained small through the early-20th century, but ultimately many grew into major metropolitan areas such as Los Angeles, Riverside, San Bernardino, Fresno, Bakersfield, and San Jose owing to a combination of diversified economies, access to transportation facilities, and progressive local governments.

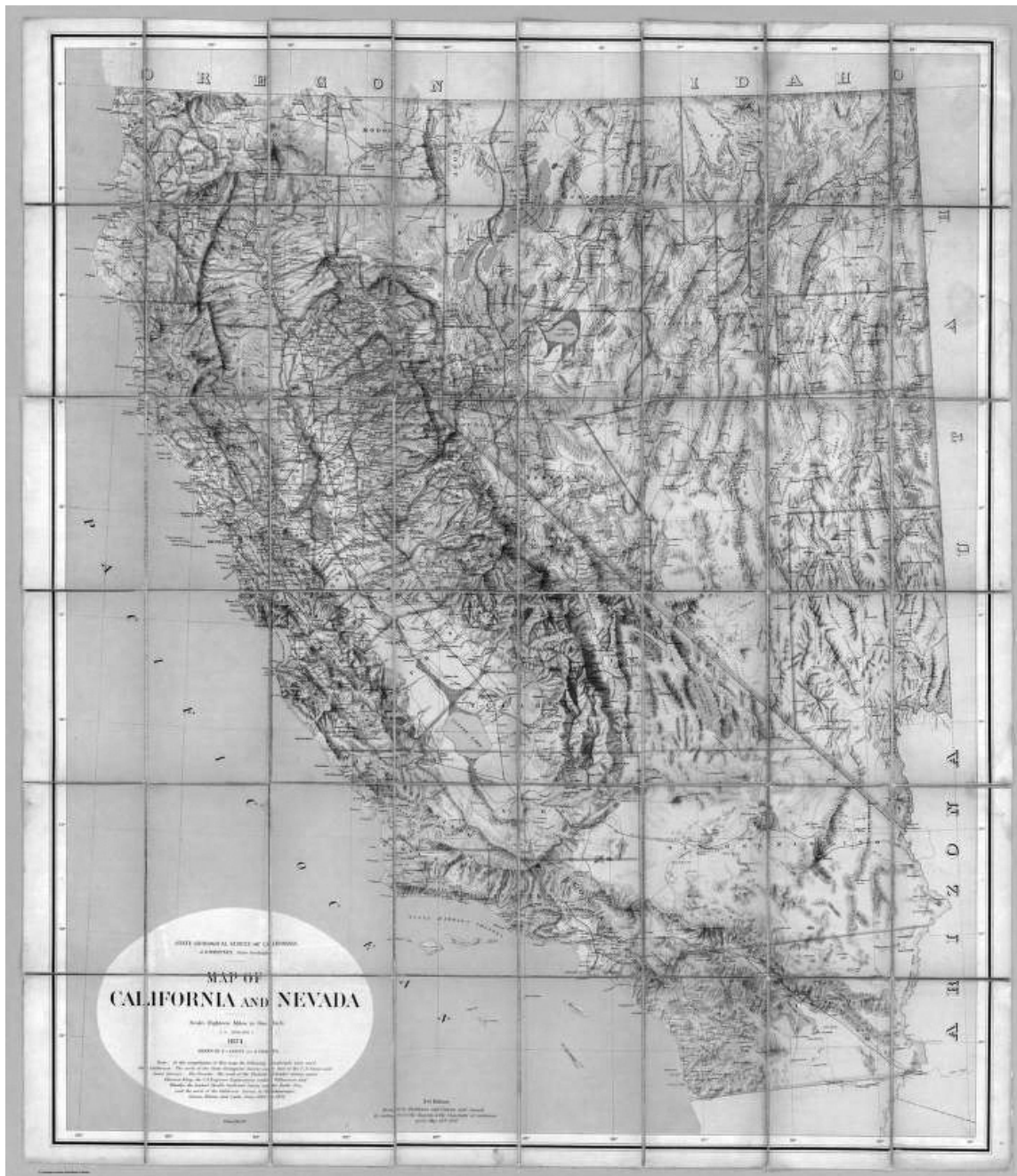


Figure 2. Map of California and Nevada, 1874. This early geological/topographical map clearly depicts the state's diverse geomorphology and settlement patterns (Courtesy of David Rumsey Historical Map Collection).

While some towns expanded, others remained stagnant, declined, or disappeared altogether. Calico, for instance, was never able to reinvent itself and overcome the waning mining industry in southern California. Similarly, mining communities such as Coloma in El Dorado County and Columbia in Tuolumne County diminished in population and political importance but survived with a small population (Coke 1968). Similar contractions occurred in the San Joaquin Valley because of declining markets for agricultural products. Indeed, the decline of the mining industry signaled the end of many communities—particularly in the principal mining districts in California. In California's Central Valley, towns stagnated or declined in population, while

others, such as Tulare (Figure 3) emerged with the construction of the Southern Pacific Railroad. To the south, Bakersfield established itself as an agricultural center and the gateway between the San Joaquin Valley and southern California, adding to its consumer base (Bailey 1984). Still other towns found themselves bypassed by that most vital 19th-century town-building factor, the railroad. In the San Joaquin Valley, for instance, Knight's Ferry was the seat of Stanislaus County until the Central Pacific established a depot at Modesto and that became the county seat (Tinkham 1921:91–94; Elias 1924:44–45).

The advent of the automobile and the development of tourism in the late-19th and early-20th centuries revived the fortunes of a few towns and resulted in the creation of new towns, as was the case throughout much of southern California (Figure 4). To the north, towns like Redding benefited from tourism with the creation of Lassen Volcanic National Park in 1914 and, in later years, with the opening of Shasta Dam and Reservoir. The town was en route to the park and was therefore ideally located to receive, house, and feed overnight travelers. Its tourism economy received a further boost with the development of Shasta Lake (Lawson 1986:99–102). Communities along the Sacramento-San Joaquin River Delta likewise experienced a resurgence linked to the growth of auto-tourism. The Delta had long been a popular destination for steamboat travelers on the river. Once automobiles became more prevalent and roads were improved, the Delta could be visited for the afternoon or for weekend camping. Places such as Rio Vista clearly benefited from this traffic in the 1910s, attracting visitors to its Annual Horse Show and Water Carnival. In southern California, the automobile was a particularly important and pervasive seed of change. The Southern California Automobile Association frequently sponsored road improvements, auto-tour events, and promoted local and regional growth.

Electrification improved the overall quality of life for residents, making the nighttime streets safer, facilitating the development of evening social activities, as well as providing the means for more intra-urban travel.

Similarly, improved communication through the telegraph and later the telephone revolutionized the way people communicated with one another. These technological and economic changes at the turn of the 20th century had political ramifications as the middle class—the group that in many ways had benefited from urban growth—led the way in reshaping how cities functioned politically and how they served their residents. From the 1890s onward, many towns became more progressive in an effort to address growing concerns for crime, sanitation, and fire (Chudacoff 2005:176–201).



Figure 3. Tulare in the late 1870s. Looking west at the new town towards the Southern Pacific Valley Railroad Depot. Note the flat landscape, uniformly gridded streets, newly constructed buildings, and numerous platted vacant lots (Courtesy of San Joaquin Valley Library System).

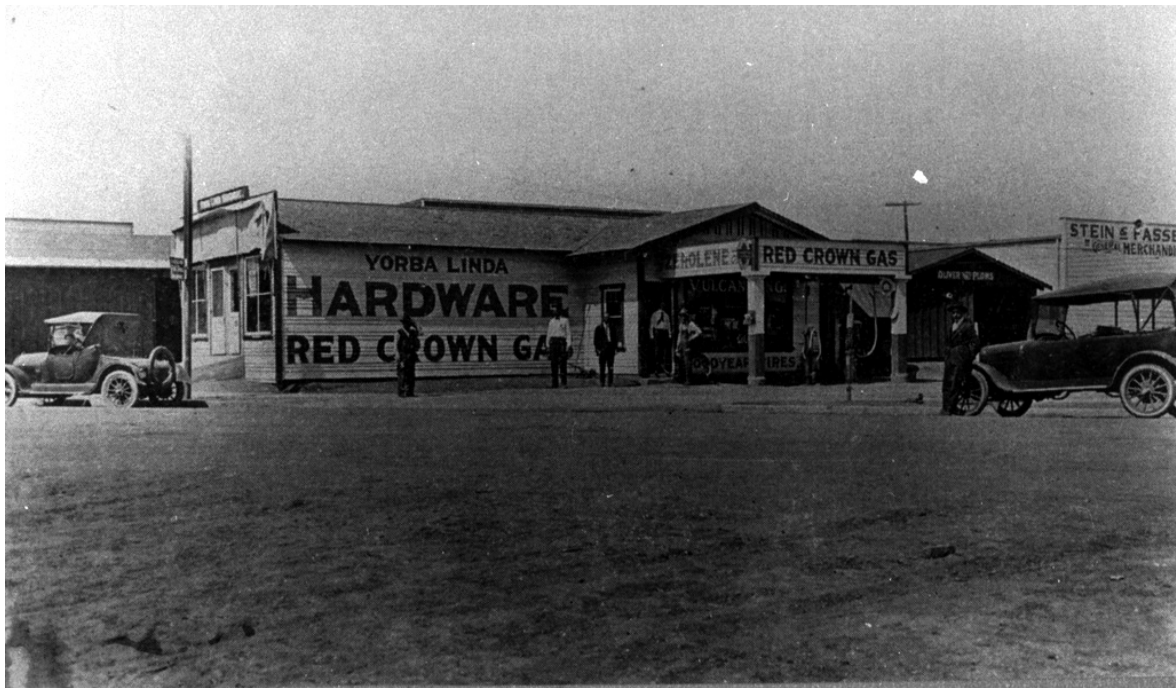


Figure 4. Yorba Linda Hardware Store and Red Crown Gas Station, 1918. Early-day gas stations like the one in this photograph provided a valuable service to local communities as well as visitors en route to various destinations. Note the combination gas station and hardware store (Courtesy of Yorba Linda Public Library, Yorba Linda).

During the early 1900s, communities sought political incorporation as a means of obtaining state monies to create an urban infrastructure that could provide a more amenable environment for commercial and residential development. Towns that secured this political status and made investments in their infrastructure often continued to grow into the 20th century.

GEOMORPHIC REGIONS AND THE SETTLEMENT OF TOWNS

For the purposes of this study, geomorphology refers to the study of landforms, their classification, origin, development, and history. California has a wide variety of landforms that make up a particular region or province, such as the San Joaquin and Sacramento valleys. Geomorphic provinces have unique but oftentimes overlapping features due to hydrologic systems that cross regional boundaries and mountain ranges that span large sections of the state. Notwithstanding the role of gold and other natural resources in the establishment of towns, climate, soils, and proximity to water played an equally important role as much of California's late-19th-century economy centered on agriculture.

As previously noted, geomorphology played an important part in the formation of towns, the survival of towns, and the types of industries associated with towns. For the purposes of this study, California has been divided into nine broadly defined geomorphic provinces (Figure 5):

- Northern Province (encompassing the Klamath and Cascade mountains)
- Sierra Nevada
- Central Coast Ranges
- North Coast Ranges

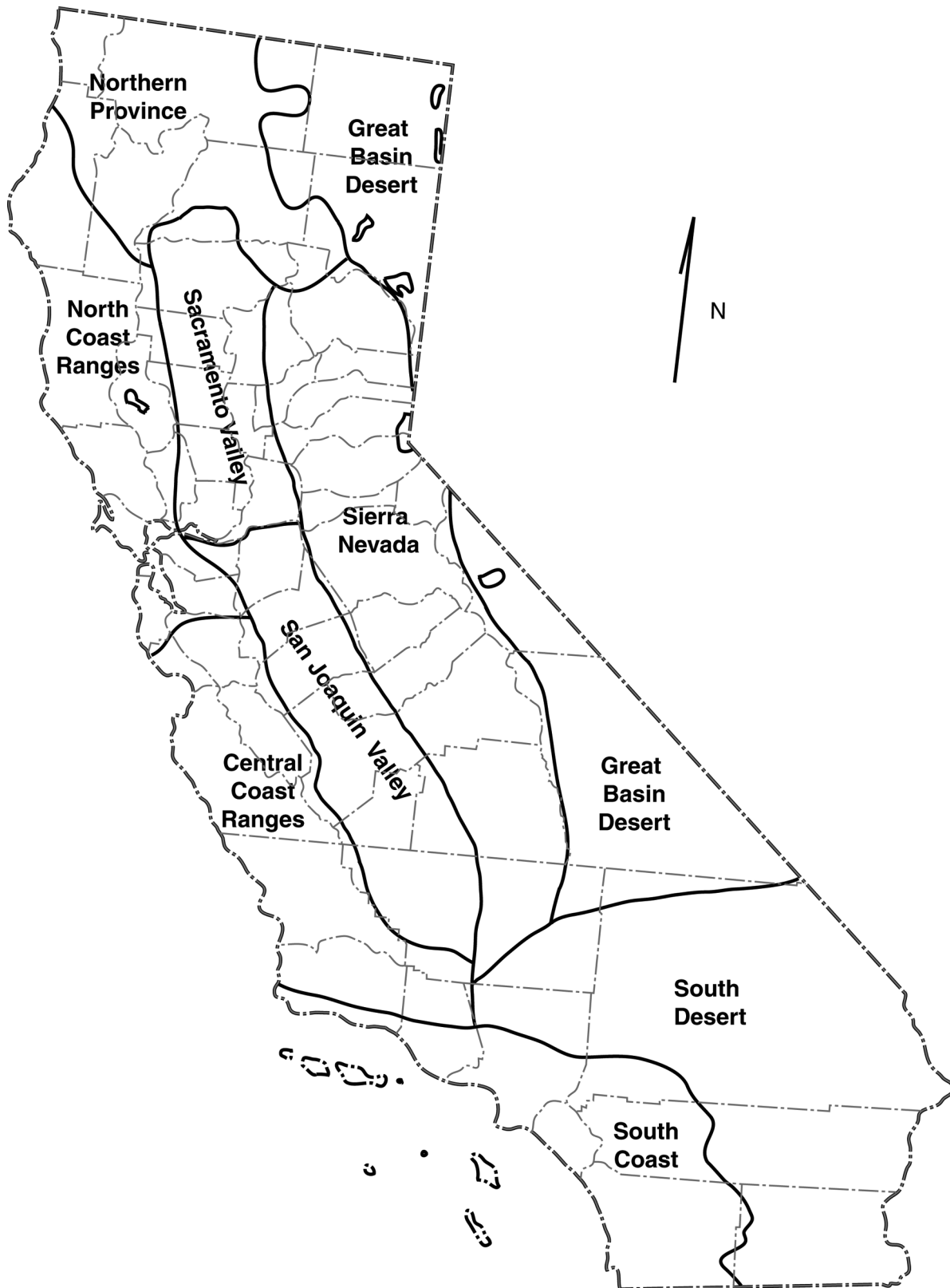


Figure 5. Geomorphic Regions of California (Compiled by Caltrans from Beck and Haase 1974; Schoenherr 1992; and Johnston 2003).

- Sacramento Valley
- San Joaquin Valley (includes the Delta region)
- South Coast (encompassing the Transverse and Peninsular ranges)
- South Desert (encompassing the Mojave and Colorado deserts)
- Great Basin Desert (encompassing the Modoc Plateau and Basin and Range Province)

A Mediterranean climate with wet winters and long dry summers generally characterizes California. The various mountain ranges influence weather patterns with as much as 80 inches of rain falling on the western slope and considerably less on the eastern slope; a “rain shadow” affects the entire eastern slope and contributes to the conditions that created the Great Basin. Much of California is arid and meets the technical definition of desert, receiving less than 10 inches of rain per year (Schoenherr et al. 1999). Those portions of the state lying east of the Cascades, Sierra Nevada, Transverse, and Peninsular ranges, as well as the southern end of the San Joaquin Valley, meet this definition.

A wide variety of geomorphologic characteristics defines California’s diverse landscape. Geographer Allen R. Eigenheer (1976) theorized that settlers used the following criteria to judge the relative value of a particular area and whether the area was suitable for settlement, principally for agricultural purposes:

- Physical features of the landscape
- The adaptability of crops to an unfamiliar climate
- The availability of free or cheap land
- Accessibility of the area to potential markets for commerce and trade
- Availability of a reliable supply of water

Soils and landforms were important factors in deciding the locations of towns (see Figure 5). Town development was associated with physical and visual characteristics, particularly the perceived similarity of certain provinces in California to a particular homeland, such as Italy, the Azores, or Mexico. For example, the northern Coast Range in Sonoma County shared many characteristics with northern Italy, hence Italians from the provinces of Genoa and Tuscany settled in Sonoma County. Similarly, Azoreans settled in large numbers along the central coast, particularly in the Monterey region, and Armenians settled in the Fresno area (Santos 1995). This pattern of selective settlement does not pertain to every immigrant group that settled in California. For many, friends and family members encouraged settlement in a particular locale or region. In other cases, investors purchased large tracts of land and made unrealistic predictions of natural conditions. In order to attract developers and home seekers, local governments through their chambers of commerce frequently embellished the advantages of their respective communities.

The formation of towns was also dependent upon a reliable source of domestic water, whether through rainfall, internal sources within the town such as natural aquifers, wells, or holding tanks, or through external means such as water conveyance systems. In order to provide a consistent supply of water, elevated water towers and water impoundments, such as dams and reservoirs, were constructed. Passage of the Wright Act in 1887, enabled the formation of local water districts, and by the first two decades of the 20th century, most communities throughout much of

California's Central and Imperial valleys were receiving water (JRP Historical Consulting Services and Caltrans (2000:14). In 1913, the Los Angeles Department of Water and Power diverted the lower Owens River to the Los Angeles aqueduct, creating one of California's most important and controversial water enterprises: the Owens Valley Irrigation Project. The ensuing Owens Valley–Los Angeles Aqueduct undertakings resulted in the distribution of water to southern California, including the city of Los Angeles. The net result of these major water projects was to foster both agricultural and townsite development after 1920.

In summary, California's diverse geomorphology influenced the establishment and location of towns in California. Topography, climate, soils, and hydrologic systems together played a part in determining the layout of towns and ultimately their role in the state's economy. Similarly, environmental factors influenced public health issues. For example, low-lying areas with sustained summer heat attracted mosquitoes and led to outbreaks of malaria, particularly in the southern San Joaquin Valley. Ironically, the state's natural resources that once appeared to be unlimited under certain conditions had real limitations. Droughts, floods, changing groundwater tables, and human intervention such as the construction of dams, canals, and reservoirs, all affected the scale and character of California's towns.

LAND ACQUISITION, THE FORMATION OF LOCAL GOVERNMENTS, AND THE SETTLEMENT OF TOWNS

Colonization of California came quickly following the discovery of gold in 1848. The process to create towns was ambiguous because land laws relating to townsite creation were vague. Most gold rush–era towns were created through preemptive settlement on lands in the public domain. During the latter half of the 19th century, towns developed around existing industries, were acquired by direct purchase from private parties, donation, or through the variety of land-disposal methods established by the state and federal government.

Until 1858, California had no state-administered land sales because local governments generally handled land transactions. Conflicts often arose when the state granted applicants lands through warrants on lands not surveyed. Due to these conflicts this method was declared illegal in 1863, and the old system of granting title to lands was nullified. After 1866, federal law deemed that land titles were granted following formal surveys and verification that the land in question was not already under title. This policy, declared illegal in 1863, along with an 1866 federal law, averted the problem that confirmed titles granted by the state in cases of dual grants (Liebman 1983:21). The most corrupt sales were associated with swamp and school lieu lands, which the office of the State Surveyor General poorly administered. In many cases, unscrupulous attorneys used dummy buyers to help them in acquiring large tracts of land. The fact that 516 individuals, including companies and corporations, had holdings over 5,000 acres in size, which covered roughly 8.7 million acres by the 1870s, attests to the dramatic land monopolization that occurred during the mid-19th century in California (Liebman 1983:22).

California had eight primary methods of federal land disposal during the latter part of the 19th and first half of the 20th century. They included cash land sales, homesteads, Desert Land Act entries, Timber and Stone Act entries, scrip or lieu, mineral entries, Timber Culture Act entries, and railroad grants. The Preemption Act of 1841, enacted for the settlement of western lands, allowed for cash sales and became the primary method of land acquisition during the 19th century. Scrip and lieu included military bounty warrants, such as those issued after the Civil War, agricultural

college scrip, Valentine scrip, Sioux Indian scrip, etc. Through military bounty bills, assignable warrants could be provided to any soldier, or his heirs, who had served a minimum of 9 days in any war after 1790 or in the Revolutionary War. Speculators later purchased many of the warrants and used them to acquire land in the West. Exploiting various types of scrip to acquire land in California also occurred, while the Forest Lieu Land Act of 1897 assisted in the privatization of the state's valuable timberland (Coggins et al. 1993). In private hands, timberlands could be later subdivided and, if desired, towns could be platted.

The federal government enacted a number of laws granting lands to aid railroad construction between 1850 and 1871. The allocated sections were alternating, odd-numbered, and within 20 miles of the side of a road. In addition, the grant generally exempted all previously disposed of land. Selling excess land occurred within 3 years after the construction of the Transcontinental Railroad. By 1958, California had disposed of 38,784,000 acres of federal land (Liebman 1983:30).

In the case of towns and cities, there was minimal governmental or legal guidance for subdivision and town lot sales in California from the mid-19th century to the early-20th century. Federal law, embodied in the Townsite Act of 1867 (14 Stat. 541), established some rules and direction for filing surveys and town plats with the General Land Office and the subsequent subdivision and sale of town lots. These, however, applied only to federal (public) land. Holders of rancho grants (private lands) interested in creating unincorporated towns (i.e., not chartered by the state legislature) were bound by no laws. The first statewide law dealing with subdivision maps and city and town plats for land sales was enacted in 1893 (California Stats. 1893, ch. 80). In 1927, the legislature adopted the first Planning Act, authorizing cities and counties to develop master plans (California Stats. 1927, ch. 874). As a consequence of the act, there was wide variation in how towns prior to 1893 were laid out and how land and land use were defined within towns prior to 1927. In addition to platting townsites, towns were granted specific authorities through federal and state laws. Those laws governed a town's authority to construct, maintain, and operate businesses and industries (Figure 6). Act 2335 (approved March 28, 1868, Stats. 1867–1868, p. 487; amended 1871–1872) gave municipal governments and incorporated towns the authority

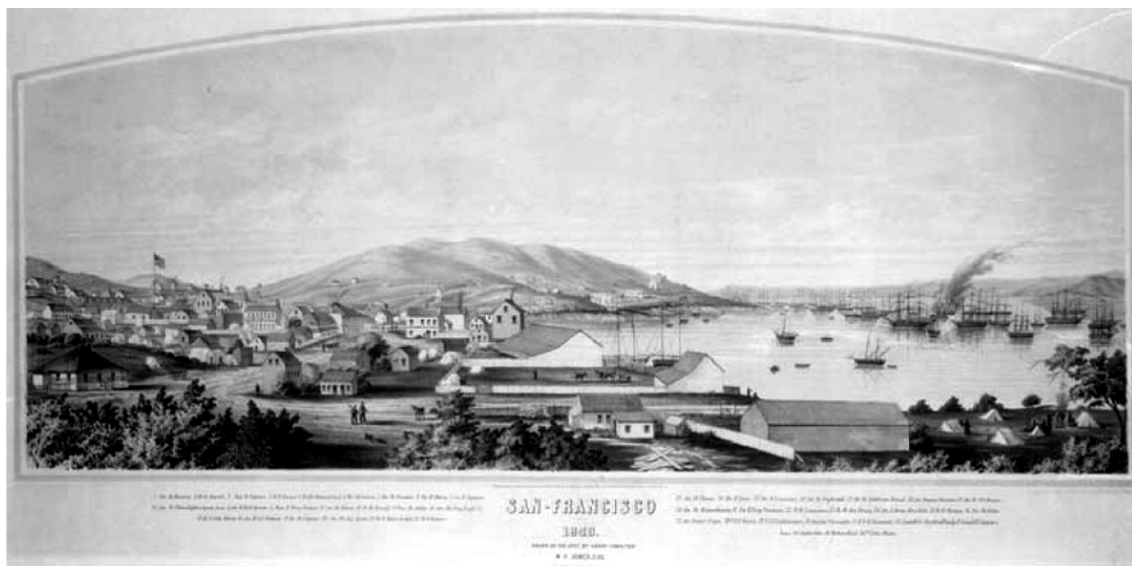


Figure 6. Early view of San Francisco, 1849 (Courtesy of The Bancroft Library, University of California, Berkeley).

to execute certain trusts in relationship to town lands (Deering 1909:648), which led to the establishment of official townsites enabling municipalities to collect taxes, develop infrastructure, and establish laws and regulations that benefited the community. A similar act in 1891, Act 2337, allowed towns and cities to acquire by purchase, gift, or condemnation, water, water rights, reservoir sites, etc. (Deering 1909:648). In the next few years, other acts provided for cities or towns to let contracts for lighting streets, planting and caring for shade (street) trees, constructing municipal hospitals, and licensing bicycles, etc. (Deering 1909:649). Today, a combination of laws, regulations, and authorities forms a city's municipal codes and guides the city manager in making decisions that influence virtually every aspect of the daily life of its citizens.

While most of the following discussion has focused on towns, county government was sometimes intermingled with local government. One example is Mariposa County, where there are no incorporated towns. Mariposa is the county seat and the county administers the affairs of the community of Mariposa, as they do other towns in the county (Figure 7). Mariposa is also unique in that the land where the town was platted was once owned by a single individual, namely John C. Frémont. Frémont acquired the land where the townsite is located through a Mexican land grant. Legal title or fee simple title to lots did not occur until years after Mariposa was settled and developed.



Figure 7. View looking north at the town of Mariposa, circa 1860 (Courtesy of San Joaquin Valley Library System).

SETTLEMENT HISTORY BY REGION

California's settlement patterns leading to the creation of towns were as much a product of natural forces as politics, laws, regulations, and cultural influences. From the first decade of the 17th century until almost the middle of the 19th century, the Spanish and Mexican governments pursued a policy of town development in the northern borderlands of the Spanish colonial empire in the New World. The Spanish colonial government planted the first nucleus of European American settlement in San Diego in 1769, and over the next six decades established 20 more missions to colonize the native population. Their efforts laid the foundations for some of the largest cities in California—Los Angeles, San Francisco, and San Jose. Smaller historically important frontier communities, such as Monterey and Sonoma, came into existence when groups of settlers near the presidios and pueblos sought recognition for town settlements that remained under military jurisdiction. The Spanish and Mexican provincial governments introduced the pattern of grid streets with main buildings facing a central plaza and reservation of common land around the town—a pattern that had already governed Spanish colonial urban design for more than 400 years. Other California towns began when the missions were secularized and former mission properties were redesigned with gridded streets and blocks, such as San Luis Rey, San Juan Capistrano, San Luis Obispo, Santa Clara, and others (Weber 1982; Cruz 1988; Cutter and Engstrand 1996).

From San Diego in the south to Sonoma in the north, the great mission trail known as El Camino Real laid the cornerstone for Hispanic civic communities and solidified Spanish control over most of California's shoreline. Monterey and Los Angeles were the cultural centers, and San Francisco, then known as Yerba Buena, was only a small hamlet of a few hundred people. In the 1830s, inland from the string of coastal settlements, were vast open stretches of Native American lands. Various Native American tribal groups still controlled the lower Sacramento Valley and adjacent foothills and mountains to the east, but their world had been fragmented by Mexican, British, and American influences and their control weakened by diseases and invasion of foreign plants, animals, and trade goods. Sutter's Fort, a provisioning point for American explorers and settlers, constituted the first interior townsite in Mexican California (Hurtado 1988:14–37; White 1994:97–106; Eifler 2002:19–32).

NORTHERN PROVINCE

The Northern Province includes the Klamath and Cascade mountains, and the Modoc Plateau is part of the Great Basin Desert. The Klamath Mountains in the northwest corner of the state have peaks ranging from 5,000 to 7,000 feet in elevation, cut by the Smith, Klamath, and Trinity rivers. Rainfall averages 140 inches per year along the coast, contributing to the large and scenic river systems. Dense stands of Douglas fir, as well as a wide variety of other economically valuable tree species, dominate the landscape. The Cascades lie farther to the east and form the southernmost extension of the range running from Washington through Oregon. Active volcanoes, Shasta and Lassen, are prominent peaks in this mountain chain (Schoenherr 1992:5–6).

Trappers had explored the northern reaches of the state, and settlers had passed through on their way to Oregon, however, there were no Euroamerican towns in the Northern Province prior to the gold rush. Pierson B. Reading's discovery of gold in the Trinity Mountains in 1849 resulted in an influx of miners. The economic draw of gold and then lumber created a need for towns to support northern California's growing population (Moehring 2004:1–5). Because most of the far-flung northern California towns rose instantly as a by-product of gold rush booms, there was a correspondingly large failure rate when the bust cycle followed.

In 1850, the California state legislature apportioned the state into 27 counties. The legislature made the northern section of the state—east of the summit of the Coast Range and north of Colusa and Butte counties—into one immense territorial division, known as Shasta County. The sheer size of the local governmental unit made it unmanageable and of little utility to the citizens residing therein. Shasta County eventually became five California counties: Siskiyou, Tehama, Lassen, Modoc, and Shasta. Smaller counties brought legal structure and stability to the fragmented region and their county seats—Yreka (1851)²; Shasta (1850) and later Redding (1872); Tehama (1850) and soon thereafter Red Bluff (1850); Susanville (1853); and Alturas (1874), respectively—benefited. These communities became centers of trade, finance, and business for their region, as they were often located near waterways and overland transportation routes (Wells 1881:64–67; Coy 1923:250–252).

As in other areas of the state, the rush of miners provided the first great impetus towards development of roads, the growth of freighting and express companies, and the emergence of stage-coach systems and the wayside stations, stables, hotels, blacksmith shops, grain and hay farms, and other service industries that supported such transportation networks (Figure 8). Settlements

² Number in parentheses following town indicates year of founding.

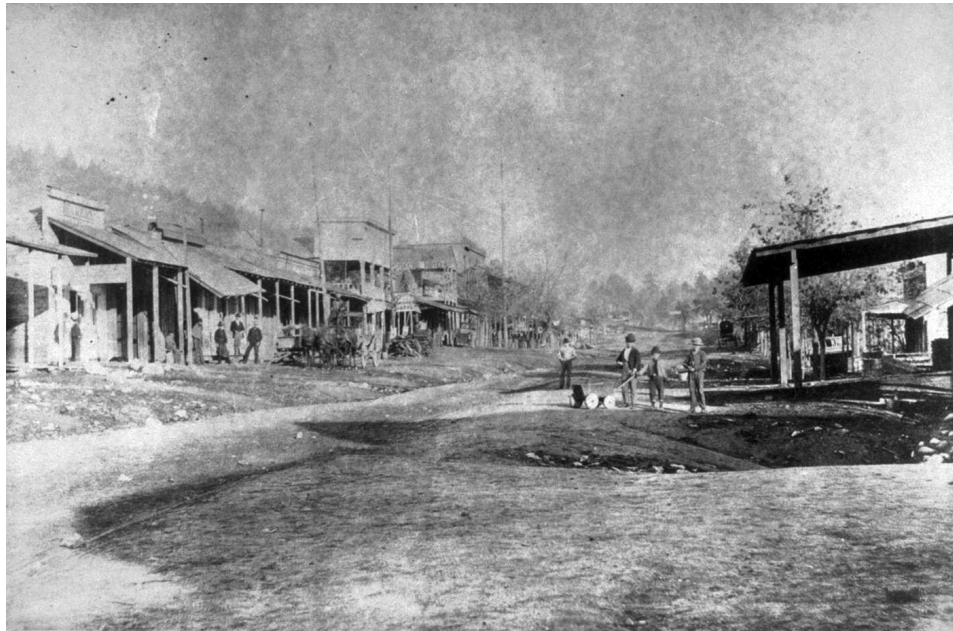


Figure 8. Town of Shasta, 1860. Note the dirt street and swale to divert water from the businesses, most of which appear to be brick and wood-frame with false fronts (Courtesy of The Bancroft Library, University of California, Berkeley).

established at the crossroads of major trade routes with a diversified hinterland were the most likely survivors, and several of these places became the most successful towns of the region. The development of interregional transportation routes, from the northern Sacramento Valley fanning out to the north coast of California, southern Oregon, and east to the Modoc Plateau and upper Klamath River country, solidified the permanence of towns along these routes of travel and commerce.

A second, but more sustained resource of the Northern Province was lumber. Demand for lumber for mining, town construction, and building the city of San Francisco resulted in the development of sawmills and oftentimes towns that surrounded the mill. The timber industry quickly became the top manufacturing industry in the region. California lumber easily competed with imported white pine from the East Coast, and by 1860, Siskiyou County alone had 30 sawmills, although most of their product was used locally. Throughout this broad expanse of northern California, Sacramento and San Francisco remained fundamental to the creation of trade networks, and local towns and communities provided jobs, social interaction, and basic services for residents living in closer physical proximity to specific industries, such as mining and logging.

Unlike the rest of the state, urbanization occurred slowly in extreme northern California because there were fewer people and more circuitous roads and steep mountainous terrain. Many of the small towns established by miners along the Trinity and Klamath rivers were transitory, lacking the resources to survive the decline of mining. Yreka survived the decline in mining after the mid-1850s, and because of its strategic location, it became the center of trade between the upper Sacramento Valley and Oregon (Wells 1881:196–200).

SIERRA NEVADA

Schoenherr (1992:1) described the Sierra Nevada as “the most conspicuous geographic feature of the state of California.” This north-south-trending mountain range consists of granite blocks

that have been uplifted by tectonic activity. The western side of the Sierra forms a gradually uplifting slope cut by many rivers, and a steep vertical drop of nearly 2 miles into the Owens Valley characterizes the eastern side. The mountain range contributes to the “rain shadow” effect that influences the entire state. The range includes 13 peaks that are higher than 14,000 feet, as well as the Mother Lode region known for its gold mining. Higher elevations support coniferous forests and alpine meadows that ranchers used for seasonal grazing and pasturage.

Gold mining in the Sierra Nevada had profound human and environmental impacts. Gold invested the Sierra Nevada with a monetary value and meaning for capitalists, and the subsequent colonization of the mountains and foothills with mines, mining camps, and towns dispossessed the native population and reshaped the natural landscape. In just a few years, mining, logging, farming, water development, and the town building that supported these industries brought American capitalism and industry to the region. Mining also brought together people of different ethnic backgrounds, gave some their start to fame and fortune, and bankrupted many more. The generation and distribution of mining capital stimulated growth and development but also contributed to the exploitation of the environment by despoiling streams with mining debris, denuding the landscape, and leaving a legacy of toxic residue. The mining and logging industries, supported by wealthy and powerful business interests in San Francisco, Sacramento, and other towns that actively promoted large-scale, capital-intensive economic development, relied upon the large immigrant workforce that was in the state by the 1860s. The gold rush era also laid the foundation for the region’s modern economy, today relying heavily on tourism.

Virtually all the gold rush-era towns in the Sierra Nevada were configured around the natural topography. Unlike valley towns that were gridded, towns in the Sierra Nevada were often built along the banks of rivers, creeks, and gulches. The physiographic context of these towns is important to interpreting their cultural development.

Most of the towns of the Sierra Nevada began as fledgling mining camps during the gold rush (circa 1848–1855), characterized by hastily built log, tent, and frame cabins erected in an ad hoc fashion. Many argonauts came to mine gold, but some realized that fortunes could be made by supplying the miners with foodstuffs and provisions. Entrepreneurs built and operated boardinghouses, saloons, hotels, or restaurants and provided entertainment and other goods and services (Borthwick 1917). Standing buildings or structures associated with the first waves of miners are few because almost every gold-mining town was destroyed by fire at some point in its early history, or in later years, the hastily built makeshift buildings were replaced with more substantial structures, many built of brick and stone which were considered fireproof.

Each town had to develop its own commercial linkages and infrastructure to stock its merchants and grocers and support the distribution of goods to mining camps while meeting the varied social and economic needs of the district’s diverse mining population (Figure 9). Remote mining towns, such as Downieville along the Yuba River and mining camps along the Feather River, relied upon muleteers and teamsters ferrying provisions to and from the region. Nonperishable products, such as canned salmon, oysters, and corned beef, may have been more common in the remote mining camps and show up more frequently in the archaeological record.

Mining supported an extensive list of non-mining occupations that included merchants, grocers, livery-stable operators, blacksmiths, teamsters, carpenters, mechanics, woodcutters, assayers, saloon and hotel or boardinghouse keepers, and usually a doctor, dentist, and attorney. Dance houses,



Figure 9. Dutch Flat, Placer County, 1866. Note the narrow streets that helped precipitate devastating fires that consumed entire commercial districts (Thomas Houseworth Collection, Library of Congress, Washington, D.C.).

gambling saloons, and places of sexual commerce were commonplace in the towns of the gold-mining districts. In the haste to build a town, many gold rush towns were laid out with narrow, circuitous streets (see Figure 9) that resulted in mini-firestorms when flames leaped from one shake roof to another, oftentimes destroying entire business districts.

In the economic realm, mining towns were the meeting place for two streams of gold rush participants with different orientations—miners, and merchants or speculators. Each was in search of wealth, but the methods chosen to achieve it were quite different—one based on mineral resource extraction, the other on acquiring these precious metals in exchange for food, mining equipment, and a wide variety of consumer goods. Thus, town society was compelled to be responsive to the miners' ways and their diverse cultural and ethnic heritage, and miners largely shaped the cultural and physical environment of gold rush communities (Chan 1986:389; Rohrbough 1997:152; Johnson 2000).

The transition from individual to industrial mining created new demands. Mining claims were absorbed into larger and better-capitalized industrial operations. Major hard rock and hydraulic mines accounted for a greater percentage of gold production, but smaller mining operations still contributed to the local economy. In addition to agents selling products such as mine machinery directly from San Francisco factories to corporate mines, local merchants also sold basic mining equipment along with foodstuffs, clothing, and other merchandise to local miners. The demand for mining technology spurred the growth of local companies that produced mine machinery.

Examples include the Knight Foundry (1873) in Sutter Creek and the Miners Foundry (1855) in Nevada City.

The Sierra Nevada mining region was divided from north to south: the southern mines were south of the Cosumnes River to Mariposa and the northern mines were north of the Cosumnes River towards Downieville. Both mining regions had a diverse ethnic heritage, although the southern mines included a disproportionate number of Latin American miners, primarily from northern Mexico, Chile, and Peru. The southern mines also attracted large numbers of Italians and Chinese, most of who were initially engaged in gold mining. After 1900, Serbians, Croatians, and even Russians immigrated to the southern mines, such as those near Jackson, Amador County. Many southern mining towns had their fandango dance hall, bull-and-bear rings, and other Hispanic cultural influences. The sheer number of communities formed in this region during the California gold rush reflects the intensity of mining activity during those early years (DuFault 1959:155–170; Monaghan 1973; Standart 1976:333–357).

While the main point of commerce and trade for the central and southern mines was Stockton, the northern mines relied primarily on Sacramento, whose merchants acted as intermediaries between San Francisco capitalists, speculators, and commodities traders and the Sierra storekeepers and miners. Before individuals with access to capital and goods established permanent townsites, the geography of trade and the flow of goods were fluid—sometimes shifting rapidly as the prominence of river-bar mining camps and the importance of emerging towns changed. Sacramento's sphere of trade put a vast region under the control of its merchants and entrepreneurs. The region extended roughly from the town of Auburn, located at the confluence of the Middle and North Forks of the American River in Placer County on the north, to the town of Jackson in southern Amador County on the south. The towns in between, which formed the core of the central mining district, linked Sacramento by a network of roads running east to west and branching out into the foothills; the principal routes roughly parallel the modern courses of State Routes (SRs) 16, 50, and 20. It was during the 20th century that a circuitous highway system, known today as SR 49 (also known as the Golden Chain Highway), linked the mining towns of the Mother Lode region from Mariposa in the south to Downieville in the north.

NORTH COAST RANGES AND SAN FRANCISCO BAY AREA

The North Coast Ranges consist of a series of northwest-to-southeast-trending ridges and broad valleys that define the western edge of the Central Valley. Mountain elevations in this region reach as high as 6,000 feet, and snow is common on higher elevations. Many rivers carve through the valleys, creating broad alluvial fans and rich bottomlands that support diverse crops. Chaparral dominates south-facing slopes, and evergreen oak woodland occupies cooler north-facing slopes (a vegetation pattern termed “slope effect”). On the coast side, stepped terraces indicate the uplift that has resulted from geological activity. The north coast region includes the counties of Humboldt, Mendocino, Lake, Sonoma, Napa, San Francisco, Alameda, Contra Costa, and Santa Clara.

The towns of the northern California coast were oriented to the leading centers of trade, namely Eureka in the north and San Francisco to the south. The prevailing industries of the region included logging, mining, agriculture, dairying, and viticulture. As towns grew and developed, their success depended upon transportation networks and the demand for the goods that they were producing.

In the 1850s and 1860s, small towns sprang up along the northwest coastal zone. The far northern coastal region witnessed a surge in logging operations tied to local ports or coves where vessels could be loaded with redwood. The shipping of lumber quickly grew to dominate the coastal towns (Cox 1974:259–262). Humboldt Bay was the safest harbor in northern California to accommodate oceangoing vessels filled with lumber, and Eureka's establishment 7 miles from the bay's entrance in 1850 allowed the city to dominate the ocean shipping trade. Eureka had many early rivals within Humboldt Bay. These early rivals included Bucksport and Arcata, also established in 1850, which were beachheads of trade created by San Francisco business interests (Moehring 2004:16–17). Eureka's success as a center for commerce and trade was in part because of its status as county seat, obtained in 1856.

During the early 1850s, resistance by Native Americans south of Humboldt Bay delayed town development in the rugged north coastal country. To help subjugate the Native Americans along the Mendocino coast and provide a military presence, the army erected Fort Bragg in 1857. The creation of the military outpost resulted in the development of a small town around the post to supply trade goods. The closing of the Noyo Indian Reservation in 1867 made land available and permitted the town to grow rapidly, converting Fort Bragg into a lumber-manufacturing, shipping, and later, fishing community (Palmer 1880:428; Moehring 2004:18).

During the height of lumbering activity, circa 1870–1890, numerous hamlets grew up along the coast, each one a shipping point for coastal lumber schooners lying at anchor off the coast. Along the Mendocino County coastline, logs were sent into the sea in chutes from the cliffs or by rail and wharf to awaiting vessels at more than a dozen places—Usal, Rockport, Hardy Creek, Westport, Cleone, Fort Bragg, Noyo, Caspar, Mendocino, Little River, Albion, Navarro, Elk (Greenwood), Point Arena, and Gualala.

The coastal port towns of Mendocino and Sonoma counties, which often started as centers of redwood production, remained small and multifunctional. When lumber was at its peak, Mendocino's Point Arena, which was established in 1859, was the busiest town between San Francisco and Eureka. The town contained 14 sawmills, which were visited daily by coastal shipping schooners that navigated the treacherous waters to access not only Point Arena but other growing lumber centers such as Fort Bragg, Elk, Albion, and Mendocino (Munro-Fraser 1880:377; Spencer-Hancock 1978) (Figure 10).

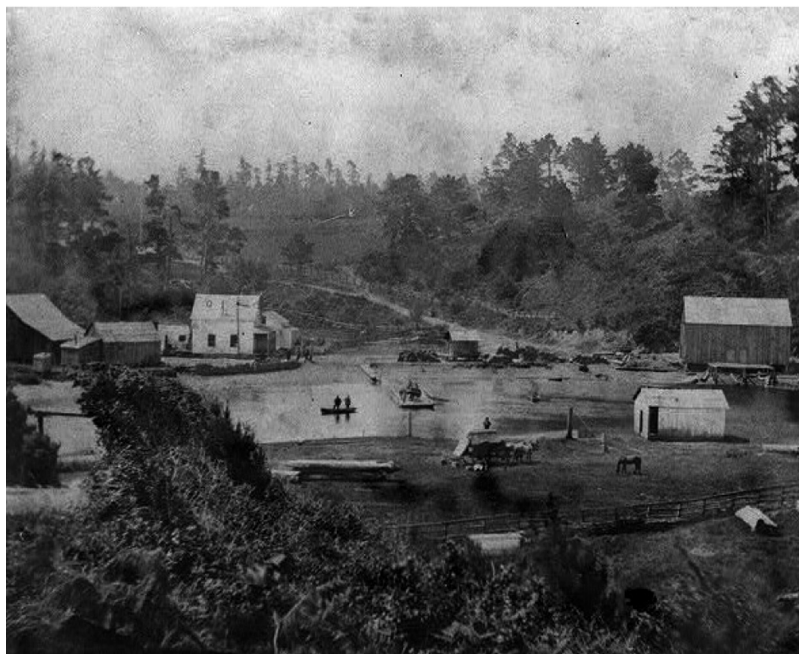


Figure 10. *Noyo River at Fort Bragg, 1866* (Thomas Houseworth Collection, Library of Congress, Washington, D.C.).

Salmon fishing became an important coastal industry, and by 1860, Eureka boasted seven packing plants that produced cured fish for the local towns and for export (McEvoy 1986). Del Norte also had a large salmon-packing industry, exporting canned salmon to San Francisco (Bledsoe 1881:115).

The inland communities east of the coastal range used overland transportation routes to link commercial farmers with urban Bay Area markets in the pre-railroad era. Within this network of small rural towns, the county seats, like those in the far northern counties, became centers of distribution. Their origins were typically agricultural, but their networks remained the same. Petaluma, established in 1852, benefited from its location on the wagon route to Humboldt and Mendocino counties and its position on the banks of Petaluma Creek. Ukiah, created in 1856, stood out as the main center of distribution for the interior cities, with smaller competitors in Lakeport (1859) and Colusa (1850). Although the railroad brought new economic opportunities to these towns, each of them was already on established travel routes from San Francisco or Sacramento north to the coast or mining regions, and the continued use of those routes allowed the towns to flourish (Menefee 1873:238; Palmer 1880:234,472–478, 1881:162–166; Rogers 1891:263–266; Lambert 1918:234–238).

Napa, located at the head of navigation on the Napa River, became an important center of commerce and trade, transporting fruit, grain, wine, and other agricultural products to the Bay Area. Its viticulture industry quickly proved to be the most profitable for the region. In addition to shipping directly to San Francisco, Napa had two rail lines running through it from Vallejo to Calistoga. It benefited from its location on the trade route between Benicia and Sonoma and from being the trade center for smaller satellite towns (Menefee 1873:50–60; Moehring 2004:19–20).

The San Francisco Bay and Peninsula—an area that includes the present-day counties of Marin, Contra Costa, Alameda, San Francisco, and San Mateo, and northern elements of Santa Clara County—experienced some of the most rapid and significant urban growth in northern California prior to the 20th century. That growth came as a direct consequence of the “instant” emergence of San Francisco as the state’s central urban place in the wake of the gold rush. Development occurred in the new urban communities surrounding San Francisco to meet the needs of the burgeoning metropolis. The location of the outlying communities to San Francisco, however, made the character of their development more suburban than urban (Walker 2001b). Indeed, the cities and towns of the bay and peninsula emerged primarily as processing and shipping points for agricultural and industrial goods, as small ports, and as bedroom communities for San Francisco (Moehring 2004:2–3,22).

All around San Francisco Bay, from Marin County across the Golden Gate to Contra Costa and Alameda counties directly opposite San Francisco, numerous towns appeared in the 1850s. In Marin County, new arrivals eager to profit from San Francisco’s growth transformed communities such as Sausalito (1850) and San Rafael, initially a mission *asistencia* established in 1817. Sausalito, whose main industry was fishing, remained a rather small community into the 1910s, but San Rafael rapidly evolved into a San Francisco suburb (Lewis Publishing Company 1892a:398–400; Scott 1985:28,30,33,56).

Elsewhere along the East Bay in Contra Costa and Alameda counties, industrial communities, ports, and local agricultural-processing centers developed. In Contra Costa County, explosive manufacturing created an economic boom for the region. Towns such as Hercules, established

in 1881, and Pinole, which was established earlier in 1854, found their economies revitalized by the industry. Along the northern tier of Contra Costa County, waterfront communities were more common. Most notable were Port Costa (1879) and Martinez (1849) along the Carquinez Strait, and New York Landing (changed later to Pittsburg) and Antioch both established in 1849 along Suisun Bay. For a time, these towns occupied a critical juncture between San Francisco, the mining districts of the east, and the burgeoning farms of the Central Valley. Further inland, Contra Costa County became home to a diverse array of townsites in the mid-to-late-19th century—some organized around mineral extraction and others predicated upon agricultural processing. Beginning in the 1860s, a number of short-lived coal-mining towns appeared south of Suisun Bay: Nortonville (1861), Somersville (1861), Stewartville (1861), Judsonville (1860), and West Hartley (1870). Agricultural-processing and service communities were established, including Walnut Creek (1860), Pacheco (1860), and Concord (1869). Walnut Creek, located on its namesake, became one of the most prosperous small towns in the San Ramon Valley by the late-19th century, largely because of its location along major roads that connected the East Bay to the Central Valley (Munro-Fraser 1882; Purcell 1940).

In Alameda County, a similar pattern of town building occurred, resulting in the creation of economically diverse communities such as Oakland (1852), Alameda (1854), and Berkeley (1864) (Figure 11). All began as “ferry suburbs,” but within a generation, they had become significant cities in their own right. As with other townsites in California, the creation of these communities came at the expense of existing Hispanic landholders. All three towns emerged out of Vicente Peralta’s enormous Rancho de San Antonio. Oakland was first; squatters and land speculators illegally seized portions of Peralta’s rancho and platted a residential community for San



Figure 11. Bird's Eye View of Oakland, 1893 (Elliot Publishing Company, Courtesy of Oakland Public Library).

Francisco in the 1850s. With the completion of the Central Pacific's transcontinental railroad in 1868, Oakland became a crucial transportation hub for not only California, but for the West Coast as a whole (Moehring 2004:22).

Although not as spectacular in their growth as Oakland, the towns of Alameda and Berkeley nevertheless experienced considerable development. By the 1870s, Alameda had evolved into not only a processing and shipping point for local timber, dairy products, and fruit, but also a San Francisco bedroom community. Berkeley took a different path; in 1873, it wooed the University of California from Oakland to its current site and became the intellectual hub of the Bay Area (Scott 1985:35,55,66–67; Moehring 2004:22). As Oakland, Alameda, and Berkeley grew up alongside San Francisco, small towns devoted to agricultural processing formed in the county interior and thrived by supplying these larger cities with goods (Moehring 2004:22). These communities included Hayward (1854), followed by San Leandro (1855), Emeryville (1859), and Livermore (1864). In contrast to the agricultural villages that dotted the interior of Contra Costa County, these communities successfully diversified their economies and grew considerably into the early-20th century.

To the south of San Francisco along the peninsula, San Mateo was established in 1863 and South San Francisco in 1890. Both communities emerged as agricultural-processing and shipping centers precisely because of their locations (Moehring 2004:22,24).

Farther south along the eastern side of the peninsula in southern San Mateo and northern Santa Clara counties, large estate homes and ranches developed, and later affluent residential suburbs. As rail networks extended farther southward from San Francisco, a wealthier class of emigrants began to settle not only in San Mateo and Redwood City, but also in Menlo Park (1854), Palo Alto (1888), and Burlingame (1901) (Hynding 1982:109–117; Moehring 2004:24).

Farther south, in northern Santa Clara County, an agricultural-based town network formed with San Jose at its center. San Jose began as a Spanish pueblo located about 60 miles south of San Francisco. The town functioned as the central place for much of the South Bay. Indeed, as one historian has noted, San Jose through “aggressive leadership” managed to monopolize much of the county, politically and economically; it became the county seat in 1850 and even served as the state capital until 1851. Towns such as Santa Clara, Cupertino, and Alviso evolved into thriving communities, established in the fertile Santa Clara agricultural valley where key transportation routes ran through San Jose to San Francisco.

CENTRAL COAST RANGES

The Central Coast Ranges generally exhibit the same geology and soils formations as the North Coast Ranges described above. The central coast region includes the counties of Monterey, Santa Cruz, San Benito, San Luis Obispo, and most of Santa Barbara County. In contrast to the San Francisco Bay and Peninsula, the central coast area, with the exception of the few major cities, experienced comparatively little urbanization in the late-19th and early-20th centuries. Although agriculture stimulated the creation and growth of a few towns, the area's lack of rail access until the mid- to late 1870s severely hampered the local economy. Those communities that were able to secure access to the railroad and develop the surrounding agricultural land were successful well into the 20th century.

Prior to statehood, the city of Monterey served as a port city, a center for trade, and the provincial capital (Figure 12). With the rapid expansion of San Francisco in the 1850s, however, Monterey quickly found itself surpassed in importance and size. During the mid-19th century, lacking rail access to the rest of the state, Monterey found it difficult to exploit its hinterlands, with the exception of dairying and grazing livestock (Moehring 2004:25–27). Beginning in the 1870s through the 1940s, the fishing industry largely sustained Monterey and the county's coastline communi-

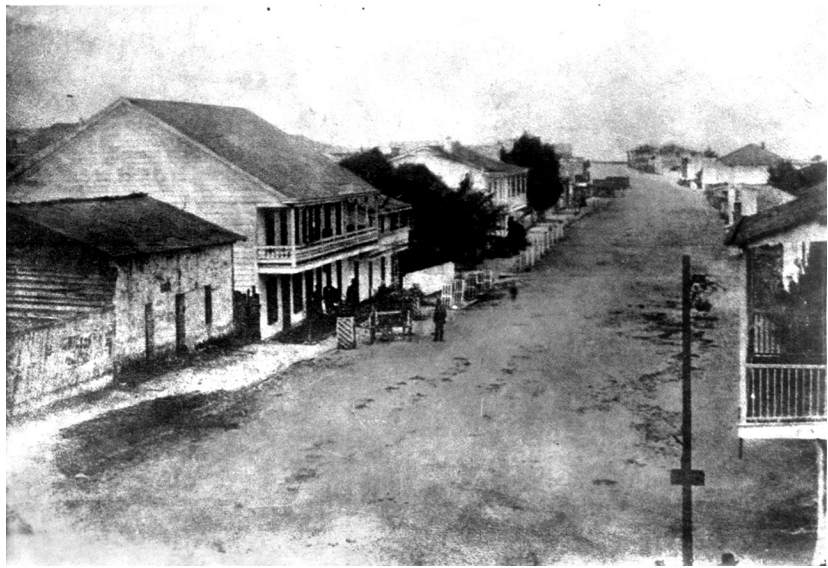


Figure 12. Monterey, circa 1849. Note the curvilinear streets and adobe construction associated with Spanish or Mexican era settlements (Courtesy of The Bancroft Library, University of California, Berkeley).

ties. For instance, Moss Landing, some 15 miles northeast of Monterey, was the location of a prosperous whale fishery until 1888. Cannery Row, located along the Monterey waterfront, began as a single cannery, built by Frank Booth to process sardines, at the foot of Alvarado Street. When World War I cut off the European import of canned fish, the demand for California's fish increased dramatically and gave life to Monterey's canning industry. By the end of the war, nearly 30 canneries existed along Cannery Row (Hoover et al. 1990:229–230).

In the early 19th century, ranchos dominated the Salinas Valley, and they prospered by supplying the mining districts with beef and mutton. In the ensuing decades, some of the ranchos were transformed into wheat and vegetable farms, and dairies spread across the valley. Located on the Salinas River, Salinas lacked a railroad connection and thus access to outside markets until the 1870s. Consequently, its economy and the economy of the region revolved around wheat production, small-scale cultivated farms, cheese and butter production, and raising livestock (Breschini et al. 2000:28–34).

Being so closely wedded to a single industry entailed significant risks for many small California communities. The town of San Lucas is a case in point. Italian immigrant and land speculator Alberto Trescony established the town along the Southern Pacific Railroad line, which ran through the former Rancho San Lucas. In the 1870s, Trescony leased several parcels of the San Lucas property to local grain and dairy farmers. He invested heavily in the success of these farms; he even went so far as to establish a ferry service on the Salinas River in 1889 so his tenants could transport their goods to Salinas. With the arrival of the Southern Pacific, Trescony platted the town on the right-of-way that he had granted to the railroad. Intending for his community to be an agricultural market town, he built an enormous grain warehouse and constructed a spur line to the railroad track. Trescony's efforts encouraged the agricultural development of the surrounding area but did little to stimulate the growth of the town of San Lucas, and in the 1920s, it lost its trade to King City as trucks began to replace trains as the principal vehicle for transporting goods to market (Palmer 1965:206–208). Similar scenarios played out in other small towns throughout

California, particularly those that were dependent on transportation systems, such as railroad and ferry service.

Still farther inland, in both southern Santa Clara and San Benito counties, the combination of agricultural development and transportation access was critical to the creation and success of towns. For example, in southern Santa Clara County, Gilroy, which was established in 1869, was situated in the midst of rich agricultural land, but ultimately its location along the El Camino Real—the major route through the county to San Francisco—ensured its development. By the 1870s, Gilroy included a roadside inn and stable, a hotel, a blacksmith's shop, a saddler, a post office, a schoolhouse, two churches, a dentist's office, and a lawyer's office. It continued to prosper through the 1890s, with the construction of a railroad depot and flour mill—both of which catered to the needs of the area's farmers (Foote 1888:201–204). When San Benito County was established in 1874, Hollister, established 2 years earlier, was chosen as the county seat for the same combination of town-building factors—agriculture and transportation.

SACRAMENTO VALLEY

The Sacramento Valley is part of the Central Valley, which is approximately 500 miles long and 40 miles wide, and lies betwixt the Coast Ranges and the Sierra Nevada. The Central Valley was the “richest agricultural valley in the world” (Johnston (2003:35). The principal counties in the Sacramento Valley include Glenn, portions of Butte, Colusa, Yolo, Solano, Yuba, Sutter, and Sacramento. Cooler winters, higher rainfall, and less-productive soils characterize the Sacramento Valley in comparison to the San Joaquin Valley, which lies immediately to the south beginning in San Joaquin County.

With the excitement of gold in the nearby Sierra Nevada, Sacramento's waterfront became a trade center, and the Sacramento River became the main artery of commerce for a region extending throughout the Sacramento Valley and beyond. Ranchos were first established along the Sacramento River north of the city's future site during Mexican rule as interested parties petitioned the Mexican government for land grants. Buena Ventura Rancho and Chico Rancho were established prior to the gold rush of 1848. These small ranchos soon converted into small communities with the sudden interest in river travel and trade into their respective golden hinterlands. It likewise became important to push the head of practical navigation upstream as far as possible to outfit the emerging mining camps of far northern California (Zelinsky and Olmsted 1985:87–97).

The trade between Sacramento and the central mines was so prosperous that it spawned the state's first rail line—the Sacramento Valley Railroad established in 1855–1856 with its eastern terminus at the town of Folsom. Founded by Theodore Judah on the main stem of the American River at the base of the foothills, Folsom was an early center of gold placer mining and later dredge mining.

The two major tributaries of the Sacramento River flowing southeast out of the Sierra Nevada, the Feather and Yuba rivers, provided a means for shipping to the northern mines. During the early 1850s, a rivalry grew over which town was to seize river traffic at the head of steam navigation on the Feather River with Marysville (1850), Yuba City (1849), and Vernon vying for the position (McGowan 1961:63,66–67). Farther north along the Sacramento River, other towns sought supremacy over river navigation and commerce, and Redding and Red Bluff, both established in the 1850s, emerged as the ultimate winners.

Marysville's story began in 1842 when Theodore Cordua, a Prussian, built an adobe dwelling and a trading store near the Yuba River, at what he called the village of "New Mecklenburg." Cordua's Ranch became an important stopping place in the Sacramento Valley for emigrants ending their long voyage over the California–Oregon Trail and a way station for hunters and trappers, and later, for miners. Charles Covillaud, a native of France and former employee of Cordua, purchased the ranch, and during the gold rush, his ranch became a center of trade and travel. Covillaud laid out the townsite in January 1850 and named it Marysville after his wife (Hoover et al. 1966:587–588).

Freight and passenger traffic soon established Marysville as the head of practical steam navigation on the Sacramento. San Franciscan Sam Brannan challenged Marysville's place as the central shipping point to the mines by establishing a rival wharf and a branch store across the Yuba River at a site he named Yuba City. After a brief struggle for commercial dominance, Marysville emerged as the victor because its superior geographic position connected it to the new communities established in the northern mining district. From Marysville, pack trails and wagon routes connected the city with foothill and mountain towns that funneled food, provisions, and equipment brought upriver from San Francisco to the mining camps and river bars.

Marysville's position as one of California's major inland ports was by no means guaranteed in the rapidly shifting economic landscape of gold rush California (Figure 13). The California Emigrant Trail over Donner Pass followed the ridge marking the present boundary line between Placer and Nevada counties and down into the valley by way of the Bear River to Johnson's Ranch. The route bypassed Marysville to the south. Because few roads existed in the rugged country east of Marysville, pack trains carried much of the early freight to the northern mines. Between 1864 and 1866, a wagon road was built between the Sacramento



Figure 13. View of downtown Marysville, circa 1880s (Courtesy of Sutter County Library).

Valley and over the summit beyond Donner Pass. Completion of the Dutch Flat–Donner Lake Wagon Road, followed by the railroad, shifted some of the business of passenger and freight traffic between California and Nevada away from the Placerville Road, built in the mid-1850s, to Nevada and Placer counties and towns such as Auburn and Roseville. Despite the distance to the nearest rail head, Marysville continued to prosper after 1870 because of the expansion of the area's agricultural industry, the creation of flour and woolen mills, factory construction, and its central location as a hub for stage traffic, with lines running to Oroville, Downieville, Grass Valley, and Nevada City (Hoover et al. 1966:588–589; Moehring 2004:7–8).

In Yolo County, located across the river from Sacramento, ferries for cross-river trade were established. For several decades, Knight's Landing was a key ferry site and landing along the Sacramento River. The town, located on the right bank of the Sacramento River, was originally laid out in 1849, but because of disputes over the sale of lots, the town was replatted by Charles F. Reed as a new townsite in 1853. One of the oldest settlements in the county, Knight's Landing was the gateway to the Sutter Basin and a produce-shipping point with steamboat service directly to Sacramento (Hoover et al. 1966:583–585). Another early ferry crossing was at the town of Washington, later known as Broderick, directly across the river from Sacramento. The town was also the site of the first Pacific Coast salmon cannery (1864). Hydraulic mining helped put an end to the salmon cannery in the 1880s, and the coming of the railroad to Sacramento across the river brought declining fortunes to the once-promising town.

During the mid-19th century, large-scale, market-oriented agriculture characterized the Putah Creek area. Displaced forty-niners, speculators, farmers, tenants, and rancho squatters in just a few short years created a region famous for its “agricultural prowess.” The settlers who made their home on the creek in the 1850s took advantage of the local market comprised of hungry miners, urban residents, traders, and merchants. The navigable Sacramento River provided a connection with San Francisco. Growing grains and raising livestock became the main economic base for the pioneer settlers during the gold rush decade, with the next generation developing wheat and grains. In the latter decades of the 19th century, farmers turned to specialty crops requiring irrigation, and the Putah Creek watershed area became one of the state's earliest and principal nut- and apricot-growing districts.

Woodland, established in 1855, was a thriving agricultural-supply center by the 1860s, and the citizens of the county voted to move the county seat from Washington to Woodland (Figure 14).



Figure 14. 1879 Illustration of Woodland's downtown commercial storefronts. Note the scale and symmetry of each of the elegant brick storefronts designed in a Classical-Revival/Italianate design (1879 County Atlas of Woodland, Courtesy of David Rumsey Map Collection online).

Most of the nut and fruit growers continued to raise wheat for export, and Davisville, created in 1868, located on the Southern Pacific tracks, served as the principal shipping point for agricultural products of the region. Prior to construction of the Southern Pacific Railroad, most of Davisville was part of the Jerome C. Davis Ranch, which was the first town-like center for the region's loosely knit agricultural community.

As with the Sacramento-San Joaquin Delta farther south, the northern Sacramento Valley was plagued with regular flooding. The floods of 1862 and 1875 raised awareness of the potential damage from winter storms and the impact of debris from hydraulic mining on the inland river system draining the mountain streams of the Sierra Nevada. The use of water to blast away dirt and rock from mountainsides was a labor-intensive method to expose the underlying gold-producing streambeds and benches of ancient Tertiary channels. The resulting debris, however, clogged the rivers of the Sacramento Valley and intensified the effects of flooding downstream. The 1875 flood left so much debris in the river channel opposite Marysville that the town's streets, which originally had been 20–25 feet in elevation above the bed of the Yuba River, were now below it. Hydraulic mining debris also crippled navigation and threatened the livelihoods of townsfolk and farmers throughout the Sacramento Valley. The bed of Steamboat Slough, a main route for steamboats travelling up the lower Sacramento River from San Francisco, rose 7 feet between 1853 and 1879, leaving the slough impassable for any vessel drawing more than 5 feet of water (McGowan 1961:287–288; Kelley 1989:26–27,63).

Farmers and town dwellers who lived along the river systems in central and northern California began a spiral of levee construction to protect their property during the early 1850s, expanding and improving those levees throughout the latter part of the 19th century. Overseas Chinese laborers carried out most of the hard work building the levees. Local efforts at reclamation and flood protection often pitted residents of each district against one another. Individuals in some communities took action to protect their homes and businesses from flooding by raising their buildings above flood level. Sloughs were drained or rerouted. Still others armored themselves by building more levees along the natural banks of the rivers. Among other measures, Sacramento approved a program to raise the level of the city's streets throughout the commercial district. The city raised and strengthened its waterfront levee along the Sacramento River, rerouted the mouth of the American River to the north, and erected a back levee to keep waters from the lowlands east of town from flowing into the city during high water.

Despite these improvements, the Sacramento Valley once again experienced several devastating floods between 1900 and 1909. It was not until the 1910s with the enactment of cooperative federal-state Sacramento River Flood Control Projects that a comprehensive approach to levee construction and channel dredging was created, which provided a greater measure of flood protection to farms and towns. The reinforcement of river levees and dredging channels kept river transportation viable, providing a competitive alternative to the railroad that kept the costs of moving commodities economical.

SAN JOAQUIN VALLEY

The San Joaquin Valley forms the southernmost part of the Central Valley. The region includes the counties of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and Kern. Approximately one-third of the state's farmland lies in the San Joaquin Valley, and nearly 90% of the valley is currently under irrigation (Johnston 1997:73). No single river runs through the entire valley,

although the San Joaquin River drains the northern portion of the valley and forms the core of the state's Delta region. Lake basins, once fed by runoff from the Sierra Nevada, form the southern end of the valley.

Development of San Joaquin Valley towns revolved around the expansion of railroads and the transportation of produce. Small hamlets subordinate to the central place of Stockton, such as Visalia, arose in the San Joaquin Valley (Figure 15). Extension of the Central Pacific Railroad (later the Southern Pacific) south through the heart of the valley in the 1870s preempted the town-building function and displaced several small farming communities as the railroad created new towns along the tracks.



Figure 15. Main Street Visalia, 1863. Note the dirt street and mix of brick and wood-frame buildings (Courtesy of San Joaquin Valley Library System).

In response to the gold rush, Americans quickly built a line of towns and roadside stations north and south across the 250-mile-long floor of the San Joaquin Valley, with Stockton as the central distribution point. Private bridges or ferries provided crossings for the principal rivers flowing out of the Sierra, and small towns occupied many of these crossings, such as Millerton (Rootville [1850]) on the south bank of the San Joaquin River and Merced Falls on the Merced River. The Butterfield stages (1858–1861) followed, in part, the route of the Los Angeles–Stockton Road through the valley, and stations were established to provide services to travelers at important river junctions such as Gordon's Ferry on the Kern River, Firebaugh Ferry on the west bank of the San Joaquin River, and Kings River Station on the Kings River. Several of the old river towns contained ranch houses, converted to inns that became early centers of trade. Towns like Rio Vista (Figure 16) became important commercial centers for trade along the river and for nearby farming areas.

A number of the valley towns were outgrowths of the railroad that ran the length of the valley floor, such as Tulare and Merced. Merced became



Figure 16. Rio Vista, 1919. Looking east towards the Delta (Courtesy of The Bancroft Library, University of California, Berkeley).

the county seat in 1872 and developed into a trade center for the agricultural and dairy region (Hart 1987:313). Wheat became a major staple export in the San Joaquin Valley in the 1860s and 1870s, but commercial vegetable, fruit, and grain farms flourished in the pioneer settlement period to meet the demands of Sierra mining towns. Although large-scale irrigation did not begin until the 1880s, the gold rush era nevertheless resulted in a scattered network of small towns throughout the valley to serve travelers and the expanding zone of cultivation (Hoover et al. 1990; Moehring 2004:29).

SOUTH COAST

The South Coast region consists of the Peninsular and Transverse ranges and includes the counties of Ventura, Los Angeles, Orange, and San Diego, and portions of Santa Barbara, San Bernardino, and Riverside counties. The Transverse Ranges run east to west, continue into the ocean, and encompass the Channel Islands. The ranges, which form the northern border of the Los Angeles Basin, consist of several distinct mountains with peaks over 10,000 feet, including the Santa Monica, San Gabriel, and San Bernardino mountains. The Peninsular Ranges form the northern end of the Baja peninsula and lie west of the San Andreas Fault. The ranges, as well as Santa Catalina and San Clemente islands, have been uplifted along the numerous fault lines that cross the region. The Los Angeles Basin is part of the Peninsular Ranges, although the basin itself is merely lowland filled with sediments from runoff of the Transverse and Peninsular ranges (Schoenherr 1992).

Since the mid-18th century, ranching—conducted on vast Californio landholdings—had been the economic basis for much of the region, and the gold rush initially sustained and even expanded this industry.³ By the time the mid-1850s drew to a close, ranchero families that had dominated the region socially and economically began to lose their landholdings. Lacking a well-developed port (with the exception of San Diego), large and deep rivers, adequate rainfall, or an abundance of easily recoverable mineral resources, southern California presented few enticements to potential emigrants and therefore experienced little urban growth prior to the 1870s (Moehring 2004:42–43). With the rise of commercial agriculture and the coming of the railroad in the 1870s, southern California’s environmental limitations constituted less of an impediment to urbanization. These two developments worked hand-in-hand to promote the creation of a diverse array of cities and towns in the region, from the end of the 1870s through the 1910s.

During the 1870s, vineyards and orchard crops succeeded dryland farming and open grazing in southern California. By the 1880s—with the aid of land-development companies and the encouragement of outside capital from San Francisco, Los Angeles, and other cities—emigrant and American farmers had acquired much of the Californios’ land and began converting the region’s pastures into wheat fields, vineyards, and citrus groves. With the completion of a number of irrigation projects in the early 1900s, even portions of southern California’s deserts were blossoming into productive farming areas (Moehring 2004:44–45,75) (Figure 17).

As agriculture spread throughout southern California, farmers, development companies, city boosters, and land speculators all sought access to the national market that a railroad line promised. Individual investors and companies frequently tried to entice the Southern Pacific and Atchison,

³ Californio is a term used to identify a Californian of Hispanic, and in some rare cases, of Portuguese, Brazilian, or other non-Hispanic Latin American descent, regardless of race, during the period that California was part of the Viceroyalty of New Spain and Mexico.

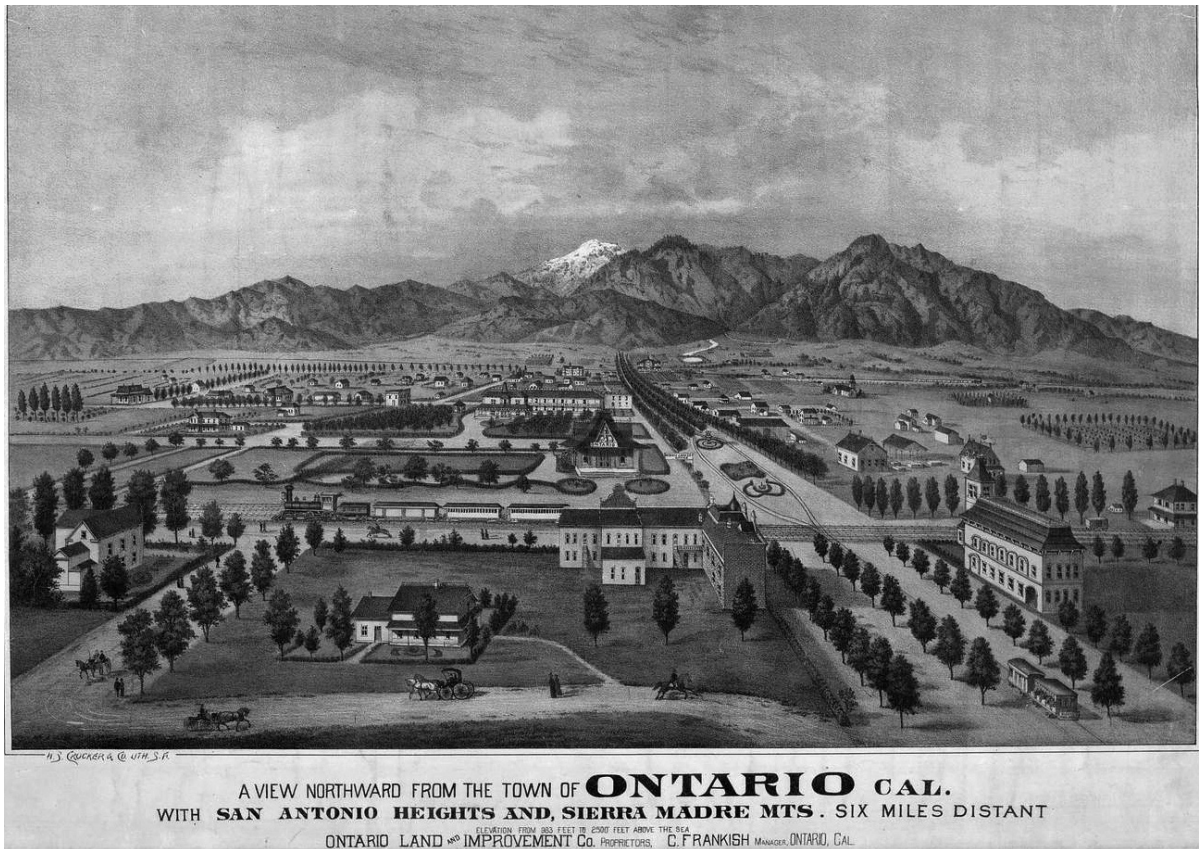


Figure 17. Lithograph of Ontario, H. S. Crocker Company, 1890. This idealized view, published in 1890, illustrates how development companies and entrepreneurs sought to draw people to the region (Courtesy of The Bancroft Library, University of California, Berkeley).

Topeka & Santa Fe—more commonly known as the Santa Fe—railroads to establish stops in the towns they platted, gambling that railroad access would boost the fortunes of the communities they envisioned. The Southern Pacific, in particular, promoted town development through advertising campaigns (Moehring 2004:42–82; Orsi 2005:65–189).

Historical railroad maps from the late-19th century illustrate the influence the railroad had on the economic and cultural development of the region, depicting a tangled web of rail lines bisecting much of the southern part of the state (California State Archives, Sacramento, California). Rail access connected small towns to larger ones and to the growing cities of the region, creating a dendritic web that had a profound effect on nearly every community. Towns that lacked access to the nation's rail network frequently languished, or in the worst situations, disappeared altogether. Indeed, more often than not, the railroad spelled the difference between a thriving urban community and a ghost town by the 20th century (Reps 1981:76–121).

Although variations in town building occurred throughout southern California owing to local environmental and economic conditions, agricultural development and transportation networks were constants in the urbanization of the region from the late-19th to early-20th century. The conversion of ranch lands into farms and the arrival of the Southern Pacific and Santa Fe railroads in the 1870s and 1880s transformed the modest pueblo of Los Angeles into a large metropolis, the southern counterpart to San Francisco (Fogelson 1967:43–63; Moehring 2004).

With the railroads came notions of public health, leisure, and romantic beauty. Certainly, climate played a crucial role in influencing town development, but promotion by railroads and land speculators also shared equally in the future growth within the region (Figure 18). Between 1886 and 1890, a massive influx of migrants settled in southern California, particularly the Los Angeles Basin, many taking advantage of cheap land (see Figure 17). Towns, like Monrovia and Azusa, were created through speculative land auctions, with transportation and food often provided free (Ovnick 1994:90–91). By the turn of the 20th century, new suburban tracts were sprouting throughout the Los Angeles Basin, and the face of towns became more permanent with masonry buildings and ornate Victorian homes. Further expansion occurred before World War II throughout much of southern California, as new industries emerged and provided jobs for middle-class families.



Figure 18. South Pasadena, 1890. Still a pastoral landscape before the land speculation boom that followed in later years (Courtesy of South Pasadena Public Library, Pasadena).

SOUTH DESERT

The South Desert region lies east of Los Angeles and includes most of San Bernardino, Riverside, and Imperial counties. Subregions include the Antelope, Coachella, Palo Verde, and Imperial valleys, as well as the Mojave Desert that extends eastward to Nevada and Arizona. The San Bernardino Mountains and the San Andreas Fault form its southern border. The Mojave is the “high desert” in southern California, with an average elevation of 3,500 feet. Precipitation falls mostly in the winter, with snowfall at higher elevations. Native vegetation includes pinyon pines, Joshua trees, and creosote bush. San Bernardino and Riverside counties gained recognition for their citrus crops and dairying, industries that continue today.

For most of the 19th century, the Colorado Desert witnessed only marginal growth of towns, largely because of the region’s lack of a sustainable supply of water for irrigation. Town building in the Mojave and Colorado deserts—portions of present-day Kern, San Bernardino, Riverside, and Imperial counties—more closely resembled town building in northern California than southern California. Many of these communities initially emerged out of a need for way stations linking southern California coastal settlements to the mining communities of southeastern California, southwestern Nevada, and western Arizona. Yet, as elsewhere in southern California before the World War I, commercial agriculture and the railroad served to bolster the development of these isolated communities as well as to foster the creation of new ones. In the Mojave and Colorado deserts, irrigation and rail links turned one-time stagecoach stops and mining-supply depots into shipping and processing centers for local agriculture.

The advent of irrigated agriculture in the desert in the late-19th century gave life to a number of communities. Indio (1876) and Banning (1883) benefited from the irrigation efforts of the Southern Pacific. The Southern Pacific Railroad laid out Indio as a supply and construction point for its irrigation efforts in the Coachella Valley of Riverside County, and the town grew as irrigation transformed the valley (Moehring 2004:74; Orsi 2005:175–176,197,226,291). Phineas Banning established the namesake community of Banning along the Southern Pacific line running through the Mojave Desert, hoping to use the town as a link between his stagecoach lines in the Mojave and the railroad. By the 1890s, owing to the railroad’s market reach and the advent of irrigated agriculture, the town of Banning developed into a fruit-growing community. According to one publication, an 8-mile-long concrete ditch serviced Banning that could transport nearly 1,000 inches of water “in the driest [sic] season” (Lewis Publishing Company 1890:480; Moehring 2004:74).

Barstow (1880) and Mojave (1876) profited from their proximity to the Santa Fe Railroad, which ran through the Mojave Desert and into Arizona beginning in the 1880s. Barstow, also known as Fishpond and Waterman Junction, was created as a supply center for the gold and silver mines in the nearby Calico Mountains. It also functioned as a desert junction for overland travel, and by the late 1880s, the town had become a crucial division point along the Santa Fe that ran into Los Angeles. By the 1890s, Barstow remained small—only about 300 people lived in the community—but as a consequence of its rail access, it boasted a post office; stage, telegraph, and telephone services; and “several stores carrying general merchandise, and a large railroad hotel” (Lewis Publishing Company 1890:480; Moehring 2004:74). The isolation of desert towns necessitated an adequate transportation system that supplied the towns with foodstuffs and merchandise, generally at much higher costs due to their distance from centers of manufacturing and agriculture.

The town of Mojave functioned as a centerpiece of desert travel in the mid-to-late-19th century, serving first as a terminus for 20-mule-team wagons hauling borax and other minerals from Death Valley mines to southern California processing plants. By the 1910s, limited oil refining and irrigated agriculture became its economic base—although the community did not reach more than 2,000 residents until the middle of the 20th century (Morgan 1914:191; U.S. Bureau of the Census 1950; Moehring 2004:74).

Victorville, originally called Mormon Crossing, was created in 1878 and functioned first as a supply depot for nearby mines and later as a railroad stop. The town, situated on the banks of the Mojave River, was initially little more than a trading camp for Mormons traveling between Salt Lake City and San Bernardino. Victorville became an important supply point for the mining camps of the Calico Mountains—especially in the wake of the mining boom of the 1880s. Later, in 1904, after the boom subsided, the town survived as a division stop along the Santa Fe Railroad (Lewis Publishing Company 1890:485; Moehring 2004:74).

Other camps and supply points located by merchants and prospectors off the line of major travel grew into small towns in the 1880s and 1890s. Calico, located 12 miles east of the town of Barstow, thrived as a supply center for local silver and borax mining (Coke 1968:3). Between 1881 and 1896, over \$65 million worth of silver passed out of Calico’s mills (Coke 1968:7). In the 1880s, families of Irish, Swedish, German, Italian, and English immigrants poured into the town, attracted to the prospect of striking it rich by either mining or supplying miners. By 1886, some 3,500 people lived in Calico, and the town boasted a school, a newspaper, restaurants, hotels, general stores, dance halls and saloons, nearly 200 homes, and two blocks of businesses on Main



Figure 19. View of Calico, 1931. By the 1930s, Calico was clearly in decline and on its way to being a “ghost town” (Courtesy of Frasher Foto Postcard Collection, Pomona Public Library).

Street (Coke 1968:11–13,18). One year later, a fire devastated Calico, and soon after the town began to decline. Although Calico was rebuilt, large companies were quickly coming to dominate the mining industry. Much of the money that once flowed from the mines and into Calico’s businesses began to flow out of the town to larger cities and even other states. In the early 1890s, a decline in the price of silver spelled the end of Calico (Figure 19). By the 20th century, unable to reinvent itself and lacking access to major transportation routes, Calico became a ghost town (Coke 1968:17–20).

Other communities in the Colorado Desert region of southern California, including Imperial, Calexico, and El Centro, did not take shape until irrigated agriculture arrived at the beginning of the 20th century. In 1900, foreseeing the potential for immigration and development that would accompany the Colorado River irrigation project, George Chaffey formed the Imperial Land Company. Like land developers elsewhere in southern California, Chaffey’s group sought to establish townsites in the midst of arable land. In 1901, the company platted Imperial, which they envisioned as the valley’s central urban community, and began selling lots (Tout 1931:266). In 1907, after determining that a site near Cameron Lake was unsuitable for settlement—a decision that proved propitious after the lake flooded later that year—the Imperial Land Company platted the town of Calexico on Chaffey’s own 160 acres (Tout 1931:272). That same year, businessman and developer W.F. Holt founded El Centro. Holt looked to create Imperial County from the easternmost region of San Diego County and make El Centro its seat of government (Tout 1931:325).

GREAT BASIN DESERT

The Great Basin is the largest desert in North America and extends a short way into eastern California. Portions in California include two geomorphic provinces: the Modoc Plateau and the Basin and Range Province. The Modoc Plateau, averaging 4,000–5,000 feet in elevation, is an

undulating flatland east of the Cascades drained by the Pit River. The Basin and Range Province lies south and east of the Modoc Plateau, along the eastern edge of the Sierra Nevada. It includes Owens and Death valleys, separated by the Inyo-White Mountains, with many smaller mountain ranges and valleys in between. Ecologically, sagebrush dominates the landscape, with pine trees at higher elevations and saltbush at lower elevations. Most precipitation falls as snow that percolates into the soil as it melts, resulting in lush spring growth.

Across the east side of the Sierra Nevada Mountains, settlements sprang up in the mountains and deserts in response to various gold and silver rushes, in which the towns of the San Joaquin Valley participated in as supply centers for the remote mining districts. Like many colonial outposts on the frontier, the early settlements were subject to raids by Native American tribes until the military established forts, and governmental control was extended to the remote hinterlands in the distant Sierra. Mining encouraged formation of a loosely federated chain of scattered camp communities, some of which eventually became small towns.

Monoville, established in 1859, was one of the first settlements of any size east of the Sierra and south of Lake Tahoe. It is a good example of a boomtown whose population rose quickly to 700 and dwindled as new camps in the region developed. Ultimately, Bridgeport, created in 1863, won out over Monoville as the Mono county seat in 1864 (Cain 1961:6–8). Raising cattle and growing hay quickly became Bridgeport's livelihood (Cain 1961:28). Both Bridgeport and Monoville were important local centers of commerce, providing supplies and provisions to nearby mines and mining camps, such as Bodie.

In Inyo County, there was a rush to develop the silver mines of Cerro Gordo in the 1870s, followed by gold and copper discoveries. During the 1870s, the region had a population of several thousand. Boron and tungsten were also mined, but cattle and alfalfa brought more enduring prosperity and population to Inyo County. The only sizable towns were Independence, established in 1861, Bishop in 1860, and Lone Pine in 1861. Samuel A. Bishop founded Bishop in 1860, but he remained only until 1864. By then, additional settlers had arrived, and the town became a popular center of a rich farming country and supplier of the mines in the White-Inyo Range. The town of Bishop also occupied a strategic position at the crossroads of major transportation routes, currently known as U.S. Highways (U.S.) 6 and 395, and SR 168 (Hoover et al. 1990:114–119; Nadeau 1992).

As mining camps faded in the late-19th century, rural hamlets serving the agricultural hinterlands persisted and became supply posts and shipping centers for the region's harvest. In the northeastern portion of the state, Susanville, created in 1853, and Alturas in 1874, were developed after the initial gold rush, and their main businesses were associated with the agricultural trade between Oregon and Nevada. Susanville quickly became the center for trade and commerce in the Honeylake Valley, and its importance increased as migration eastward from California to the goldfields of Idaho and Montana began in the late 1850s and 1860s. The first stage route from Chico to Ruby City, known as the Humboldt Road, passed through Susanville, but it was the development of the railroad from Nevada that secured Susanville's role in eastern commercial transactions. In an attempt to tap the timber resources of northeastern California, the Central Pacific Railroad—operating under the auspices of the Union Pacific Railroad—created a line that ran from Fernley, Nevada, through Susanville to Westwood. The far northeastern routes focused on Alturas as a center of trade between Oregon and Nevada towns. In 1881, the Nevada, California, and Oregon Railroad built a line that ran from Reno northwestward into California and terminated at Alturas (Athearn 1922; Cook 1973:49–55).

THE INFRASTRUCTURE OF CALIFORNIA TOWNS

The term infrastructure has been used since the early-20th century to refer collectively to the roads, bridges, rail and utility lines, water systems, and similar public works that are required for an industrial economy, or a portion of it, to function. The term also has had specific application to the military installations necessary for the defense of a country and to describe any substructure or underlying system. All towns generally have some degree of infrastructure, and its nature and complexity are a product of a town's location, economy, and function within the respective local, regional, and national economies. In other cases, infrastructure developed through local, state, and federal legislation or private enterprise.

TRANSPORTATION

Transportation systems formed the backbone of virtually every town's infrastructure, from crudely built Spanish and later Mexican road networks to modern-day highways. Inadequate transportation networks for the movement of people and goods would have been deleterious to an efficient system of commerce and trade, and ultimately, the economic vitality of towns. During the late-18th century, the need for a direct route from Mexico City to the Monterey presidio became a priority (Kurillo and Tuttle 2000:7). Because most of the state's settlement during the first few decades of the 19th century was located along the coast, the need for a north-south transportation corridor was important for connecting southern areas to maritime ports in the north. Extending south from Monterey, El Camino Real unified the central coast with southern California. By the early 1800s, a chain of missions and presidios had been built along the route that provided those making the journey a bit more safety, with the missions acting as roadside inns (Kurillo and Tuttle 2000:15). As settlements and farms grew around the missions, smaller roads branched from the main route, providing access to the state's interior and creating the need for maritime transportation along the inland rivers, such as the Sacramento and San Joaquin (Figure 20) (Kurillo and Tuttle 2000:12; Otterstrom 2004:222).

One of the first state- and county-sponsored transportation systems was the "national wagon road" designated by the state in the mid-1850s. Prior to the early 1900s, most state and local transportation projects were privately funded. The concept behind the route was to link emigrants coming west with the most expeditious route into California. While communities lobbied for the proposed road to connect their respective towns, ultimately the decision rested with the California



*Figure 20. Front Street along the Sacramento River Waterfront, 1866
(Thomas Houseworth Collection, Library of Congress, Washington, D.C.).*

State Legislature and Wagon Road Commissioners appointed by the state. The final selection followed portions of the Johnson Cut-Off route (1852), now roughly overlaid by present-day U.S. 50. Ironically, most of the monies for construction ultimately came from private individuals; there was limited support from county government and little or no money from state government (Supernowicz and Petershagen 1993).

During the early stages of the gold rush, proximity to rivers or streams was critical for town development. Navigable waterways facilitated trade, and where these were not present, supplies were hauled by wagon and express mail (Figures 21 and 22). Many small communities located along the Sacramento and San Joaquin rivers provided ferry service and docks for vessels needing portage. Although each of these river towns struggled to overcome environmental obstacles inherent to their locations, such as floods, throughout the 19th century, they continued to grow and prosper as centers of government or supply bases for the agriculturally rich Sacramento and San Joaquin valleys (see Figures 20 and 21).

Accustomed to well-developed transportation networks in the East, the settlers of California transplanted their ideas of community and commerce to the West (White 1973:136). The growing population and the need to transport products to and from the centers of commerce necessitated an overland travel network of trails and wagon roads that worked in unison with river and ocean transportation. By the end of the 19th century, arteries of roads ran between the hundreds of gold camps and agricultural villages that dotted the state.

Although a dozen or so emigrant routes were opened over the Sierra Nevada, most of them were poorly engineered and not suitable for large numbers of wagons (Howard 1998:167). Locally, communities and businesses needed well-maintained roads in order to provide access to their settlements. Marysville, Placerville, Sonora, Nevada City, Auburn, and Georgetown were among the towns attempting to lure settlers through improved road access during the 1850s (Howard 1998:66). A lack of decent roads slowed and often deterred settlement and the shipment of supplies, and settlers gravitated to more-accessible, populated areas (Otterstrom 2004:221–223). Conversely, if a town failed, its roads would fall into neglect, contributing to further isolation (Petershagen 1991:2). As mineral resources were depleted, many towns attempted to maintain

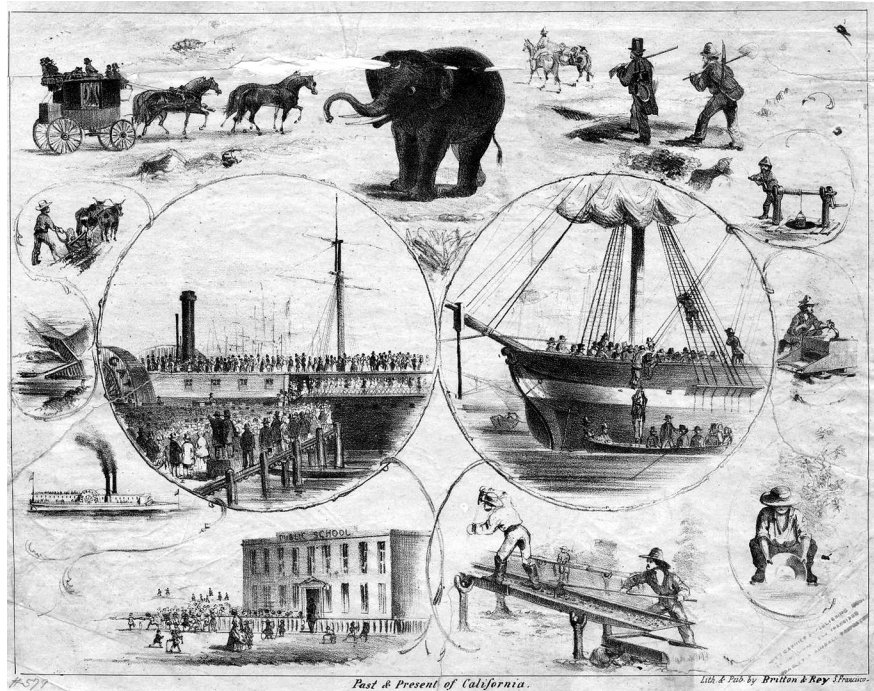


Figure 21. Britton & Rey lithograph entitled “Past & Present in California,” 1856. This lithograph portrays the state’s evolving transportation system from pack trains to steamships, schooners, and stages (Courtesy of The Bancroft Library, University of California, Berkeley).

their roads in hopes of spurring future settlement (Supernowicz and Petershagen 1993:27). Without proper governmental organization and assistance, the industry of road building naturally became a private undertaking (Klein and Yin 1994:6). In 1853, the state passed legislation with the purpose of facilitating the formation of toll road corporations, but this met with little success (Klein and Yin 1994:7). It was not until 1860 that legislation provided the mechanism for private companies to charge and collect tolls, which created the impetus for the construction of numerous toll roads and turnpikes that ultimately traversed California, connecting mining camps and agricultural villages (McGowan 1949; Petershagen 1991).

Between 1850 and 1902, approximately 150 toll roads were constructed in the state. Many early gold rush trails and roads were reconstructed in order to support wagon and stage traffic (Supernowicz and Petershagen 1993:44) (see Figure 22). In Inyo County, for example, the difficult terrain and geography of the region prevented widespread development beyond its mining camps (Otterstrom 2004:227). Mining, stage, and lumber companies had great interest in the construction of toll roads, as good roads led to easier and quicker transport of ore and lumber. The companies or corporations who owned the road systems paid for development and maintenance of toll roads (Klein and Yin 1994:10–11). Besides increasing economic growth, toll roads fostered a new type of service industry, the roadside inn, or way station. Similar to the mission network of the Spanish colonial period, these establishments provided accommodations and included drayage for teamsters and others who required services along the route (Otterstrom 2003:38).

From Stockton, Sacramento, and Marysville, freight wagons hauled supplies to the larger strategically located mining towns, such as Sonora, Plymouth, Placerville, Auburn, Grass Valley, Nevada City, and Oroville (see Figure 20). From these depots, wagons or pack trains carried the supplies to the various mining camps of the surrounding districts. Other towns also emerged as centers of commerce and trade in the mining regions, including Sonora, Jackson, Placerville (Figure 23), Coloma, Georgetown, Grass Valley, Nevada City, and Oroville.

Early transportation routes of importance in southern California included the Temescal Valley Route or Temescal Road that connected San Diego with Los Angeles. The “Old Temescal Road” as it is also known, is a listed California Historical Landmark. According to the OHP (2009), the route was used by Luiseño and Gabrieleno Indians, whose villages were nearby. Leandro Serrano established a home on this route in Temescal Canyon in 1820. Jackson and Warner traveled the



Figure 22. This early view of Cisco, circa 1866, depicts the expansion of trade and wagon traffic along the Donner Summit Route during the 1860s and the town's importance as a supply center during the construction of the Central Pacific Railroad (Lawrence & Houseworth Photographic Collection, Library of Congress, Washington, D.C.).



Figure 23. Placerville looking east from the balcony of the Cary House, 1866. The photo was taken at the height of the Comstock mining boom, hence the large freight wagons en route to and from the mines (Thomas Houseworth Collection, Library of Congress, Washington, D.C.).

road in 1831 and Frémont in 1848. It was the southern emigrant road for gold seekers from 1849 to 1851, the Overland Mail route from 1858 to 1861, and a military road between Los Angeles and San Diego from 1861 to 1865. This route's popularity increased commensurately with the incorporation of Los Angeles in 1850, and by 1858, it had become a major thoroughfare to the city. Similarly, the addition of a stage route from Tucson, Arizona, to San Francisco contributed to the accessibility of California's interior. As California achieved statehood, the 1860s saw a decline in the rancho system, which in turn gave rise to more individualized landownership and the need for a more elaborate road network to connect rural agricultural districts with populated areas (Otterstrom 2004:222–226).

In central and southern California, freight and stage companies also played an important role in the “economic welfare of the communities they served” (Cleland 1918:62). In 1854, the firm of Alexander and Banning operated a stage company between Los Angeles and San Pedro, competing with at least two other companies. The competition reflected the need of southern Californians to travel and to ship goods and mail between the two settlements. Additional routes

between Los Angeles and Salt Lake City increased available stage service to the region. Other notable routes were Wells, Fargo & Co.'s service between Los Angeles and Tejon, Alexander and Banning's freight lines from Yuma and Mojave to Los Angeles, and their 1855 weekly stage from Los Angeles to the newly discovered mining fields along the Kern River. The Adams Express Company's 1854 monthly service between Salt Lake City and San Francisco via Los Angeles further contributed to the area's growing freight industry. This last-mentioned route also provided important freight service to San Bernardino, Fillmore City, and El Monte (Cleland 1918).

In 1857, John Butterfield created the Overland Mail Company, a federally subsidized overland mail service. This delivery service originally brought mail across the country's interior from St. Louis to the Southwest and into California. The mail was then carried north to San Francisco. Similarly, the Pony Express, founded in 1860, improved upon this method with a more direct route into Sacramento, effectively bypassing the lengthy, and often dangerous, southern route favored by Butterfield. The Pony Express, despite their direct northern route, superior speed, and efficiency, did not possess a government subsidy like the Butterfield Company. This condition forced the Pony Express to charge higher rates, making it difficult to compete with their rivals (Cleland 1918:60–66).

RAIL TRANSPORTATION

Notwithstanding the importance of emigrant freight and express mail service during the mid-to-late-19th century, railroad construction had a profound influence on the location, development, and economic character of towns in California. Railroads also played an important role in local and state politics and became the basic mode of transportation for goods and people throughout the late-19th and first half of the 20th century.

The Sacramento Valley Railroad, California's first railroad, was an early attempt to establish a rail connection from Sacramento to the goldfields. Conceived in 1852, this rail line was eventually completed in 1856, creating a 22-mile link between Sacramento and Folsom (Figure 24). Sacramento, already a viable commercial port along the Sacramento River, became a hub for railroad transportation in the state. Despite its shortcomings and financial disparities, the Sacramento Valley Railroad signified a new era of travel in California (Orsi 2005:5). Communities, such as Sacramento, that included a rail terminus and related industries, experienced large economic and population boosts (White 1973:138).

In June of 1862, the political and financial underpinnings of the transcontinental railroad were set in motion. Congress moved to permit the construction of a railroad to the Pacific with the Pacific Railroad Bill (Deverell 1994:22), stipulating that grants of public lands located along the route would finance the project, and the grantees of those lands would be responsible for the railroad's construction (Deverell 1994:11). Beginning in the west, the Central Pacific Railroad stretched through northern California, stimulating economic and population growth in the towns along its route. Generally built upon or near previously existing wagon roads, the railroad promised an efficient transportation system for people and goods to points in California and beyond. Controversial for its intrusion upon California's rural composition, monopolistic practices, as well as its infringement on existing stage and wagon business, the railroad changed the face of California (Deverell 1994:25,39–40). As the rail line worked east from Sacramento, towns like Colfax, Newcastle, and Roseville benefited from the increased trade and population brought about by the construction. Elsewhere, the city of Oakland benefited from its designation as the rail line's



Figure 24. Folsom, circa 1866. Looking south from the north side of the American River at the wagon and pedestrian bridge and the Sacramento and Placerville Railroad bridge over the river. In the distance is mining community of Folsom (Lawrence & Houseworth Photographic Collection, Library of Congress, Washington, D.C.).

western terminus. Paved streets, new homes, and other civic improvements attested to the influence of the rail industry (Deverell 1994:24). Ending California's isolated existence, the newly completed transcontinental railroad plunged the state into direct competition with midwestern and East Coast merchants. The railroad also triggered years of feuds and protests by farmers and citizens over property rights, labor issues, and freight charges (Deverell 1994:38–39).

Not everyone benefited from the development and expansion of railroads in California, but the railroad resulted in the creation of towns and, in some cases, the demise of towns. In general, railroad construction created three different types of towns: those originally located on or near established routes of travel bypassed by the rail system causing them to lose their status as trading centers; previously established towns that now included a rail stop with a depot; and towns largely created by the railroad company itself.

Towns located along strategic wagon roads often became trading hubs. As the rail network was extended, these trade centers were either chosen as depot locations or bypassed in favor of more-efficient routes. Bypassed towns saw their fortunes dwindle as they became increasingly isolated from the hubs of rail transport. Although these towns did not disappear altogether, their decreased population and lack of rail connection slowed economic growth and deterred future settlement. San Bernardino was one such town. Bypassed by the Southern Pacific Railroad, it experienced a long period of economic stagnation until the arrival of the Santa Fe Railroad in the early 1880s (Dumke 1944:21). It is important to note that some settlements, generally those with a solid, intact local industry and populace, constructed their own railroad spurs or short lines in order to connect to the main line. Acting as direct links to major rail depots, these smaller lines were the lifelines of many towns bypassed by the new transportation system, as they enabled residents

of small communities to enjoy some of the benefits that larger towns or cities were afforded by direct rail connections.

Increased commerce created by a rail connection provided renewed vigor, allowing towns to emerge from economic hard times. Often there were no settlements in areas deemed suitable for depots, prompting the Southern Pacific to foster town development, as was the case with Tulare, the terminus in the late 1870s for the Southern Pacific Railroad's valley branch. The Southern Pacific chose towns that were either geographically convenient to their line, or as some critics of the railroad contend, towns that accepted railroad subsidies (Dumke 1944:20).

The introduction of refrigerated railcars in the 1870s, although still in their experimental phase, made it possible to ship perishables, including meat, dairy, and produce. After several designs by a multitude of private companies, the refrigerated railcar was sufficiently developed for practical use by the early-20th century (Orsi 2005:328–330).

Towns linked by rail connections grew between 1880 and 1900. Besides increased goods and commuter service, immigrants took advantage of cheap rail fares, many responding to the extensive advertising campaigns put forth by the Southern Pacific and Santa Fe railroads (Orsi 1975:210). The complexity of the Southern Pacific's massive development and settlement program for California is perhaps best represented by the Central Valley counties of Kern and San Joaquin, and much of southern California. Southern Pacific actively advertised in newspapers and magazines hoping to attract prospective settlers from other parts of the United States and foreign countries. They offered drastically reduced travel and freight rates, including "land seekers tickets," in which all the money paid towards a fare would be applied to any purchase of western railway land, and "emigrant" cars that came complete with cooking facilities and fold-down beds (Dumke 1944:26–27). An attractive option, this program created settlements with highly diverse populations. Western Europeans and Latin Americans arrived to farm near the recently developed towns, many of which already contained houses, roads, and other amenities. In the agricultural colony of Tancred, the Capay Valley Land Company and the Southern Pacific not only worked to improve irrigation, roads, and bridges and subdivided land parcels but also built warehouses and public parks (Orsi 1975:210–212). Although the practice of subdivision benefited the railroad and new property owners, ranchers who used the land for open-range grazing before the coming of the railroad did not fare as well. Settlement changed the nature of land use as the construction of fences and carefully measured acres of farmland began to replace previously wide-open spaces (Dumke 1944:12).

During the 1880s, the agricultural industry expanded in southern California. The region experienced a land and population boom with many towns becoming packing and shipping centers for locally grown products (Dumke 1944:112). Santa Ana, founded in 1870, grew steadily with the help of Southern Pacific's 1887 annex known as Santa Ana East. In this early addition to Santa Ana, the streets paralleled the train tracks, tying local business with tourism and the shipment of fruits from the surrounding agricultural lands (Dumke 1944:115).

Southern California's land boom in the 1880s resulted in competition for agricultural land and land suitable for suburban growth and health resorts. While agriculture remained an important part of the local economy, farming communities, such as Redlands in San Bernardino County as one example, became connected to more densely populated urban centers such as Pasadena, Los Angeles, and as far away as San Francisco.

From 1881 until the arrival of the California Southern line in 1885, Redlands was a sparsely populated town (Dumke 1944:122). Rail service ushered in a thriving commercial era for the once quiet outpost. The burgeoning town quickly enacted civic improvements. Brick replaced wood as the preferred building material (partly because of a strictly enforced building code); cement sidewalks replaced wooden planks; a school district was formed; and by 1889, the town had been incorporated and boasted a thriving fruit-growers association (Dumke 1944:122).

In the San Fernando Valley, the town of San Fernando was established in 1874 and rose to prominence through rail connections. The Southern Pacific furthered the town's advancement with special fares and freight rates aimed at prospective settlers (Dumke 1944:100). The Southern Pacific contributed towards the advancement of the entire San Fernando Valley and the establishment of other towns, such as Pacoima and Chatsworth Park, both established in the late 1880s (Dumke 1944:101–102) (Figure 25).

Santa Barbara's residents sought to maximize the potential of their resources, namely agriculture, a beautiful coastline, and a mild climate. Realizing a railroad connection would increase their chances of success, the town solicited various rail companies. In 1886, the Southern Pacific reached the city by extending the rail line north from Los Angeles. The town's central district grew almost immediately, and real estate sales were nearly five times higher than the previous year. Construction and improvement companies opened throughout the town as surrounding



Figure 25. Southern Pacific Depot and freight shed, Anaheim, 1895. The importance of railroads and shipping products by rail, in this case cabbage, is quite apparent in this photograph (Courtesy of Anaheim Public Library, Anaheim).

areas were platted and subdivided to make room for the rush of settlers. Hotels were hastily built to accommodate the droves of tourists who traveled to Santa Barbara on rail excursions, along with a new post office, lumberyard, and water company. In just over a year, Santa Barbara had transitioned from an agricultural settlement to a bustling city (Dumke 1944:158–165).

The development of transportation networks, along with improvements to existing transportation systems, generally brought prosperity to California towns. The downside was that large corporations that owned and operated rail transportation systems, such as the Southern Pacific, created a monopoly by securing most of the state's rail service, and the cost of transporting goods and services often outweighed profits for small businesses. As a whole, consumers benefited through expanded rail service that increased the range and availability of a variety of products and provided access to many other points within and outside the state that may not have been easily accessible previously.

ELECTRIC RAILROADS AND INTERURBAN TRAINS

By the end of the 19th century, a complex rail network had spread throughout California. Trains moved people and freight long distances for a reasonable price and with minimal discomfort; however, the state's rapidly expanding urban centers, such as Los Angeles and the San Francisco Bay Area, needed more accessible and efficient methods of transit between metropolis and hinterland. With automobiles reserved for the few who could afford them and roads generally being of poor quality, there were limited options for those desiring to travel within and between cities, towns, and tourist destinations (Tobar 2008). Electric interurban trains provided an efficient solution for many California towns and cities faced with public transportation problems (Figure 26). Besides transporting passengers, these trains carried mail, agricultural products, and general freight throughout the state (Shoup 1915:240). Interurban electric and nonelectric train and trolley service led to changes in urban and suburban growth.

In southern California, the Pacific Electric Railway, established in 1901, used previously existing streetcar and trolley lines to create a system of electric train service. Establishing hubs in Los Angeles and San Bernardino, the Pacific Electric successfully connected Orange, San Bernardino, Riverside, and other counties with coastal areas as well as enabled the shipment of southern Californian agriculture to eastern markets (Shoup 1915:239). The Pacific Electric also incorporated city trolley lines in cities such as Pasadena, Long Beach, Venice, and Santa Monica into their network, resulting in a vast and efficient rail transport system (see Figure 26). As a primary element of the area's infrastructure and economy, Pacific Electric paid for road development and maintenance to guarantee smoother



Figure 26. Pacific Electric railway car at Santa Monica Station, 1919 (Courtesy of the California History Room, California State Library, Sacramento).

travel and was part of a larger company that controlled wharves and docks, hotels, and light and power companies (Shoup 1915:237).

Northern California also developed an interwoven electric-rail network. Having unique regional transportation problems posed by the San Francisco Bay, the new system resulted in a combination of electric rail and ferry service that linked San Francisco and adjoining towns. The cities of Sacramento and Stockton each developed a network of their own that in turn allowed access to outlying areas. The San Joaquin Valley contained several interurban lines that connected the region's small settlements with the larger cities of Fresno and Bakersfield. These trains provided access to the San Joaquin Valley's growing number of resorts as well as its agricultural areas (Shoup 1915:243) (Figure 27).

With the installation of electric interurban lines, many California cities and towns emerged from geographic isolation and economic stagnation. Besides stimulating population and economic growth in large cities as well as small towns, the interurban trains constituted a large market for the state's hydroelectric projects and figured prominently as revenue producers for the expanding California oil industry (Shoup 1915:244).

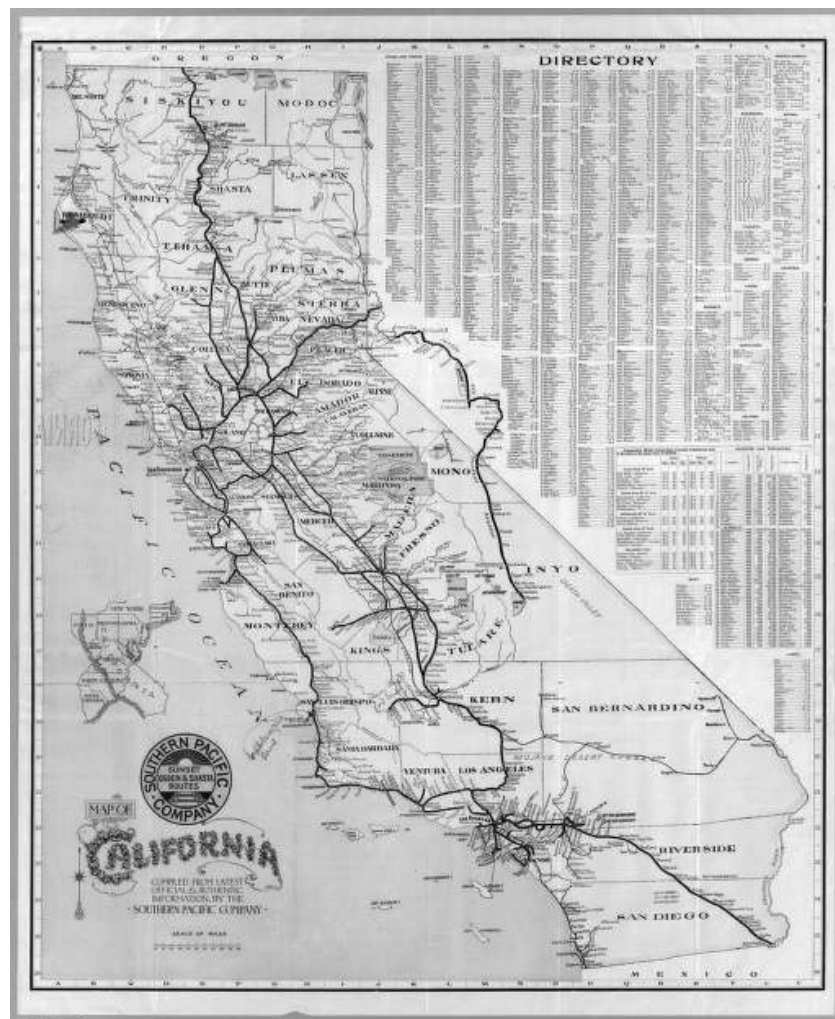


Figure 27. Southern Pacific Company Map of Railroads in California, 1901. (Courtesy of David Rumsey Map Collection).

HIGHWAYS

Just as the railroad transformed transportation in California, the advent of a highway and county road system ushered in a new era of mobility. Roads and highways had a significant influence on the economic development and settlement pattern of virtually all California towns. Federal and state funds helped accelerate the development of roads and highways, and towns generally accommodated expanding automobile use by providing services and infrastructure. These developments contributed to the creation of California's tourist and roadside businesses. By the 1920s, advancements in road and bridge design, along with the improved availability of the automobile and fuel, helped lay the foundation for California's modern transportation system.

California's advance toward a modern highway system was rooted in the national Good Roads Movement, which espoused replacing outdated, rutted roads with those improved by modern surfacing techniques. Influenced by bicycle clubs during the 1880s, ultimately these roads became the domain of the automobile. California, with its challenging array of terrain and climate, was expected to set the example for similar projects throughout the country. To facilitate this transition, the Legislature established the California Bureau of Highways in 1895. Upon completing a survey of the state in 1896, a plan was submitted for a state highway system (Blow 1920:15–17). It was not until 1909, however, that a unified state highway plan began, providing cities, towns, and municipal corporations the authorization to use their roads for county and state road purposes. In 1911, the state was divided into seven distinct road districts to regulate, repair, and construct highways (Boudier 1966:5–6). By 1919, the California State Highway system had built and was maintaining 1,800 miles of paved highway and another 700 miles of mountain roads (Blow 1920:47).

The successful construction of a modern state highway system required funding through several key legislative acts. The Savage Act (1907) allowed counties to bond their assets in the interest of road improvement. The state road system's biggest financial boost came in 1910 with an \$18 million bond act established for the purposes of constructing major north-south arteries on the coast and in the Central Valley (Boudier 1966:3). The 1910 act also provided for a permanent highway system that was to be supervised and maintained by the state (Harrison 1915:228; Blow 1920:1–2). Legally mandated lateral connections to every county seat throughout the state effectively formed the basic outline of an interconnected system between rural and urban locales. A similar bond act followed in 1916, allocating an additional \$12 million for road projects (Blow 1920:2). Other forms of revenue included the passage of a 1913 act requiring vehicle registration and driver's licenses and the Bankhead Act of 1916 that distributed federal funds for the construction and maintenance of roads used for the delivery of mail (Boudier 1966:9). The use of convict labor, made possible by the 1915 Convict Labor Law, helped offset labor costs of road construction and maintenance. This "volunteer force" engaged in all aspects of roadwork from the crushing of rock and preparation of surface material to actual road and bridge construction (Blow 1920:41–42).

In 1915, George B. Harrison (1915:230) described the anatomy of this proposed road network:

A system of principal or trunk roads was developed in accordance with the provisions of the law. Four such routes were established, making two main north and south roadways. One followed the coast, in general, starting in Del Norte County, passing through Eureka, Ukiah, Santa Rosa, San Rafael and other cities and towns en route, and meeting the San Francisco ferry connection at Sausalito. A continuing route began at the limits

of San Francisco, and passed through San Mateo, Redwood City, San Jose, Salinas, San Luis Obispo, Santa Barbara, Ventura, Los Angeles, and Santa Ana to a termination at San Diego. Two other routes were comprised in the valley or inland portion of the main State highway. One began at the Oregon boundary, where it is now joined to the Oregon section of the Pacific highway, and linked Yreka, Redding, Red Bluff, Yuba City and Marysville with Sacramento. The fourth route was planned through the San Joaquin Valley from Sacramento via Stockton, Modesto, Merced, Madera, Fresno, and Bakersfield to Los Angeles.

The construction of an interconnected highway system in California affected the state's urban and rural settings. Free from the constriction of railway timetables and tracks, motorists began to explore previously inaccessible areas, known as "auto touring" (Melosi 2004b:3). In turn, special interest groups, such as the Automobile Club of Southern California, the Southern California Automobile Association, and the California State Automobile Association were major proponents of road construction and improvement projects, and they promoted automobile tourism and safety throughout the state (Figure 28). Responsible for innovations in roadside distance, direction, and safety signage, as well as campaigning for bonds and establishing roadside campsites and recreation areas to stimulate and facilitate travel, these groups were highly influential during the early years of the automobile (Blow 1920:50–53).

The efficient transportation of goods, primarily agricultural products and those of related industries, was another motivating factor for the construction and improvement of California's road

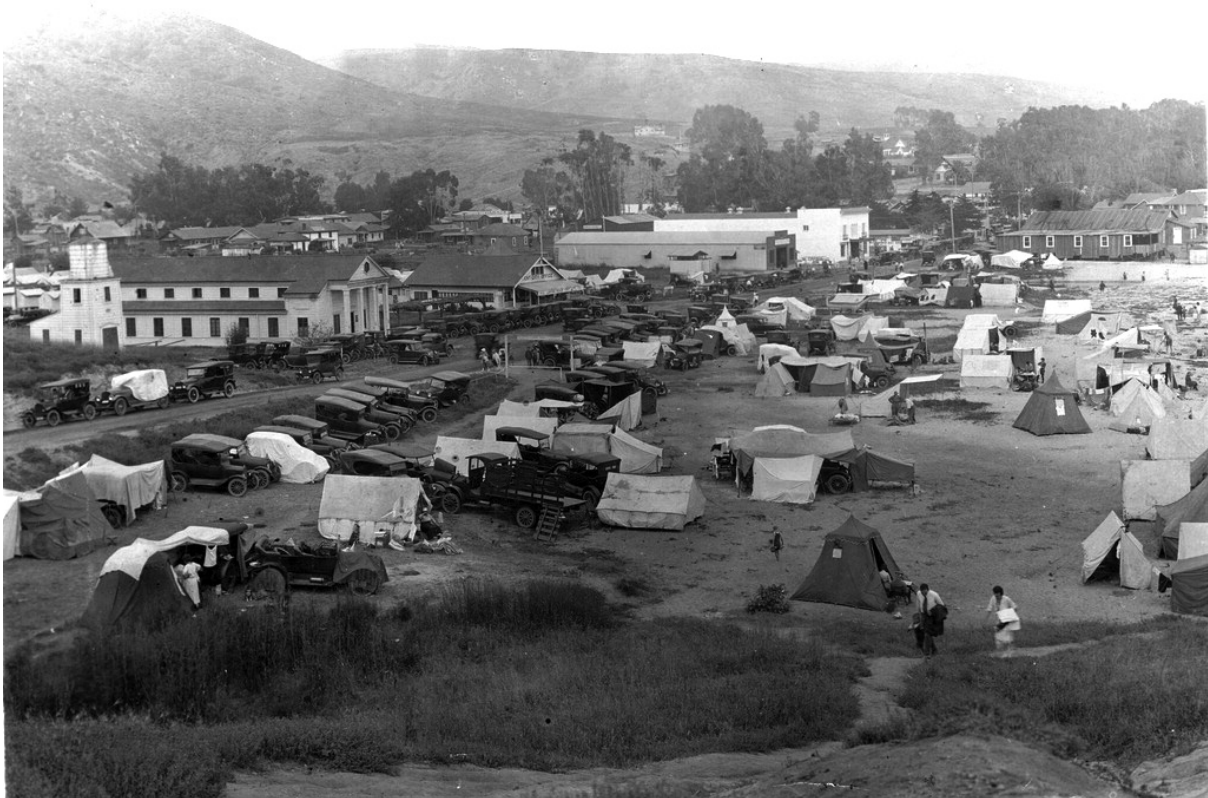


Figure 28. An image of tent camping from the back of a car indicates the growing popularity of auto touring. Apparently tent camping on the beach was not prohibited when this photograph was taken (Courtesy of Orange County Public Library, Orange).

system (Blow 1920:16). As the state agricultural industry expanded, the automobile transformed how fruits, vegetables, and animals were transported. With pavement replacing old, rutted roads that often proved impassable during inclement weather, it became easier and cheaper for farmers to deliver their products to wider markets (Melosi 2004a:10). As farmers and other industries embraced the automobile as a means for shipment and transportation, a strong connection between automobiles and commerce emerged (Mitchell 1915:225).

Reliable bridges were another component of transportation systems that connected many small communities to the rest of the state (Figure 29). Many bridges constructed in remote regions were made of local timber because it was not possible to transport steel over rugged terrain (Blow 1920:63). In Yolo County, the 1916 construction of a 16,000-foot (3.1 miles) concrete bridge, referred to today as the “Yolo Causeway,” effectively linked the Sacramento Valley to the Bay Area by carrying traffic over the seasonally high waters caused by the overflow of major rivers and snowmelt from the Sierra Nevada (Blow 1920:72; Boudier 1966:9). The highway over the causeway allowed farmers and other commercial industries to transport goods throughout the valley more efficiently and cheaper than before, regardless of flooding and bad weather. By trimming the distance between San Francisco and Sacramento from 130 miles to 100 miles, this connection not only facilitated easier travel to and from the Bay Area, but it also helped facilitate transportation service between Lake Tahoe and other destinations (Blow 1920:73). Yosemite, Lake Tahoe, Lake County with its several hot springs and splendid scenery, and other locales of natural wonder, experienced increased tourism as the automobile allowed a slower-paced, more-individualized style of travel to that of the railroad. The addition of paved and graded roads furthered the economic success of lake and mountain resorts, helping to lay the groundwork for the state’s nascent tourism industry (Otterstrom 2003:47).

Rural communities, such as Susanville and Alturas, where roads were regularly subjected to harsh weather conditions, did not possess the resources to maintain their roads and relied heavily upon state-sponsored transportation routes to connect them to other parts of the state (Blow 1920:69). Similarly, towns located on steep grades or in mountainous regions were often accessible by road only during the dry season as winter conditions proved dangerous for travel, and snow removal was not a routine part of the state’s maintenance budget. Until the improvement of the Bell Springs Grade between Eureka and Willits in 1915, which allowed safer passage throughout the entire year,



Figure 29. East Chapman Avenue Bridge, Orange, California, threatened by Santa Ana River floodwater, 1916 (Courtesy of Orange Public Library, Orange).

travelers from San Francisco took an arduous steamer and railroad journey to reach Eureka (Blow 1920:59–63). Other routes that played an important role in promoting tourism included U.S. 50, referred to in the 1920s as the “Pioneer Branch of the Lincoln Highway,” Rim of the World Drive (SR 18) in San Bernardino County (Robinson 1989), San Gabriel Forest Highway (SR 39), and the Angeles Crest Highway (SR 2) in Los Angeles County.

As car ownership shifted from an elite few to the general population, the importance of the automobile and improved roads changed dramatically. The need arose for services along the highways, precipitating the growth of gas stations, repair shops, and related businesses, as well as restaurants and lodgings (Mitchell 1915:226). Similar to the way stations found along early wagon roads, these roadside-service providers became outposts of civilization along California’s roads and highways. In some instances, roadside businesses catalyzed new settlements or introduced a renewed prosperity to areas located beyond the main travel routes or railroad lines (Melosi 2004a:10). As roads and streets developed, the adjacent vacant land became valuable real estate. The commercial and residential development of lands bordering highways boosted local economies as businesses, contractors, bankers, realtors, and consumers took advantage of new opportunities for land development (Melosi 2004b:2).

The impact of the automobile on social and commercial aspects of towns and cities is complex. Besides roadside businesses, the increasing number of automobiles on the road influenced communities and community development. The size and weight of the automobile changed how roads and bridges were built and maintained. Bridges were widened and strengthened, and streets were widened to accommodate increased traffic, altering existing transportation patterns and changing the character of downtown corridors. In small rural towns, such as Mariposa, Mariposa County, widening streets meant altering sidewalks, removing verandas, and changing the way pedestrians and vehicles accessed the commercial downtown (Figures 30 and 31).

The addition of paved, modern streets altered the leisure activities of residents as well. As faster moving vehicles replaced wagons, carts, and other forms of transport, the use of streets and street corners as social gathering points and playgrounds declined as citizens gravitated toward shopping districts, parks, and other pedestrian-friendly areas (Melosi 2004b:4). In many towns and cities, this growing infrastructure of road- and automobile-related businesses and structures, including driveways, parking lots, and garages, was adapted to preexisting spaces and buildings. Service stations in rural locations often appeared in or



Figure 30. View of downtown Mariposa, looking north on State Highway 49, 1930. Note the diagonal parking (as compared to Figure 31 taken in 1940) and the quintessential verandas that lined the sidewalk. (Courtesy of San Joaquin Valley Library System).



Figure 31. View looking south down State Highway 49 in downtown Mariposa, 1940. Note the widening of the highway since the 1920s (as compared to Figure 30) and the reconfiguration of parking and the original verandas that once lined the wooden sidewalks (Private Collection).

in front of barns, stables, and feed stores previously used for the care and maintenance of horses and carts (Melosi 2004b:2,8).

In summary, California's transportation system experienced a rapid transformation during the 19th century. Emigrant roads were transformed into county or toll roads during the 1860s and later declared official wagon roads. Railroad construction began in California during the mid-1850s, although it was the Central and later the Southern Pacific Railroad that created a web of transportation networks that crisscrossed the entire state. By the late 1920s, highways and ocean and river transport, in some instances, were being superseded by air travel. It was not until the 1940s, however, that municipal airports became an important part of the state's transportation network.

PUBLIC HEALTH AND SANITATION

PUBLIC HEALTH

During the 19th century and throughout the early part of the 20th century, it was almost impossible to separate public health from the quality of life in California towns. Similarly, the relationship between public health and sanitation is self-evident, as improvements in the disposal of waste

and the development of sewerage systems improved health standards throughout the state. In certain cases, towns were developed solely for the purposes of promoting health, and the physical location of California towns played an important role in issues related to public health.

This section of the historic context focuses on public health as it relates to the genesis of measures that were taken to address health-related concerns. Interpreting the genesis of health issues in any particular town is important for archaeologists reconstructing the physical record of pathogens and disease as evidenced through artifact assemblages. While the sale and distribution of certain nostrums reflect business practices and consumer demands, it may also have broader implications regarding the overall health of a particular population. The following section explores public health standards in towns and the infrastructure designed to address those concerns.

Without proper sanitation and adequate supplies of water, it was unlikely that any California community could flourish, let alone sustain itself. Public health has been described as

The science and the art of preventing disease, prolonging life, and promoting physical health and efficiency through organized community efforts for the sanitation of the environment, the control of community infection, the education of the individual in principles of hygiene, the organization of medical and nursing services for the early diagnosis and preventive treatment of disease, and the development of social machinery which will insure to every individual in the community a standard of living adequate for the maintenance of health (*The American City* 1928b:148).

Historical records provide evidence that during the early 1850s, the initial phase of community development, Californians raised the issue of standards for improvements in public health. Public health standards remained an important issue through the latter part of the 19th century and during the first few decades of the 20th century. California faced monumental challenges in establishing relatively safe health standards, including those related to proper sanitation, sewage disposal, disease-born pathogens created by standing water, poor hygiene, and inadequate health care.

The roots of modern medicine in California were formed during the gold rush when both schooled and unschooled argonauts brought their skills to the region. Medical practitioners set up shops in small mining towns and communities in the Sierra Nevada. Sacramento, because of its close proximity to the mines, its advancements in city life, and location of state government, became an important location for the practice of modern medicine in California (Lyman 1925:570).

A number of diseases and epidemics plagued California during the late-19th and first part of the 20th century. From the standpoint of small towns, the way in which they dealt with health care crises or epidemics is an important part of local history. The diseases of primary concern for California towns included malaria, smallpox, cholera, diphtheria, typhoid fever, and tuberculosis. In 1844, a smallpox epidemic gave cause for the establishment of California's first public hospital, located just outside of Monterey. In 1850, Sacramento suffered a cholera epidemic. In 1877, a quick and particularly severe diphtheria epidemic attacked California, hitting the coast and coastal valleys slightly harder than the interior valleys and mountain areas. The epidemic disproportionately affected children, with nearly three-fifths of its victims being 5 years of age and under. It left approximately 1,163 dead in its aftermath. By 1878, this epidemic reportedly subsided again to normal proportions (State Board of Health of California 1879:18).

By the 1870s, local governments gradually recognized the need to oversee public health, and equally important, the first state board of public health was established. The State Board of Health of California (SBOH) consisted of seven appointed physicians, two from Sacramento and five from other regions of the state. The responsibilities of the SBOH included oversight of public health and sanitation matters throughout California, the accumulation of medical and sanitation statistics, and the dispensation of usable knowledge to the public. The most visible aspect of the board's duties was its position as an advisory board in regards to the "location, construction, sewerage, and administration of prisons, hospitals, asylums, and public institutions" (Halverson 1949:59). However, even as late as the 1920s, the SBOH's influence on small towns was at best marginal.

Capitalists and entrepreneurs saw the opportunities associated with public health concerns and established resorts and, in some cases, entire communities that were designed around specific products, such as mineral water, or locations viewed as healthy or promoting sustained health (Figure 32). Locations included the mineral waters of Sonoma, Napa, and Lake counties, the high desert region, and coastal counties, such as San Diego, Orange, Los Angeles, Santa Barbara, and Monterey.

At the close of the 19th century, boosterism gained strength as chambers of commerce vied for increasing commerce and trade within their respective communities through booklets and advertisements in popular magazines, such as *Out West* and *Sunset*. Some communities went so far as to adopt catchy slogans as forms of advertisement, particularly those towns whose economic livelihood was largely dependent upon tourism and healthy living.

California's diverse climate and geography made certain areas more susceptible to particular forms of disease and sickness. While California's coastal regions purportedly contained healing qualities for those suffering diseases of consumption, such as tuberculosis, the Central Valley became associated with scorching heat and various types of fevers. Early California medical practitioners expounded on the connection between health and the natural environment. For example, they attributed a dysentery epidemic in San Joaquin County between 1870 and 1873 to the rapid temperature changes in the region. Physicians became acute observers not only of human symptoms but also of changes in weather and the natural environment. Early SBOH reports reflect this as they chart disease and death rates in comparison with humidity, temperature, and rainfall in localized regions.

The awareness of connections between sickness and the natural environment gradually resulted in changes to the built environment. In 1879, the SBOH, concerned about the relationship between



Figure 32. *Glendale Sanitarium, Glendale, circa 1900. Note the exuberant design of the Queen Anne Victorian that provided luxury accommodations to its guests (Courtesy of Department of Archives and Special Collections, William H. Hannon Library, Loyola Marymount University).*

dampness and sickness, recommended the following rules for new construction, although most were never strictly enforced:

1. Buildings were not to be built too close together whenever possible, and were to be situated in such a way as to achieve the most constant sun in the most frequented rooms
2. Soil should slope away from the house in order to prevent undue moisture at the base of the home's perimeter and walkways replace plant beds
3. Trees should be planted to absorb moisture, though not an overabundance to block sunlight and wind; and exterior walls of brick homes either should be hollowed or have studded walls between the exterior plaster and interior brick to serve as a moisture barrier (SBOH 1879:78).

Evidence remains that county hospitals and small-town health care facilities did not have the capacity to deal with mounting diseases compared to cities (Figure 33). In 1879, the SBOH (1879:35–36) reported that county hospitals were “designed commonly for other diseases, the treatment of accidents, the care of paupers, and for those suffering from a class of chronic maladies for which hygienic treatment is, by comparison, of secondary importance.” Although numerous county hospitals had been built by the late-19th century, many sick and diseased rural inhabitants traveled to the larger cities to receive medical care. The *Pacific Medical and Surgical Journal* reported in 1879 that, “a large number of invalids come from the interior to the metropolis for the benefits of its medical skill, private charity, and public institutions” (SBOH 1879:35–36).



Figure 33. *Chula Vista Public Hospital, circa 1915.* Many small towns had hospitals located in converted residences (Courtesy of John Rojas Photograph Collection, Chula Vista Public Library).

Industrialization resulting in the modification of the natural environment created conditions that led to the spread of disease. In the Central Valley, for example, the leveling of fields and introduction of irrigation systems for farming resulted in an increase of malaria outbreaks. Irrigation systems, along with the associated practice of leveling fields, left low-lying stagnant pools of water for malaria-ridden mosquitoes to breed (Figure 34). Abandoned, spent mining land, associated largely with dredging, also fueled this problem (Nash 2006:76,109).



Figure 34. Artesian Well, Lower San Joaquin Valley near Bakersfield (Carl Watkins Photograph, Courtesy of San Joaquin Valley Library System).

Many theories abounded as to malaria's means of transmission. One theory was that miasma—tainted air associated with dampness, swamp-like environments, stagnant water and air, and putrid smells—caused malaria and other diseases. Physicians believed that soils in California's Central Valley carried the cause of malaria (Nash 2006:64). Malaria did not directly affect southern California and the mountainous regions because the climate was not conducive to its spread.

After the 1897 discovery of the mosquito as the principal carrier of malaria, health advocates and engineers decided to deal with the problem by further altering the natural environment. This included "draining swamps, clearing vegetation from streams and ditches, removing standing water, and poisoning larvae wherever they were found" (Nash 2006:107,115). In 1910, a leading expert in mosquito control named William Brodbeck Herms began leading campaigns to eradicate mosquitoes by restructuring both the built and natural environment. When Herms began his first campaign in the community of Penryn in Placer County, however, four nearby towns refused his services. This highlighted the need to educate rural communities in sanitation and disease-prevention practices.

This history of disease, pathogens, and sanitation is no more pronounced than in the development of California's dairy industry. Health regulations aimed directly at the dairy industry after 1900 influenced broader health regulations related in particular to sanitation and disease. The history of dairy operations in California's small towns and rural communities reveals a transition from independent producers to the rise of large cooperatives. While livestock and pastures were generally located outside town centers, other parts of the dairy operation existed inside the heart of many small communities. The beginnings of this industry reach back to the gold rush period. Many settlers brought their own dairy cattle and quickly found a lucrative opportunity in selling dairy products. In the 1850s, Petaluma supplied large amounts of dairy products to the San Francisco Bay Area, but heavy demand still required abundant importation from the East Coast.

In the early days of milk production, many dairies and creameries operated in filthy conditions, raising health concerns. Beginning in the mid-1870s, innovations occurred in dairy production,

including the cream separator, glass milk bottle, milking machine, and pasteurization techniques. As this transformation occurred, health officials began to realize the need for strict dairy regulation and standards (Figure 35). The dangers of unsanitary dairy practices included the contamination of products with bacteria causing typhoid, tuberculosis, diphtheria, and scarlet fever. In 1895,



Figure 35. Whittier Sanitary Dairy Building, 1925. Note the in-town location of the dairy and use of the word “sanitary.” (Courtesy of Whittier Public Library, Whittier).

the State Dairy Bureau sought to tackle this problem through dairy inspections and the stringent enforcement of dairy laws. The newly created bureau responded quickly to a suspected bovine tuberculosis threat and subsequently initiated a statewide inspection of cattle and dairy facilities. Although the State Dairy Bureau could only manage inspections to the best of their available resources, many of the conditions they found were appalling (Santos 1994). Besides dairy cattle, hogs and horses were common features of many small and large California towns. Both horses and hogs presented health problems, particularly if left unattended.

Ethnic minorities were frequently blamed for creating unsanitary conditions. Chinese, and other merchants and restaurateurs, for instance, kept hogs behind or near their houses or businesses in many California towns and cities. In a number of California towns, the Chinese and other ethnic groups became scapegoats for politicians who sought to blame those minority groups for a wide variety of unsanitary conditions leading to disease outbreaks. San Francisco launched particularly racist campaigns against the Chinese (Figure 36).

The first part of the 20th century brought sweeping changes in professional health care nationwide, although in disproportionate measure for various demographics. The Progressive movement, recognizing the explicit connection between public health and sanitization, pushed for large-scale sanitization efforts in the urban areas. On the other hand, diseases, such as malaria, remained widespread throughout California through the 1910s, disproportionately in the Central Valley towns and communities. Furthermore, between 1909 and 1914, reports reveal three times more typhoid deaths in the valley than in the large cities. In fact, these and other figures are likely underrepresented because of the comparably poor diagnosis and statistical methods used among these smaller communities (Nash 2006:87).

Even as late as 1920, the disparity between small town and large city sanitary infrastructure and practice is apparent. California’s smaller towns and rural communities appear to have suffered disease outbreaks in higher proportion than the larger cities. For example, a 1919 survey in Anderson (Shasta County) found 64% of the adults had contracted some degree of malaria within the last 3 months and that 20% currently had it in their bloodstream (SBOH 1921:10–11). In 1920, both Susanville (Lassen County) and Pittsburgh (Contra Costa County) faced severe outbreaks of typhoid fever due to unsanitary conditions of food supplies, dairies, and sewage practices (SBOH 1923:55–56).

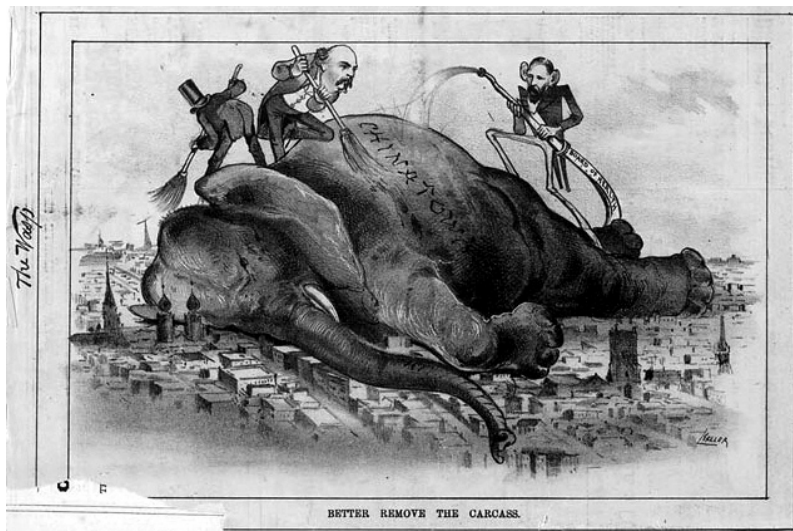


Figure 36. *Cartoon from The Wasp entitled “Better Remove the Carcass.” Poking fun at purported health problems associated with Chinatowns in California, 1880 (Courtesy of The Bancroft Library, University of California, Berkeley).*

The SBOH, eager to correct these problems, enacted measures targeted specifically at smaller towns and rural communities. In 1917, legislation passed requiring the registration of all plumbers doing work in incorporated towns, along with county examination of all completed work. That same year, the Local Health Districts Act passed, allowing the formation of local health districts from towns and rural communities in any arrangement and requiring a health officer for each county. In 1919, the Bureau of Child Hygiene was created and it purposely focused its efforts in child development

and health to small towns and rural communities (SBOH 1918:11). Even after the SBOH made these efforts, however, small towns and rural areas often remained oblivious to the concern. One year after the Local Health Districts Act passed, only one county possessed an acceptable health officer (SBOH 1918:10). The SBOH had been stressing rural education and awareness to sanitary measures as far back as the 1870s, and in 1918, its report recognized the slow nature of its efforts and considered taking direct control over local sanitary matters, “taking from them the obligation to serve their citizens in such matters, in which obligation they are now derelict” (SBOH 1918:10).

Increasingly, public health, particularly adequate sanitation, was intertwined with townsite infrastructure, and city governments and rural communities alike struggled with how to dispose of sewage and agricultural waste. Besides the foul odors emitted by human and animal waste, disease created by untreated sewage presented a very real concern for all of the state’s towns and cities. California’s small towns and communities, however, generally lacked the capital needed to develop modern sanitation systems.

Between the late-19th and early-20th centuries, significant progress was made towards improving the living conditions of California towns. Not all communities, however, witnessed the benefits associated with improved infrastructure. Communities with economies based on single resources were more subject to the upturns and downturns of regional, state, national, and in some cases, world markets. Some communities lacked a well-organized municipal government, and others remained unincorporated well into the 20th century.

During the closing years of the Progressive Era, county governments began to form regional planning commissions to address issues related to health, sanitation, traffic, public parks, flood control, subdivisions, and the orderly growth of cities. In 1923, Los Angeles is credited with establishing the first official regional planning commission (*The American City* 1928a:5). Local governments

who had planning departments began to consider aesthetic design into planning documents, including arcading streets, encouraging good architecture, planting street trees and constructing street furniture, linking local parks with scenic points through parkways, and grouping public buildings and businesses at appropriate central locations.

Prior to the 1920s, although the vast majority of small towns in California lacked an official planning unit in the city government, other towns were on the cutting edge of local and regional planning. In particular, southern California communities such as Santa Barbara, Palos Verdes, Rancho Santa Fe, Hollywood, and Riverside, to name just a few, initiated traffic, park, landscape, lighting, and city plans. Santa Barbara went so far as to institute architectural design standards following a disastrous earthquake in 1925. In Riverside, Victoria and Magnolia avenues became model streets or parkways with paved surfaces lined with palms and shade trees. The West Riverside Bridge in Riverside, designed in the popular Mission style architecture, soon became a landmark following its completion in 1920s, along with the Memorial Arch Bridge on the west entrance to the city.

A number of observations can be made from published sources and an examination of government documents related to the evolution of public health in California during the 19th century and first few decades of the 20th century. First, both large cities and small towns appear to have suffered from serious health and sanitation issues well into the second decade of the 20th century, and many of the same health issues faced both small towns and metropolitan areas. In larger cities and metropolitan areas, health and sanitation issues were generally confined to middle- and lower-class populations, particularly the poor, and in small towns, health and sanitation issues affected a larger segment of the population. Second, minority or ethnic populations were prone to have the lowest standards of sanitation and likely suffered the most in regards to disease and lack of health care. Third, the interior spaces of commercial buildings—including barns and sheds—were often unsanitary, poorly ventilated, and constructed with dirt floors, sometimes containing manure and excrement in the same location as food preparation. Lastly, an analysis of public health in California towns from 1850 to 1920 demonstrates the general lack of health care and sanitation during much of the 19th century. Ever so slowly, California's public health system matured, culminating in state-run and county-run efforts to develop a systematic approach to inspections that resulted in specific legislation aimed at public health concerns. Interpreting California's public health system will certainly require further research, particularly the cause and effect of disease in small towns as compared to large urban areas.

SANITATION

Sanitation was and is an important part of townsite development, health and safety, and urban growth. For the purposes of this study, sanitation is defined as efforts by unorganized, organized, company-owned, corporate, or local governmental bodies to address basic services, such as the collection and disposal of sewage and garbage.

During the mid-19th century, few California towns offered any form of refuse disposal. Garbage was disposed of by burning, localized dumping, depositing in privies or water closets, or collection through local scavengers. Official city refuse-disposal sites or dumps became more common after the turn of the century and only after towns witnessed the apparent deleterious effects of unmanaged refuse disposal, particularly as it related to public health concerns.

Before automobiles, horses frequented the streets and alleys of towns and discharged fecal material that jeopardized local wells or irrigation systems. According to Melosi, by the “mid-1880s, 100,000 horses and mules were pulling 18,000 horse cars over 3,500 miles of track nationwide.” Sanitary experts calculated that the average city horse produced roughly 15–30 pounds of manure each day (Melosi 2001:94).

Sewage disposal consists of the separation of the suspended matter from the liquid and the control of its decomposition. Early attempts at sewage disposal included flushing systems, open ditches, cesspools, septic tanks, land filtration, stone or sand filters, and coagulation in tanks (*The American City* 1928a:135–136).

The science of sanitary drainage in the United States has its antecedents in Western Europe with the open drainage ditch, where it was the principal means of disposing sewage throughout much of the early-19th century. These became common in many gold rush–era towns in California, where open ditches filled with sewage and waste became a common sight. Open ditches gave way to paved gutter ways, usually made of brick. This provided some degree of sanitation with consistent rain and gravity providing a means to carry waste away from homes and businesses. Some bigger cities, such as San Francisco, built much larger underground conduits to move sewage, with access provided by manholes penetrating through street surfaces. Most of these systems featured brick construction with rounded bases, vertical sidewalls, and crowned arched tops. The rounded sewer base proved better at transporting silt-laden waters and sewage (SBOH 1879:62–63).

Although the sanitary movement gained nationwide attention by 1850 and brought awareness to the need for sewer systems, only large cities were first able to implement these measures. Between the late 1850s through the 1870s, cities in the East and Midwest built the first planned underground sewer systems in the United States. These sewers featured combined systems, carrying both sewage and storm water. Later, some municipalities constructed sewage systems that diverted storm water and sewage separately (Melosi 2000:91–93).

California’s history of municipal sewer systems is not well documented. State and municipal records, however, do document some of the larger urban centers’ attempts at developing sewer systems. The beachfront community of Santa Cruz symbolizes the problems that faced fledgling California communities, at least along the coast, that attempted to establish effective waste-disposal systems. Incorporated in 1866, Santa Cruz grew from a population of 950 to 2,561 by 1870, and to 3,898 by 1880 (Santa Cruz Public Libraries 2008). Before the development of the first sewers in Santa Cruz in the 1880s, sewage flowed from the collection drains, through a ditch, and into a nearby lagoon. As the city expanded, so did new sewer lines. By 1917, the sewer system encompassed about 75% of the community, with the remaining population served by vault-style privies. However, most of the sewage entered the Pacific Ocean directly, or by way of the San Lorenzo River, and discharged itself along many of the city’s beaches. The SBOH quarantined beaches near the mouth of the San Lorenzo River from 1917 until the construction of a screening plant, interceptor sewers, and outfalls in 1928 (Santa Cruz Public Libraries 2008). Similar systems existed in other coastal towns through the 1910s; in the interior of the state, sewage systems generally ran the effluent into holding ponds, ditches, or in some cases, the creek and river systems that ultimately entered the bay and ocean.

The use of underground sewerage systems in cities increased rapidly in the 20th century. Much of this had to do with the municipal engineer's rise to prominence, coupled with the massive urban clean-up efforts associated with the Progressive movement. All of these efforts served to remove sewage waste far from the city itself without any real effort in sewage treatment. Many of California's small towns and rural communities, however, still dealt with issues of living in and near the sewage they produced.

One immediate factor causing the need for sewer systems was the introduction of potable running water delivered to homes by municipalities (Melosi 2000:91–92). Although there was rising awareness of proper sewerage techniques in small towns across California, these small communities rarely had the capital necessary to make the costly improvements in their sewage or water supply systems without raising taxes or securing bonds for such improvements. Instead, a number of the more rural communities relied upon well water and vault privies through the Great Depression of the 1930s. Further research may reveal specific construction dates for municipal water hookups and underground sewage systems in specific California towns.

During the late-19th through early-20th centuries, the indoor toilet became more commonplace. In some communities, the installation of porcelain toilets over privies attached to local sewer lines occurred before installation inside homes or businesses. The modern flush toilet was introduced in the 1870s but did not come into common use until after 1910. The Jennings Closet, popularized during the late-19th century, was by far the most recommended and popular flush toilet, although expensive. As an alternative, two other basic types of indoor toilets were also available at the time. One type was the pan or water closet, consisting of a porcelain bowl on top of an iron basin. The upper bowl, containing water and waste, emptied into the lower basin at the pull of a valve. The drawbacks of this toilet were its inability to prevent sewage gas seepage during flushing, and its design apparently made it very difficult to clean. The "hopper closet" was another type of toilet that was marketed during the late-19th century. It consisted of a basin that fed directly into a trap. From the toilet bowl leading to the iron drainpipe, "closet bends," as they were called, were manufactured first of lead, and sewer pipes were made from clay, or pottery, or cast iron. Clay sewer pipe was reportedly made at Lake Elsinore, Riverside County, as early as 1885, and the clay pipe was used in sewer connections throughout portions of San Diego during the city's building boom of the late 1880s.

Despite advances in sewer systems and domestic sewage systems, the difficulty in educating small towns and rural communities to good sewerage and sanitation practices proved immense. Enforcing the practices proved even more difficult. As far back as the late 1870s, the State Board of Health (1879:3) acknowledged public enlightenment of proper sanitation as crucial to enforcing sanitation measures. The Board continued its educational efforts, and in 1909, it unveiled the SBOH train "sanitation car." The train car travelled to 92 towns in 11 months, providing education on sanitation practices and the role of flies and mosquitoes in spreading disease (Nash 2006:116).

As communities expanded during the early 1900s and consumer waste increased because of an expanding economy and an increase in spending on material goods, the need for the disposal of municipal refuse became more acute, as did improved sanitation (Figures 37 and 38). There is no definitive history of refuse disposal methods in the United States, but Melosi's (2000) *The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present*, presents several models for interpreting the evolution of waste product disposal. Prior to the early 1900s, most

municipal garbage was disposed of in a wide variety of methods, the most common being in arroyos or gulches, the ocean or bay, and at hog farms.

During the 1920s, the City of Long Beach collected garbage from business and residential sections of the city and hauled the garbage 3 miles by tractors and trailers to a hog farm. In Oakland, during the same period, garbage was collected in trucks and wagons and hauled to what was known at the time as “Garbage Park,” a sanitary landfill along the harbor front. In Pasadena, garbage was collected by wagons and trucks and taken 7 miles to a hog farm, and in Los Angeles, garbage was hauled to a landfill along the Los Angeles River where scavengers picked through the dump (Figure 39). A similar disposal method was used in San Diego. In San Francisco, massive Thackeroy pots, built in 1896 with a capacity of 400 tons, were used to incinerate garbage collected within the city. Garbage was dumped over the end of the wharf, built by the city in 1915, into five-yard bottom dump skips. Two electric cranes lifted the skips and dumped the garbage into ships, which hauled the material 40 miles out to sea to dump it. Barrels, boxes, and tree cuttings were reportedly incinerated (*The American City* 1928a:146–148.)



Figure 37. Backyards of a suburban neighborhood, Santa Clara, California, circa 1910. Note the trash, lumber, and lack of sanitation; such conditions were prevalent in towns throughout the state during the early-20th century (Courtesy of The Bancroft Library, University of California, Berkeley).



Figure 38. Los Angeles neighborhood from the 1900s depicting a privy still in use in the 1940s and the burning of trash in an open steel barrel in the rear yard (Courtesy of the Housing Authority of the City of Los Angeles Photograph Collection, Southern California Library for Social Studies and Research, Los Angeles).

Between 1913 and 1917, “Sanitary Reports” provided by SBOH provide an important body of evidence documenting health and sanitation conditions of hundreds of towns in the state, including municipal dumping practices (Figure 40). These reports are on file at the State Archives in Sacramento.

In 1913, Edwin Ross, staff engineer for the SBOH, traveled throughout California's rural countryside to inspect sanitary conditions following reports of unsanitary conditions brought to attention by a workers' revolt at a hop ranch in Wheatland. All throughout the labor camps and rural communities, Ross expressed disgust at the unsanitary and appalling privy conditions (Nash 2006:96,104). A 1914 SBOH Sanitary Report on the town of Davis seems to verify Ross's observations on unsanitary conditions during his 1913 field trip. Apparently, Davis had no sewer system, multiple unscreened privies were in "dilapidated and filthy condition," and an operational well lay within 50 feet of several privies (SBOH 1914:1-2). Furthermore, Davis had no system to collect trash and refuse, and most of the garbage was "allowed to accumulate for months and even years" (SBOH 1914:2). The sanitary inspector recommended installing a modern sewer system with septic tank and requiring that all property owners connect to it; cleaning and enclosing all privy openings; thoroughly cleaning various hotels, restaurants, and residences; keeping all hogs outside of town; and removing all present manure (SBOH 1914:3-5).



Figure 39. *Los Angeles City dump near 26th Street and the Los Angeles River. Note the scavengers sorting garbage and shacks for those living at the dump site, circa 1920 (Courtesy of The Bancroft Library, University of California, Berkeley).*



Figure 40. *Garbage dump wagon San Francisco, circa 1920s (Courtesy of The Bancroft Library, University of California, Berkeley).*

Davis was not alone during the late 1910s through the 1920s; many small towns in California upgraded their refuse and sanitation systems. Another case in point is the historic mining community of Placerville. Developed in 1849, the city relied on gravity and check dams to remove effluent dumped into Hangtown Creek. During the late 1910s, the city began to provide sewer service to its business district, and privy vaults overhanging the creek were removed. Similar efforts were made in other Mother Lode communities during this same period, although sewage outfall, spills, and leakage into creeks and drainages remained a serious problem (Sanitary Inspection Reports 1914-1920,

Records of the State Board of Health/Public Health, California State Archives, Sacramento). Residences and businesses not connected to sewer systems continued to use vault privies well into the late 1930s, in large part because they had no other choice (Brienes 2006:252-253).

The evolution of sanitation in California is associated with health and sanitary movements in the 19th century, to the social and political reformists of the Progressive Era, and to legislation and regulations that municipalities began to endorse after the turn of the 20th century. Sanitation and sewerage evolved slower in small communities as compared to large cities. As late as 1917, vault privies were still common in many, if not most, California towns, and sewage was being disposed of in a wide variety of ways, including discharge into the ocean, sloughs, creeks, drainage ditches, sewage ponds or farms, and in rare cases, modest treatment facilities. In general, sections of towns populated by immigrants and minorities were afforded fewer improvements, such as water and sewer connections, despite the state's effort to regulate these types of improvements in order to improve public health. Today, sanitation and sewage treatment remain significant parts of any city's infrastructure.

WATER SYSTEMS

One of the most important forms of infrastructure that followed the creation of a townsite was a sustainable supply of domestic water. From 1850 to the present, domestic water has been provided through underground or artesian wells, rainwater gathered in storage tanks or in reservoirs, and dams, flumes, penstocks, and other devices that capture and convey water to towns.

Wells and tank houses were the most common form of water storage facilities adopted for most California townsites during the 19th century. Where gravity-fed systems were practicable, reservoirs, canals, ditches, and penstocks were built, some at great expense to the municipality. Known as "impounding reservoirs," these storage devices had disadvantages that included turbidity, organic increases, and the overall expense of creating storage systems, as compared to wells and canals. Impounded systems required the use of copper sulfates to remove organic materials, particularly in hot climates.

In California, prior to 1880, it was rare to have piped water in domestic dwellings. There were, however, exceptions, and those who could afford it generally used gravity-fed systems from on-site or nearby well and water towers with lines connected directly to the house. Larger cities, such as San Diego, had municipal water with direct connections to wealthy residents in the early 1870s, as did Anaheim in Orange County (Figure 41). Prior to 1900, domestic water pipes were manufactured of galvanized metal. Most of the early (pre-1900s) residential water pipes lacked the distinctive ridges on the pipe ends, as they do today. Municipal water or private water-company hookup records are some of the most important and accurate written documentation regarding the dates when specific buildings were constructed. Municipal water delivery was generally through cast-iron pipes.

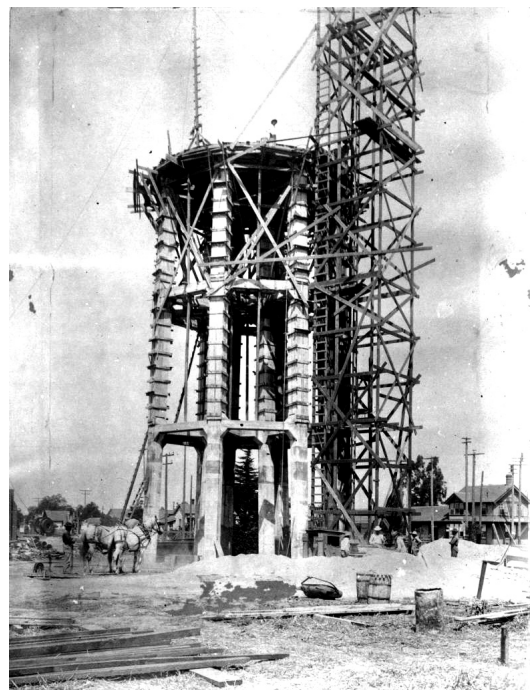


Figure 41. Anaheim municipal waterworks concrete tower under construction, 1907
(Courtesy of Anaheim Public Library, Anaheim).

By the 1910s, many small California towns were developing or improving their own water systems. One example is the city of Davis in Yolo County, whose municipal water system was designed in 1919 by John Debo, a noted consulting engineer. Although constrained by the city's limited financial base, Galloway, a civil engineer, was able to supervise the construction of a basic water system that built upon an existing private system. By 1920, the water system for the city of Davis included an elevated steel water tank, numerous mains, hydrants, electric-powered wells, and fire pumps, as well as a connection to the University Farm (later University of California, Davis) (Galloway 1923:405–410). For a more definitive history of California's water systems refer to JRP Historical Consulting Services and Caltrans's (2000) thematic study, *Water Conveyance Systems in California: Historic Context Development and Evaluation Procedures*.

UTILITIES

California's desire to create utility systems in towns began in the 1850s with municipal gas plants that provided indoor and outdoor lighting. Prior to the mid-1840s, most street lighting in the United States used oil lamps. Similarly, oil lamps were the primary source of indoor lighting for households until the gas lamp was introduced (Myers 1978). Electrical lighting first appeared in the early 1880s, but many small California communities did not acquire electricity until well after 1900, particularly in rural areas.

Prior to 1880, throughout most of small town America, municipalities were the sole provider of gas and later electricity (Figure 42). Illuminating streets, businesses, and homes was an important part of the development of towns. Street lighting made outdoor evening activities safer, and indoor lighting allowed businesses longer hours of operation and provided families with a reliable light source that was conducive to socializing and reading. Gas lighting emerged at the close of the 18th century in Britain and France, and it remained popular through World War I for lighting streets. Most of the gas fixtures used in the United States prior to the 1830s were manufactured in England and France. Various gas burners and gas cocks were perfected between 1808 and the 1840s (Myers 1978:10–19). Because of technological changes in gas tubing and design, most gas apparatuses are datable to a specific period.

Between 1840 and 1880, gas companies were formed in many California towns. Most were small to medium in size and built of brick. The gas tank in the plants was constructed of riveted iron plates and immersed in water at its base. Before lime was no longer used as a purifying agent, in favor of “washers” and “scrubbers,” it



Figure 42. *The city of Santa Clara city municipal gas and waterworks plant, 1905. Note the unusual water tower (Courtesy of California Room, San Jose Public Library, San Jose).*

became extremely foul when saturated with impurities from the gas. It was actually the lime rather than the sulfurous odor of the gas itself that made gashouse districts so unpleasant (Myers 1978:231).

By the late-19th century, gashouses were giving way to municipally owned and operated electric plants. Initially, steam-generating plants produced electricity, but later steam turbines improved efficiency and made electrical generation through transmission networks a possibility. By the 1910s, diesel engines provided power and replaced outdated steam plants (*The American City* 1928c:141–142).

The first hydroelectric facility providing electricity to a municipality in California was in Folsom. The Folsom Power House began operations in July 1895. Power was delivered to Sacramento at 11,000 volts, which was reportedly a new achievement in long-distance high-voltage transmission. The capital celebrated with a grand electric carnival on 9 September 1895. The original generating plant, still in place, remained in continuous operation until 1952, and today is California Registered Historical Landmark No. 633.

During the first two decades of the 20th century, large corporate gas and electric companies were formed, many of which later merged and formed large conglomerates, such as Southern California Edison in southern California and Pacific Gas & Electric Company in northern California. Municipalities purchased power from these and other companies, or the company itself erected substations in various communities and sold power to homeowners and businesses, in much the same way as it does today.

ARCHITECTURE (MUNICIPAL BUILDINGS AND STRUCTURES)

Interpreting the evolution of architecture, technology, and landscapes of towns from 1850 to the 1920s requires a basic understanding of economic, political, and cultural change in a regional and national context. California had a diverse and abundant array of local materials that were exploited by the area's first settlers, beginning with Native Americans. Wood, stone, earth, and adobe were materials employed by Spanish, Mexican, and eventually European American settlers. Buildings, and consequently architecture, varied according to climate, topography, soils, vegetation, and other natural conditions. Cultural values also played a role, as certain groups preferred using traditional materials from their respective home countries, such as stone, adobe, and brick. As transportation networks developed, particularly railroads, it became more economical to acquire building materials from regional or even national suppliers. By the 1870s, it was common for local contractors or property owners to order architectural supplies, such as sashes and doors, from Los Angeles or San Francisco, and have them delivered to the nearest railroad depot where wagons would haul the material to the job site. By the early 1900s, mail-order houses were shipping entire premanufactured homes via the railroads.

In 1849–1850, with only a handful of sawmills and no sash and door companies operating in California, a number of Californians purchased prefabricated homes from New England that were packaged and shipped around Cape Horn to ports such as San Francisco and then assembled on the building site (Woodbridge and Woodbridge 1992:108). These homes were, by design, quite simple, having balloon framing and generally lacking ornamentation. By 1851–1852, sawmills were operating in and around San Francisco and the gold regions, albeit rather inefficiently, powered largely by water. By the early to mid-1850s, steam began to replace the older water-powered sawmills and more affordable milled lumber was shipped throughout the state, including

sash and door materials. Although most of the early lumber manufactured was nondimensional, as compared to present-day standards, it was of superior quality because it was milled from old-growth trees, such as Douglas fir, sugar pine, and redwood. While milled-wood products may have been available as early as 1850–1852, builders in certain instances still chose adobe or stone as the preferred construction material. The choice may have had more to do with ethnicity and traditional building practices than the availability of milled lumber.

Although earth (rammed earth) and adobe were readily available for construction purposes, the use of such materials was limited. Stone and brick were preferable building materials in many of the state's developing communities, largely because of the readily obtainable supplies and because these materials could withstand moisture and retard fire (Figure 43). In fact, a few towns and city charters required the use of brick or stone for all buildings constructed within the central business district. In response to these developments, brickyards and quarries were producing large quantities of clay brick and quarried stones by the mid-1850s to meet the demand. By the 1860s, metal roofs had begun to replace extremely flammable shake roofs, and iron shutters were hinged to the exteriors of commercial brick and stone buildings.



Figure 43. Brick commercial buildings, Whittier, 1893
(Courtesy of Whittier Public Library, Whittier).

Another trend was adapting European or East Coast methods of building and styles of architecture to California's vernacular architectural tradition, in this case, adobe brick (Figure 44). In Monterey and San Diego, similar building traditions were used from the 1850s through the 1880s.



Figure 44. Ruins of the Higuera Adobe, Milpitas, 1947
(Courtesy of California Room, San Jose Public Library).

Earthquakes also influenced California architecture. Major earthquakes occasionally rattled California communities and damaged unreinforced buildings. Notable earthquakes include Great Fort Tejon (1857), Santa Cruz (1865), Hayward (1868), Owens Valley (1872), Vacaville and Laguna Salida (1892), and the famous 1906 San Francisco earthquake (Century-National Insurance Company 2008). In response to this threat, earthquake-prone communities used bond iron or cables, and later reinforced concrete, to prevent excessive damage, or, in many cases, the communities imposed limitations on building height. Even with these measures, earthquakes continued to cause considerable damage to buildings and infrastructure (Figure 45).



Figure 45. Earthquake damage to a reinforced stone-masonry building in Santa Rosa, 1906 (Courtesy of The Bancroft Library, University of California, Berkeley).

tenement housing, was often blamed on immigrant groups and linked to various diseases and pathogens. The Chinese in various cities, such as San Francisco and Los Angeles, became the scapegoats for health epidemics.

The architectural vocabulary of California's buildings and structures can reveal much about a town's historical development. It is impossible to discuss all the variations in architecture that evolved in small towns scattered throughout California, however, the evolution of architectural styles is certainly distinctive. For more information on California's architectural heritage, Harold Kirker's (1986) *California's Architectural Frontier: Style and Tradition in the Nineteenth Century*, provides a broad overview of the development of 19th-century architectural styles, whereas John Mack Faragher's (2001) article "Bungalow and Ranch House: The Architectural Backwash of California," studies the influence of these two 20th-century styles of architecture. Other published works focus on specific architects, such as Julia Morgan and Bernard Maybeck.

For many small towns, however, architecture was more of a vernacular form of expression; homes and commercial buildings were constructed by local builders without any formal training or by developers who built affordable housing for the middle class. *American Common Houses: A Selected Bibliography of Vernacular Architecture* (Jakle et al. 1981) is a good source for interpreting this form of architectural design. Whether built by trained architects or local builders, the development patterns in small towns may provide important information on culture, economy, ethnicity, and technology. Architectural products, such as bricks, time-dated plumbing fixtures, gas apparatus, door and window hardware, nails, screws, etc. can provide an important tool for dating the remains of built-environment resources in towns.

At the turn of the 20th century, many towns began to adopt a standard building code. Building codes were also required by fire insurance companies who insured based upon liability levels associated with building construction techniques and availability of water for fire suppression, such as hydrants. The Sanborn Map Company was the largest provider of insurance mapping to municipalities in the United States during the late-19th and the first part of the 20th centuries, and their maps have become valuable tools for historians and archaeologists. The firm name established by Sanborn

City building codes generally classified structures by occupancy and types of construction, much as they do today. Construction details were often described as frame, non-fireproof, and fireproof. Following the 1906 San Francisco earthquake, most commercial construction in San Francisco adopted fireproof building material, particularly reinforced concrete. Occupancy was an important concern in many cities. It was common for occupancy to exceed local codes, as was the case in tenement housing in Los Angeles and San Francisco. Excess occupancy, particularly in

in 1867 was changed in 1876 when the firm was incorporated under the name Sanborn Map and Publishing Company, which then became the Sanborn Perris Map Company, Ltd., until 1902 when the name was shortened to the Sanborn Map Company (Sanborn Map Company 2003).

THE SOCIOECONOMIC CHARACTER OF TOWNS

People are what make towns thrive, and the character of a town was largely dictated by the community and how the community responded to change over time. The industrial revolution created a culture based on race, class, and purchasing power. The more money, the more one could acquire services and purchase products. During the late-19th century, increased demand for new products helped foster capitalism and create wealth. Socioeconomics is the study of economic activity and social life. The two are dynamic characteristics of any town and are evidenced in a wide variety of ways, including physical buildings or structures, increased economic activity, the mix of businesses and services in a community, and cultural diversity.

As noted previously, architecture and infrastructure have been used to define the social and economic character of a town, particularly public buildings such as courthouses, city halls, churches, and schools. The location and characteristics of residential neighborhoods also defined class structure in many California towns, as wealthy residents tended to congregate in specific areas, whereas working-class residents lived in separate enclaves, and the poor were often relegated to substandard housing, such as tenements. Ethnic composition and stratification also defined a town. For California, the gold rush resulted in a massive influx of diverse cultural groups that settled throughout the state. These groups formed social networks, organized labor unions, and in certain cases, became the nuclei of local governments.

By the late 1850s, most California towns provided a wide range of services, both personal and nonpersonal. Personal services included brothels, herbalists, doctors, dentists, lawyers, and domestic servants or day laborers, and non-personal services included hotels, boardinghouses, saloons, laundries, blacksmith shops, grocers, restaurants, and cobblers, to name just a few. The interrelationships between these different services are intriguing, and each town had its idiosyncrasies as to the mix of services available.

Capitalist principles defined the economic structure of gold rush and post-gold rush California. These include dual markets and the exchange of goods and services, privatization of real property, a stratified class structure, capital investment, and competition. Together, these characteristics of the economy drove industry and capital and created new businesses and jobs, and many of the state's small towns.

For a few years during the gold rush, there was a sense of commonality among the diverse cultures that settled in California towns, particularly as it related to class and in some cases race. However, by the mid- to late 1850s, the social order of California towns, particularly its cities, formed traditional hierarchical structures based upon traditional capitalistic systems. An important factor in California's success as a regional economy was the centralization of capital and wealth in San Francisco, and later in Los Angeles, affording capital accumulation and investment throughout the state. Many of the state's largest banking houses were located in San Francisco, and therefore, so were many of the state's wealthiest financiers, including Charles Crocker, D. O. Mills, and James Flood.

Resource extraction and economic development, both hallmarks of California's economy, were reciprocal, in that the gains from resource extraction created prosperity and the social order helped maintain these conditions (Walker 2001a:171). In essence, capital fostered regional development and expansion, and social differentiation within towns helped maintain this order by offering labor at marginal costs and expanding the diversity of goods and services available to purchase. Wealth accumulation, created in large part through resource exploitation, particularly in gold and silver, freed up capital and helped entrepreneurs develop new businesses or expand existing businesses, generally through borrowing. For example, by 1860, California had produced \$1 billion in gold, and by 1900, the state had produced one-fifth of the world's gold. Similarly, the state generated over \$360 million in silver and \$100 million in quicksilver by 1895 (Walker 2001a:173). Similar dollar amounts were attained for oil, natural gas, other minerals, agriculture, timber and lumber, fish, and hydroelectric power.

The contributions of this massive wealth during the 19th century through the first two decades of the 20th century had a direct influence on the development of towns throughout the state. Certainly not every town benefited from the accumulation of wealth, but as a whole, California was much better off than most of the nation in respect to capital and wealth accumulation. It was only during periods of resource depletion or major events in the national or world economy that California communities felt the impact of economic downturns, or in the worst cases, severe recessions.

As noted earlier, one of the key factors in wealth accumulation and success of towns was private property ownership. Businesses saw California as a land with unlimited opportunities, which for many meant the private acquisition of both large and small landholdings. Community boosterism reached new heights in the 1880s and captured the imagination of prospective settlers and home buyers through newspaper advertisements, magazine advertisements, and flyers.

The property class included small merchants, manufacturers, and shop owners, as well as speculators. In a number of cases, mineral speculators usurped the rights of small property owners and acquired tracts of land, many already subdivided into town lots. This practice occurred in the gold regions of the Sierra Nevada and in the oil-rich communities of Los Angeles and Orange counties.

During the late-19th century, socioeconomic development and expansion precipitated a more diverse and robust business climate and created new businesses catering to a working-class society in many of California's towns. With money in hand, Californians desired a wide range of goods and services. To meet this demand, California entrepreneurs recreated virtually all the same types of merchandise and service establishments found in most East Coast cities. Although generally on a smaller scale, California merchants offered a wide variety of goods, including mail-order services.

Beginning in the early 1850s, affordable housing was of critical concern for the thousands of argonauts arriving daily in California towns. The subdividing of lots with official townsite maps was an important goal of most California towns. The official map provided a blueprint for the local assessor and tax collector to calculate valuations of real property and assisted in the sale of property throughout a given townsite. Many of the gold rush-era towns were not officially mapped until the 1870s.

Although California towns established commercial districts early in the development of the community, until zoning laws were established, it was common to have commercial enterprises intermixed within residential neighborhoods. One example was the ubiquitous boardinghouse (Figure 46).

A boardinghouse is a commercial building, or often a family home, where lodgers rent rooms for one or more nights, and sometimes for extended periods of weeks, months, or years (Figure 47). The common parts of the boardinghouse, such as the parlor, kitchen, and dining room, were maintained by the owner or hired workers, and some services, such as laundry, cooking, and cleaning, were provided by the owner. A boardinghouse is also synonymous with a “lodging house” and a “rooming house,” which may or may not offer meals. A hotel, unlike a boardinghouse, generally provided similar accommodations but may not have offered long-term housing, and meals were generally not included.

Paul Groth’s studies (1983, 1994) of single-room housing in American cities, applied the term “hotel” in the broadest terms, with a four-tier classification based on architecture and social stratification. Palace hotels and mid-priced hotels catered to upper- and middle-class clientele, rooming houses catered to people in skilled trades, and cheap lodging houses catered to the indigent and day laborers (Groth 1994:20–23). Rooming houses and old-fashioned boardinghouses catered to people who worked in both skilled and unskilled trades. These people could not afford to live in the mid-priced hotels but wanted some degree of “respectability.” According to Groth, “while the cultural opposition of rooming house residents was subtle, lodging house residents lived and worked in flagrant opposition to the rules of the middle and upper class” (Groth 1994:23). Rooming houses in larger cities were often located along primary transportation corridors, which provided easy access to places of work and recreation.



Figure 46. Boardinghouse in Tulare offering “Meals and Rooms,” 1880s (Courtesy of San Joaquin Valley Library System).



Figure 47. Mrs. Wenzinger's Boardinghouse, probably Marysville, Yuba County, circa 1880. Note that boardinghouses were not just confined to dedicated buildings, but also in converted residences, such as the one shown in this photograph (Courtesy of Yuba County Library, Marysville).

Beginning during the gold rush, hotels, boardinghouses, lodging and rooming houses, hostleries, and way stations provided housing, both short-term and long-term, to meet the demand of the state's expanding workforce and business clientele. This was a common phenomenon in larger cities, such as San Francisco, Los Angeles, and Oakland (Groth 1994), and among smaller towns scattered throughout California (Echeverria 1999). Unlike hotels, boardinghouses were sometimes located in the heart of residential neighborhoods (see Figure 47).

Boardinghouses often provided a home life where boarders met for group meals two or three times a day and grew to know each other (Wolfe 1906). Boardinghouses also served as centers for social activities, especially for members of the geographically mobile working class, fostering tenant interaction, and some eventually formed social bonds similar to that of a family. As Stofer (1994:39) explained, the boarder led a "contradictory existence, offering a 'home' and a 'family' that could disappear if the boarder lost his job, or was transferred to a new location." Many of the boarders were far from home and "felt the boardinghouse offered them a sense of home and a surrogate family" (Stofer 1994:43). Some boardinghouses served specific ethnic or cultural groups, helping immigrants navigate within their new country. To date, most boardinghouse studies have focused on specific ethnic groups, such as Basques in Idaho and California (Bieter 1993; Echeverria 1999); Italians in Toronto, Canada (Harney 1978; Zucchi 1990); Hungarians in Chicago (Vázsonyi 1978); Jews in Nevada (Stern 1978, 1982); and Armenians in Ontario, Canada (Kaprielian 1983).

The economic changes of the late-19th and early-20th centuries brought about the decline of boardinghouses, supplanted by other forms of lodging, such as lodging houses and apartments, where tenants generally lived more-isolated and private lives. This shift had social and economic implications (Wolfe 1906:38–51; Modell and Hareven 1973:467; Groth 1994). Boardinghouse keepers generally did not close their doors; they just stopped serving meals. Groth (1994:93) examined this transition in San Francisco and found that boardinghouses made up nearly 40% of the commercial housing listings in the city directory in 1875, but 25 years later, they comprised less than 1%. This transition is attributed to a change in social attitudes, coupled with a general rise in incomes, that prompted both boardinghouse hosts and tenants to desire and afford more privacy (Harris 1992:331).

Unlike boardinghouses, hotels, which generally provided overnight or weekly accommodations, also played an important role in the socialization of 19th-century California. Hotels could be modest single-story establishments or grand Victorian palaces. They not only served business guests, but they also formed an important part of the leisure and recreation industry in California, offering accommodations and variety of services to health seekers. Many hotels, but not all, served meals, provided liquor, and offered a host of other personal services.

During the 1860s, Lake Tahoe emerged as one of the state's most significant destination points for tourists and health seekers. With the accumulation of wealth in California and Nevada, a result of the Comstock Lode, hotels and resorts around Lake Tahoe emerged, and in some cases, they evolved into small towns, such as Tahoe City, Glenbrook, and later Bijou. Hotels and health resorts developed in the late 1880s throughout southern California. By 1890, large palatial hotels/resorts were established at Lake Elsinore in Riverside County, and at Del Mar and Hotel Del Coronado in San Diego County, to name just a few. Many, if not most, of the southern California late-19th-century hotels and health resorts were popularized in newspapers and magazines. In particular, the Southern Pacific Railroad Company routinely printed lavish guides and pamphlets describing

in detail the various properties accessed by the company's railroad system (Truman 1883; Edwards et al. 1897; Karutz 2007).

Hotels and boardinghouses were often conveniently located adjacent to other businesses, such as saloons and breweries. Many of the first structures built in California towns during the halcyon years of the gold rush were saloons, and in some cases, these were tents or canvas shelters (Weiser 2006:6). The vast majority of liquor sold at gold rush-era saloons was imported from the British Isles, with wines and champagne generally shipped from France; by the mid-1850s, products from local distilleries and breweries began to take the place of imports (Carroll 2010).

These earliest breweries (1849–circa 1855) were generally small, sometimes portable establishments constructed of stone or wood and canvas whose one or two employees produced a modest six to eight barrels (Carroll 2010:10). Breweries, unlike wineries, were generally located in the hearts of towns or cities because the hops were acquired from independent growers, some as far away as Europe. By the late-19th century, breweries were commonplace in many, if not most, California towns. Where local breweries did not exist, regionally brewed beers were sold on tap or in bottles (Yenne 2003). Most of these breweries, such as the Santa Clara Brewery (Figure 48), were German-owned and operated (or owned and operated by Swiss or others hailing from the Germanic states), but Irish and British immigrants also participated in brewing during this period (Baxter 2009; Carroll 2010:9,99). Breweries, perhaps better than any other industry in California, represented consumption habits, social attitudes, and technologies that shaped the character of towns and provided thousands of jobs throughout the state (Carroll 2010:5).

Breweries quickly became a staple industry of the state's post-gold rush economy, as commonplace as bakeries and blacksmiths in Californian towns. In Placerville, between the early 1860s and the early 1890s, at least four breweries operated within the town's business district. The Mountain Brewery, owned by the Giebenhain family, operated from the mid-1850s through the Depression and was the longest-lived of Placerville's breweries. The California Brewery was in operation by 1862, included a saloon and a bowling alley, and was associated with a boardinghouse. The Placerville Brewery operated in the 1860s, and Fred Collins owned another brewery circa 1874–1884 (Baxter 2008:20).

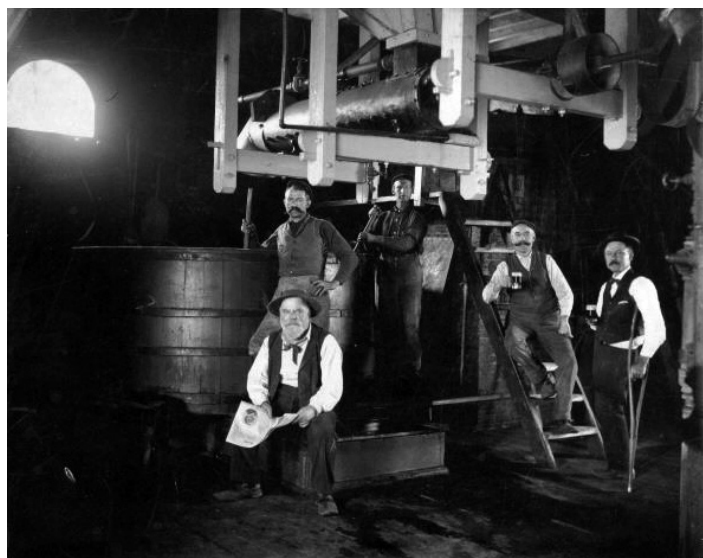


Figure 48. *Interior view of the Santa Clara Brewery, 1895*
(Courtesy of the City of Santa Clara History Collection).

In addition, breweries often supported in-house saloons. Placerville's Mountain Brewery serviced both customers and retailers. The functions of saloons were economical and social and frequently overlapped with other service industries, often acting as restaurants and social clubs, with activities such as gambling, billiards, music and dancing, bowling, and shooting galleries. Occasionally, saloons even functioned as public meeting places in some communities (Weiser 2006:10).

In her book on the saloon culture of Virginia City, Nevada, *Boomtown Saloons*, Kelly Dixon (2005: 26) notes the importance of saloons to newly arrived immigrants, “Upon arrival in the region’s busting boomtowns, immigrants frequently found a foreign and often hostile environment. . . . Saloons owned by a specific ethnic or cultural group accommodated customers of similar backgrounds and provided places of refuge and solidarity.” While some saloon owners catered strictly to customers of their own ethnic origin, others sought as broad a customer base as possible (Dixon 2005:26–27). In communities dominated by Hispanics and Southern Europeans, cantinas flourished, often located adjacent to distilleries that produced spirits such as brandy, as was the case in Newtown, El Dorado County, and Jackson, Amador County. The ethnic tie to producing and drinking alcohol would also become a detriment to the industry as overt racism, especially towards German immigrants, began to grow in the years leading up to World War I, becoming a leading rallying point for prohibitionists (Yenne 2003:78; Baxter 2009).

In response to what was seen as a “culture of alcohol,” temperance movements of the late-19th and early-20th centuries, such as the Anti-Saloon League and the Woman’s Christian Temperance Union, began focusing on businesses designed around the production or serving of alcohol. The temperance movement was a social movement against the use of alcoholic beverages, touting alcohol as one of the main causes of most of society’s problems, including poverty, domestic violence, corruption, and a lack of education (Weiser 2006:13). During the first years of the 20th century, prohibition progressed from a cause based on religious and social ties to a national political issue based on the ideals of the Progressive movement. These movements culminated in Prohibition, and the 18th amendment to the Constitution was enforced 16 January 1920, which succeeded in altering the business landscape of U.S. towns for over a decade (Yenne 2003:71–75). Clifford Walker’s (1999) *One Eye Closed, The Other Red* offers a broad overview of bootlegging in California during Prohibition.

The buildings that housed alcohol-related industries may not have physically changed during Prohibition, but the businesses operating there did. Although it was often only in name that industries changed, this change in landscape can be seen in Sanborn maps. Establishments serving alcohol illegally during Prohibition were often called speakeasies. “Though they may have appeared to close down for a short period, saloons simply went ‘underground’ in basements, attics, upper floors, and disguised as other businesses, such as cafes, soda shops, and entertainment venues” (Weiser 2006: 14). At the same time, home brewing and home winemaking continued to grow in popularity. When Prohibition was repealed in 1933, saloons came back, but many of the local breweries, distilleries, and wineries that had supplied the local markets did not return:

The failed effort to legislate morality had hit small businesses the worst. The majority of companies that had stayed afloat with near beer and other products were able to resume brewing within a short time, but smaller businesses found resumption to be a bit more difficult. Many of the small-town breweries that folded could not resurrect their businesses. Of the 1,568 breweries that had existed in 1920, only 756 reopened, and most of these ceased to exist during the ensuing great depression (Yenne 2003:71,76–77).

Ironically, during the same period when saloons and breweries were languishing, the imagery of saloons was presented in various forms in numerous movie productions, beginning in the 1920s with silent films, and creating a new mythology as an icon of the American West (Dixon 2005:23–24; Weiser 2006:6,13). At the end of the Great Depression, surviving breweries began exploring both new business structures aimed at protecting their industry and revolutionary new technologies, including canning beer in 1935. If Prohibition did anything to the brewing industry, it was to both

modernize and commercialize it on a large scale that left smaller towns behind (Yenne 2003:78). In addition, with woman's suffrage and changes in attitudes after the 1920s, the social face of the saloon changed, and women patrons became more common in saloons and speakeasies. By the end of Prohibition, "saloon" was no longer a commonly used term (Weiser 2006:14,19).

Besides saloons, breweries, and legitimate gambling houses, many California towns included less official, but by no means less profitable, ventures, such as prostitution. Henry B. Sheldon, a visitor to California during the early 1850s, remarked that all settlements, regardless of size, counted prostitutes among their citizenry (Hurtado 1999:82). Although Sheldon's comments were a bit overstated, prior to 1900, prostitution was a ubiquitous trade carried out in most towns, particularly those with large concentrations of single males. Because of their low social standing among whites from Europe and the East Coast, Native American women, and later, Chinese, Mexican, Hawaiian, and other women of color, received exceedingly low wages for their work (Hurtado 1999:91–93). Women had a variety of employment opportunities in California during the 19th century, but few could match the profits afforded by prostitution (Barnhart 1986:8).

During the gold rush era, California's isolation from East Coast Victorian morality was a factor in prostitution's ascendancy as a profitable and thriving undertaking. This is not to say that prostitution on the East Coast was not widespread, but California's sense of anonymity created an atmosphere where morals were often tossed aside and replaced with a new sense of freedom and experimentation. Author and historian, J. S. Holliday (1981) makes this argument in his seminal book on the gold rush, *The World Rushed In*, providing examples taken from a variety of gold rush-era diaries and journals.

Even as the lines of morality blurred in gold rush California, most business or property owners were reluctant to openly advertise houses of prostitution. Brothel owners generally rented properties in specific enclaves within towns that often included gambling halls, saloons, and other similar establishments. The expansion of residential areas and increased domesticity, the result of more families and children, led to the relegation of brothels to specially designated areas away from public view and reflected a growing sense of morality previously unassociated with California culture (Hurtado 1999:86). Most brothels were interspersed within the central business district of towns, in industrial areas, or along its periphery, often into distinct "red light" districts. This alteration of social mores resulted in a social stratification in which prostitutes, and those connected to the industry, were marginalized and denigrated as the drug use, disease, crime, and violence that had always accompanied the profession became points of contention among the citizenry (Barnhart 1986:13; Hurtado 1999:86). Although still a prevalent and profitable practice, in many communities, prostitution became synonymous with sin rather than local commerce. Marginalization of the trade is evident in the omission of prostitution and prostitutes from tax, municipal trade, and industry records; city directories and census records; and the overall sparse and indirect documentation of the industry in journals, diaries, and newspapers from the late-19th century (Barnhart 1986:19).

Prostitution continued to flourish in most California towns and cities after 1860, albeit perhaps not at the same intensity as during the halcyon years of the California gold rush. The demise of prostitution in small towns in California was evident by the early-20th century as families began to arrive, and churches and schools became part of the new social order. Even so, prostitution and gambling continued to be viable commercial enterprises, making them an integral part of local commerce (Goldman 1981:31–32).

Respectability became a key component to the social development of towns, and some towns promoted the fact that they were free of alcohol and prostitution. Women newly arrived from the East Coast, responding not only to what they saw as a lack of morality amongst the women in California, but amongst men as well, began forming temperance societies. The temperance movement had its roots in East Coast society of the late-19th century. Women's clubs and organizations also began forming with the initial settlement of families, offering a forum for women to discuss social issues.

Notwithstanding the importance of prostitution and gambling in California towns, there were many other trades that formed the backbone of early town development. By the 1870s, California's workforce was disproportionately immigrants, including Irish, Cornish, Germans, Chinese, and Italians, to name just a few. In general, from the late-19th through the early-20th centuries, wages in most trades within California were higher than much of the nation. Higher wages provided greater buying power, and coupled with the availability of capital, many entrepreneurs were able to acquire mortgages and create businesses, and workers who witnessed a rise in incomes were able to purchase more goods and services.

According to the U.S. Bureau of the Census, California's top industries in 1869 included lumber, flour (wheat growing) and grist mills, boots and shoes, tobacco and cigars, newspapers, machinery, liquor, carriages and wagons, and quicksilver. By 1909, the top industries included lumber and wood products, printing and publishing, foundry and machine shops, canning and preserving, bread and bakery products, liquor, slaughtering and meat packing, and sugar beets (Walker 2001a:177).

For most of the 19th and early-20th centuries, California's businesses mirrored those of the rest of the nation. Small town mercantilism generated most of the basic goods and services required by its citizenry (see Figure 48). Goods or services that were not produced or acquired locally could be ordered and shipped via the railroad or through the state's navigable waterways. Telegraph, and later telephones, made communication more efficient and economical, and together they improved the way in which products were marketed.

Politics played a role in town development. Local politicians influenced capital development in towns by encouraging cheap land or labor, or in other cases, receiving bribes from wealthy capitalists in exchange for certain favors. Real-estate speculation took on a life of its own, particularly in southern California. Banks throughout the southland engaged in speculative lending during the late-19th century. Names like Chandler, Slauson, and Huntington became synonymous with real-estate schemes and promotions. Three-quarters of all bank failures during the economic Panic of 1893 were in the West (Walker 2001a:184).

For many California towns, when natural resources neared depletion there were few opportunities available for sustaining a viable economy, and consequently, numerous towns saw rapid out-migration and the loss of key businesses. This was particularly true in single-resource dependent communities, such as mining, logging, and agriculture. Some communities shrank into obscurity, but others hung on and, despite economic declines, were able to sustain themselves, principally because the community continued to depend upon its merchant class and businesses for needed goods and services. The railroad and later the automobile revolutionized transportation and created a much broader network of goods and services, in many cases well outside the core central business districts of small towns. Factories began to relocate to the outskirts of towns where

land was cheap and labor was plentiful. California's transportation system, which developed in the first two decades of the 20th century, induced further expansion to the periphery of towns, providing more efficient intra-town access, and in some cases, resulting in the creation of new communities.

California's workforce is credited with technological innovation, first in mining and later in agriculture. The foundations for this new technology sometimes emanated from small towns where entrepreneurs had the freedom to innovate and the ability to share different products locally, regionally, and statewide. State, regional, and local fairs (Figure 49) frequently displayed goods produced by California's entrepreneurs, including mechanical equipment and new agricultural products (*California Farmer* 1854–1857).

Although small town America never witnessed the same diversity of services and occupations found in larger urban centers, nevertheless California towns met most of the needs of their citizens. The free-trade system, which prevailed during the 19th century, was curtailed at the beginning of the 20th century in what has been called a revival of elements of mercantilist philosophy, or neo-mercantilism. High protective tariffs were reintroduced, and for political and strategic reasons, great emphasis was put on national self-sufficiency as opposed to national interdependence and a free flow of trade.



Figure 49. Street Fair in Orange, circa 1910 (Courtesy of the Local History Collection, Orange Public Library, Orange).

Prior to World War I, most manufacturing jobs existed in larger urban communities. America, and much of California, was transitioning from an agricultural economy to an industrial economy. Class structure in small towns was largely divided between the working poor and the middle class, with a small upper class of merchants and large landowners.

Several paradigms may help explain the development and social dynamics of towns and the differences between urban or metropolitan communities and small towns. During the last quarter of the 19th century, George Simmel (1950), a German sociologist, studied how organization affected the interactions among individuals. Simmel asserted that urban residents had to make several adjustments, which included assuming a “detached” attitude, learning to compute the money value as well as personal wealth of things, and balancing the tension between the desire for anonymity and for recognition. The need for a detached attitude arose, according to Simmel, from a person's inability to become familiar with all the phenomena he or she was exposed to in the city. In rural areas, or perhaps small towns, according to Simmel, the number as well as the spatial and temporal pattern of stimuli remained relatively constant. In essence, changes occurred at a much

slower rate in small towns than they did in large metropolitan areas. This phenomenon, whether real or perceived, characterizes urban life in cities such as San Francisco and Los Angeles, as compared to small towns (Holliday 1981).

Following Simmel, American mathematician Adna Weber gathered census data from the mid-1890s in a volume describing urban growth. Weber (1963:389) described the “escalator effect”; many children and grandchildren of immigrants improved their social and economic status and moved into better districts within a town or city, or moved well beyond the home place. There were many factors involved in the complexity of socioeconomic relations in small town America during the late-19th and early-20th centuries. The roots of change and the dynamics of small towns evolved through politics, economics, and the creation of religious, political, and social or fraternal organizations.

EDUCATION

A quality education can serve as one marker of a community’s performance, both socially and economically. Generally, large cities or metropolitan areas had more-progressive educational systems than small towns, including higher education institutions, such as colleges and universities. It is less clear how rural communities addressed education, and how the lack of a quality education affected the community. California’s interest in education began at the onset of the California gold rush as counties established local school districts. The state began to set aside land for schools, and taxes began to secure funding for constructing new schools, a trend that continues to this day.

Although research on early California town schools is limited, what is available focuses on rural “country” schools. In his monograph *America’s Country Schools*, Andrew Gulliford (1984:7) described country schools as “small, house-sized schools isolated in natural settings.” He used

the terms “country school,” “rural school,” and “one-room school” synonymously (Figure 50).



California’s original 1849 constitution stressed the “promotion of intellectual, scientific, moral and agricultural improvement,” and provided for the establishment of common schools, the founding of a state university, and a superintendent of public education (Hendrick 2000:227–232,237). The process of establishing a comprehensive public school system, however, proved elusive.

Figure 50. *Arcadia’s first schoolhouse, a packing shed, 1904 (Courtesy of Arcadia Public Library, Arcadia).*

The establishment of a formal public-school system in California did not come without obstacles. Several factors contributed to the struggle and controversy. Demographically, mid-19th-century California consisted of a growing population of mostly single men who did not necessarily hold provisions for education in highest priority. Additionally, cultural values held a tradition of individual, family, and church responsibilities over that of a good education, particularly in respect to females. Furthermore, while education proponents argued the necessity of an educated electorate, the concept of taxing everyone for the benefit of a few children met with opposition (Gulliford 1984:40).

By 1860, however, the battle for free public education in California largely succeeded, and the concept of public education was firmly entrenched as an American ideal. By 1864, California had 754 schools, 219 of which were fully cost-free (Gulliford 1984:40). To ensure free schooling, public schools superintendent John Swett initiated a petition calling for an increased state school tax that same year, resulting in successful legislation. Furthermore, in 1866, the Act to Provide a System of Common Schools passed, establishing “California in the front ranks of progressive states so far as a *full system* of free public education was concerned” (Hendrick 2000:238).

Education initiatives and support ultimately led to higher percentages of children enrolled in public schools. By 1867, California schools educated 46% of the state’s white children, 40% of its black children, and less than 1% of its Native American and Asian children. With education for minority children a contentious issue at the time, even those supporting free public schooling often argued against such inclusion (Hendrick 2000:231,235,239).

Teacher demographics also changed during the mid-to-late-19th century in California schools. Specifically, the profession experienced a gender shift between 1860 and 1876. During this period, statistics show that the number of male teachers rose from 560 to 1,167, and female teachers rose from 218 to 1,983 (Hendrick 2000:241). This clearly shows the contributions women made in fostering the development of education. Other changes in the teaching profession included the standardization of tests, textbooks, and learning skills, stemming largely from progressive ideals. This brought about the gradual decline of the once-popular *McGuffey Reader* (Gulliford 1984:40; Hendrick 2000:241). Additionally, a new curriculum surfaced emphasizing a gender-based class structure that included woodworking for boys and home economics for girls.

Schools formed part of a town’s social dynamics and visually expressed class status and success through their architecture. By the 1880s, most California towns boasted at least one school. Often, schools began as private classes taught in homesteads, before local schools declared them public, or packing sheds (see Figure 50). Although public schoolhouses varied in style from one-room structures to more architecturally designed two-to-four-story buildings, most of the schools in California towns from the mid-19th to the beginning of the 20th century were one-room schoolhouses. The one-room-style schoolhouse most easily served its typical function to educate the children within the vicinity (Gulliford 1984:36).

Stylistically simple, one-room schools may have had an additional cloakroom to act as a buffer against extreme weather; however, all instruction took place in the main room. Basements and additional rooms were not common in country schools until after the turn of the 20th century, and even then, they were scarce. Gulliford (1984:35–36) noted “schools were named after communities and communities were often named after schools.”

In summary, schools and education were a fundamental part of the development of virtually all communities in California. Schools played an important role in the socialization of children, although the school system in the 19th and early-20th centuries was not devoid of discrimination, particularly against Native Americans, and non-English-speaking children. Communities with a strong educational system were generally more successful, both socially and economically.

PARKS, RECREATION, AND LEISURE TIME

Besides public health, infrastructure, and education, the character of any community is also dependent upon both work and leisure time (Figure 51). In general, organized pastimes began to replace informal and spontaneous recreation during the late-19th century. This, coupled with the rise in commercial entertainment, such as sporting events, nickelodeons, arcades, and movies, replaced self-generated and active leisure, and private diversions began to replace collective recreation (Fischer 1994).

The industrial revolution of the mid-19th century led to increased consumerism, which translated into greater purchasing power, increased leisure time, and demand for more public recreational opportunities. Leisure time dramatically expanded for many Americans during the first two decades of the 20th century. Automobiles, bicycles, streetcars, telephones, and later, radio and television transformed American culture and helped foster leisure activities. Consequently, infrastructure developed to propel these activities and opportunities, including improved transportation and the creation of parks. Examples include the Red Car rail service along the southern California coast, designed exclusively to move passengers from the inner city to beach communities.



*Figure 51. Anaheim City Park with designed recreation facilities, circa 1920
(Courtesy of Anaheim Public Library).*

Parks were created by setting aside natural areas or through local funding to create designed landscapes. During the 19th century, parks functioned in a variety of ways, providing the setting for civic events as well as for recreation opportunities. Park planners believed that the creation of parks would enhance property values, promote healthy lifestyles, and provide safe havens for children.

By the late-19th century, a “pleasure ground,” consisting of woods, plains, mountains, or lakes, was perceived as necessary for unstructured outdoor activities that were needed to divide work and leisure. A bit of nature in the city promised to give respite to the tired worker while simultaneously stimulating and exercising the unused portion of brain. Informal and unscheduled activities, such as walking, were encouraged. Park officials promoted walking as a way of “psychic renewal” (Cranz 1982:5–13,80). Toward this goal, parks often featured pathways intended to encourage pedestrian activities, as evidenced in Figure 51, depicting the range of activities available and civic improvements at Anaheim City Park in the 1920s. At the close of the 19th century, public perception of parks shifted. More vigorous recreation activities such as baseball, football, and lacrosse gained in popularity at public parks. Urban park planners believed the masses incapable of conducting their own recreation, and the solution was to create designed or organized spaces.

As California towns developed, so too grew a concern for the “acute situation of unbridled growth, indoor work, mass communication, and intensification of business life, as well as the loss of breathing space” (Cranz 1982:5–13,80). All of these factors were commonly thought to contribute to the moral decline of the people. As populations in larger cities began a push for a park or garden space to combat the city’s ills, populations in smaller towns followed suit.

Unfortunately, most Americans during the 19th century had little leisure time, and most small, rural communities never saw the development of dedicated parks until the mid-20th century. Instead, communities had specific locations, which they ceded as recreation spots (Cranz 1982:19–21). Historical photographs provide evidence of this phenomenon. In some cases, they were simply open lots within the town limits that were used for baseball games, barbecues, turkey shoots, or other informal community activities. In other towns, natural areas were set aside, such as ponds, reservoirs, or watercourses. In a few towns, these informal gathering sites were eventually acquired and transformed as city or county parks.

By the 1910s, Americans found new opportunities in the “playground movement.” The movement was rooted in the idea that parks needed to offer playground facilities. Larger cities such as San Francisco established a Playground Commission in 1907, indicating the city’s support of the playground ideal (Cranz 1982:65). Park advocates pushing for the location of new parks on sites more accessible to the working classes were natural allies of the playground movement. As ideals of organized play superseded those of pleasure, the term “small park” came to mean an area for children’s play, and large parks generally remained without playground equipment. Small parks were no longer created as pleasure grounds and, in fact, were distinguished by their function rather than by their size (Cranz 1982:63,65).

While the playground movement gained momentum in California, parks remained an integral part of town and urban development; however, not all parks looked the same. For example, parks in Contra Costa County, specifically in the towns of Pacheco, Concord, and Martinez, all included dedicated park space with different orientations. By the early 1900s, Ferndale Springs Resort opened in Martinez. The resort is an example of a formal garden retreat. Concord featured the

Todos Santos Park, dedicated to the city by Don Salvio Pacheco around 1844, featuring manicured enclosures with prominent walkways for pedestrians. On the other hand, unincorporated Pacheco featured Haven Park, an example of an unmanicured and informal natural park space, extending along the creek.

The study of California town parks is an important component in understanding 19th-and-early-20th century urban and rural life. Through analysis of town planning, and specifically the designation of park or garden space, historians and archaeologists can gain an understanding of public ideals.

RELIGIOUS AND FRATERNAL ORGANIZATIONS

Prior to the gold rush, religions practiced in California included the diverse rituals and ceremonies practiced by Native Americans and, beginning with Spanish colonization in the 18th century, Catholicism. Twenty-one missions and a number of branch missions known as *asistencias* were founded between 1769 and 1823 in what was to become California. The Spanish missions in California were built to spread the Christian faith among the Native American population, to colonize the Pacific Coast, and give Spain a foothold in the new frontier. Notwithstanding the religious and economic value of California missions, the missions themselves provided the inspiration for a successful form of architecture known as “Mission Revival.” Today, Mission Revival homes, commercial buildings, schools, and churches can be found from San Diego to the Oregon border.

The role religion played in California had profound importance for the economic development of the state. Ironically, in January 1848, it was a company of religious zealots who called themselves “Mormons,” engaged by John Sutter at his sawmill in Coloma, who were responsible for perhaps the most significant event in the history of California that led to the creation of towns —namely the discovery of gold and the ensuing California gold rush. Mormon settlements were later established in San Bernardino in 1851, albeit for only a few short years (Tullidge 1889:308). The next major Mormon migration to California did not occur until the 1920s during the second major land rush to southern California.

Many place names in California have religious significance, including Los Angeles, San Francisco, Carmel, Mecca, Joshua Tree, San Bernardino, Sacramento, and San Joaquin (Gausted et al. 2001:336). The church, chapel, synagogue, and Joss House became symbols for the state’s diverse ethnic population and of a civilized society based upon religious beliefs (Figure 52). By 1850, the gold rush brought a multiplicity of religions to California from cultures all across the nation and the world.

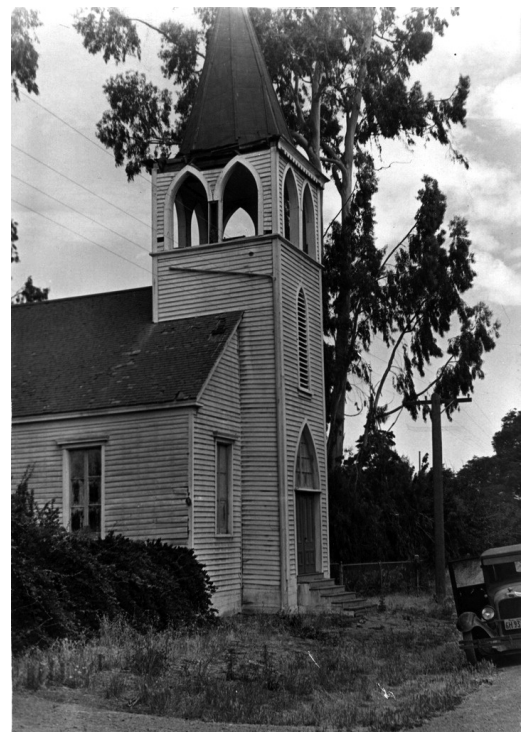


Figure 52. St. Raymond's Church, Dublin, Alameda County, circa 1915. Note the clap-board siding and gothic windows (Courtesy of City of Dublin Heritage Center).

One outgrowth of religion was the creation of cemeteries dedicated to specific religious groups, including Catholics, Jews, Protestants, Methodists, to name just a few. Cemeteries were generally located adjacent to the religious edifice, such as a church or synagogue.

In 1853, American Catholicism established its first California diocese in San Francisco. The gold rush also saw an influx of eastern religions. Chinese and Japanese workers brought Buddhism and its variations to the state. The first Chinese Buddhist temple in California was founded in 1853 in San Francisco. From the 1890s through the early-20th century, Hinduism spread across California, and Indian and Pakistani Muslims formed lasting communities in California's agricultural valleys (Carroll 2000:102,104,106).

By the early-20th century, religion had become a powerful force in many small towns throughout the state. The state's religious landscape was vast, from the evangelical churches of the Central Valley to the synagogues of Los Angeles. Religions' influences on most small towns in California are not well documented; however, there are numerous examples where religion dominated a town's sociocultural history, such as Pacific Grove in Monterey County. The fledgling community had its beginning in 1875 as a summer Methodist camp, where several hundred people assembled to worship, most camping in tents. By the 1880s, the area's mild climate and picturesque landscape drew others to the retreat to rest and meditate, and others established businesses. In June 1879, the first camp meeting of the Pacific Coast branch of the Chautauqua Literary and Scientific Circle was held at Pacific Grove. The camp was designed after the Methodist Sunday school teachers' training camp established in 1874 at Lake Chautauqua, New York. By 1889, the town was incorporated, becoming the City of Pacific Grove. The last Chautauqua meeting in Pacific Grove was held in August 1926 (Trosow 1997–2005). The city's early religious doctrine prohibited the sale of liquor in the town, a legal requirement that remained until the late 1960s.

Aside from more-traditional religions, many metaphysical movements thrived in California, such as Spiritualism, Unitarianism, and Christian Science. The first Unitarian church in California was founded in San Francisco in 1850. Fountain Grove, a Spiritualist utopian community in Sonoma County, existed from 1876 to 1900 and was one of many such religious communal utopian societies in California in the late-19th and early-20th centuries (Carroll 2000:82). Most of California's utopian communities desired to remain isolated; hence, their affiliation with towns was more limited.

Census information is not only useful for population numbers, genealogy, gender, and ethnicity, but also for documenting trends in religious settlement for specific areas, providing registered denominations, number of members, church value, and other information for each county. For example, 1920 census information for California from the U.S. Bureau of the Census reveals that 2,762 of 3,347 registered Armenian Church members resided in Fresno County.

Social organizations, often referred to as fraternities, have been defined as brotherhoods, although the term usually refers to a formal organization. The only true distinction between a fraternity and any other form of social organization is the implication that the members freely associate as equals for a mutually beneficial purpose, rather than because of a religious, governmental, commercial, or familial bond, although there are fraternities dedicated to each of these areas. Most fraternities were limited to male membership, but this was not always the case; there were fraternities with both males and females and even solely female fraternities. Examples include the

Grande Loge Mixte de France, the Honorable Fraternity of Ancient Freemasons, the Grande Loge Féminine de France, the various Orders of Odd Fellows, and the Order of the Eastern Star.

Fraternalities can be organized for many purposes, including university education, work skills, ethics, ethnicity, religion, politics, charity, chivalry, other standards of personal conduct, asceticism, service, performing arts, family command of territory, and even crime. There is almost always an explicit goal of mutual support, and although there have been fraternal orders for the wealthy there have also been many fraternities for the working class and poor, particularly for immigrant groups. Trade unions also grew out of fraternities such as the Knights of Labor (Stevens 1907).

By definition, the primary characteristics of fraternal societies consist of “an autonomous system of lodges, a democratic form of internal government, a ritual, and the provision of mutual aid for members and their families” (Beito 2002:183). Fraternal organizations were credited with providing the first substantial health care coverage in the United States. Alongside medical care and sickness insurance, these organizations also offered unemployment insurance, burial costs, and numerous social functions (Beito 2002:1–2).

Fraternal societies appeared to have developed most successfully in cities and towns because of their larger populations and increased disposable incomes to facilitate their growth (Beito 2002: 189–190). Fraternal societies gained in popularity and membership in the United States from the 1850s through the 1920s (Beito 2002:197).

Sanborn maps for this period regularly depict fraternal society buildings in the center of towns, such as Masonic halls or lodges (Figure 53).

There were many fraternal or ethnically based societal organizations in California from the gold rush through the early-20th century. Among the earliest, most prolific, and widespread in California was the Free and Accepted Masons. Their first lodge in California was in Benton City, Tehama County, in 1848. By 1850, two more lodges were built in Sacramento and one in Benicia, only to steadily increase from this point onward (Stansel 1975:12, 20). Another organization, the Independent Order of Odd Fellows (IOOF), stemmed from Britain and built its first U.S. lodge in Baltimore in 1819. These and many other lodges or halls sprung up in many small California towns. The IOOF changed the structure of fraternal benefits distribution, setting distinct payment schedules and amounts for eligible disbursements. Prior to this, most fraternal organizations dispensed benefits through charities or on a case-by-case basis without specific guidelines (Beito 2002:190,192).



Figure 53. Masonic Temple (on second floor) and drugstore (on first floor), Yorba Linda, California, circa 1910 (Courtesy of Yorba Linda Public Library).

E Clampus Vitus started as a more egalitarian organization in contrast to other, more formal societies and was introduced to California by gold rush miners. The Knights of Columbus originated from humble beginnings in the U.S. Catholic Church in Connecticut in 1882. Non-Western European cultural groups, including the Chinese and Japanese, also had a variety of societal organizations such as the Japan American Society founded in 1909 and the Chinese Consolidated Benevolent Association founded in 1883.

Other social organizations associated with immigrant groups in California towns included Portuguese organizations, such as Irmandade do Divino Espirito Santo (I.D.E.S.), Sociedade Portuguesa Rainha Santa Isabel (S.P.R.S.I.), União Portuguesa do Estado da California (U.P.E.C.), and the Irmandade Do Espirito Santo e da Santissima Trindade (I.D.E.S.S.T.). The Portuguese Hall in Newcastle, built in 1918, housed activities for several of these organizations. Irish Americans gathered for cultural, religious, and protective benefits in various California chapters of the Ancient Order of Hibernians as early as the 1870s. Other examples of immigrant associations and immigrant meeting halls in California towns include the Finnish Temperance Hall in Rocklin, the Danish Hall in Ferndale, the Societa di Unione e Beneficenza Italiana (the Italian Benevolent Society) of Amador, which was founded in 1881, and the Chinese Tong society in Isleton.

CASE STUDIES IN FOUR CALIFORNIA TOWNS

Interpreting the diverse physical, economic, political, and cultural history of California towns can be challenging. There are a few tools, however, that may help in this regard and assist in comparative studies between towns. Of particular importance are cartographic and population data.

Together, cartographic and census data can be useful for interpreting the physical development, and in certain cases, the cultural and economic development of small towns. While cartographic data, particularly Sanborn fire insurance maps, are commonly used today by historians and archaeologists for site-specific research, their value for comparative studies has received less attention.

For the purposes of this study, four California towns were sampled using Sanborn fire insurance maps and city and county business directories. The sampled towns were selected because they were small, with populations not exceeding 3,000, and they represented regional variations and specific, yet different, physiographic settings across California. They consist of Yreka (Siskiyou County), Black Diamond later renamed Pittsburg (Contra Costa County), Lockeford (San Joaquin County), and Santa Paula (Ventura County). To help interpret the spatial organization of the town's business districts over time, a representative sample of Sanborn fire insurance maps that spanned the years 1884–1912 was selected, as were business directories for similar years if available.

Sanborn fire insurance maps provide population figures, as illustrated in Table 2, for each town or city. As Table 2 suggests, Black Diamond (Pittsburg) witnessed a nearly seven-fold increase in population between 1900 and 1907, and Lockeford's population remained virtually stagnant between 1884 and 1912. Santa Paula saw its greatest increase in population between 1888 and 1892 with a leveling off through 1903 and modest increase by 1907. On the other hand, Yreka saw a modest increase in population between 1885 and 1890, a substantial decrease in population between 1890 and 1897, and then a modest increase between 1897 and 1908. The increases and decreases in population numbers in the aforementioned towns may relate to changing economic conditions, a boom and perhaps bust in certain industries, such as mining, and increased demand

Table 2. Populations of Four California Towns, 1884–1907.

Black Diamond	300 (1884)	350 (1891)	350 (1900)	2,250 (1907)
Lockeford	350 (1884)	350 (1890)	400 (1898)	450 (1912)
Santa Paula	300 (1888)	1,500 (1892)	1,500 (1903)	1,800 (1907)
Yreka	1,500 (1885)	1,800 (1890)	1,000 (1897)	1,600 (1908)

Note: Population statistics are from Sanborn fire insurance maps with years noted in parentheses [Sanborn Map Company 1867–1970].

Table 3. Pacific Coast Directory Statistics.

Business Type	Black Diamond			Lockeford		
	1880/81	1883/84	1886/87	1880/81	1883/84	1886/87
Attorneys						
Banks/loans/ins.			1			1
Confectioners						
Physicians/druggists				1	3	5
General merchandise stores		2	2	2	2	2
Hotels	1		1	1	3	2
Saloons/liquors	3	4	5	1	3	4
Population	—	—	200	—	300	500

Business Type	Santa Paula			Yreka		
	1880/81	1883/84	1886/87	1880/81	1883/84	1886/87
Attorneys				1	5	6
Banks/loans/ins.				1	2	1
Confectioners					1	3
Physicians/druggists	1	1	1	4	5	7
General merchandise stores	3	4	2	10	6	8
Hotels	1		1	3	2	4
Saloons/liquors	1	1	1	7	10	18
Population	—	450	350	2,000	2,000	2,000

in other industries, such as agricultural and petroleum products, as was the case in Santa Paula during the 1890s. The rise and fall of populations in these towns mirror population numbers in other California communities whose prosperity depended upon the health of local industries and, in other cases, regional or even world markets for specific products.

Table 3 provides information taken from three volumes of the *Pacific Coast Directory* for the years 1880–1887. Information may be doubled, as in a hotel or store and its proprietor each given a separate listing (McKenney 1881, 1884, 1887). When comparing all four towns, the most dramatic built-environment change within the years studied occurred at Black Diamond (renamed Pittsburg in 1911), a Delta town in the outer fringes of the East Bay region in Contra Costa County. The area of study focused on Front Street along the San Joaquin River from York Street east to the

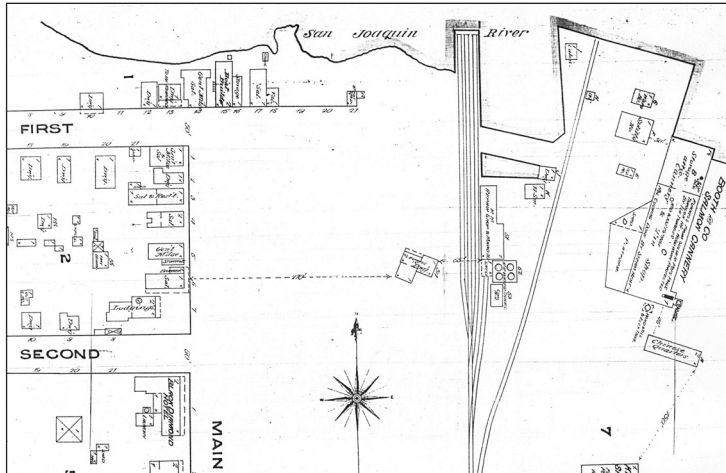


Figure 54. 1884 Black Diamond Sanborn Map (Sanborn Map Company 1884).

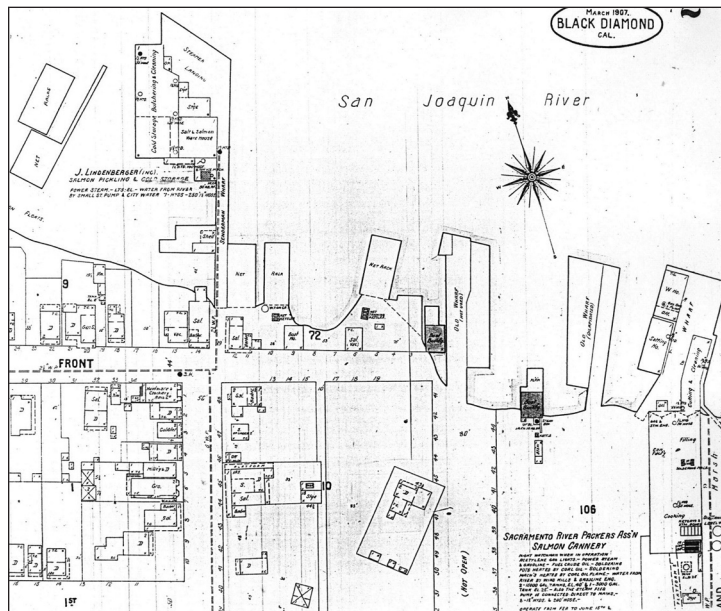


Figure 55. 1907 Black Diamond Sanborn Map. Note expanded wharf area compared to 1884 map (Sanborn Map Company 1907).

old railroad terminus. Changes from 1884 (Figure 54) to 1907 (Figure 55) reveal substantial infill development, newly partitioned blocks, and new infrastructure consisting of wharfs and accompanying facilities. Unlike the other towns in the sample, although infrastructure expanded, there appears to have been little expansion of specialty shops and those associated with leisure and recreation, aside from saloons. The community nestled along the San Joaquin River retained a consistent mix of residential houses and general merchandise stores, and at the same time, expanded a port facility tied to trade along the river and San Joaquin Delta.

Early business directories from 1879 to 1886 validate these observations and reveal an increase in boat builders, canneries, and insurance and banking institutions. The mix of businesses in Black Diamond during the years sampled appears to be consistent with the predominant lower-middle-class status of the community's population, most of which were employed in factories associated with maritime trade. In summary, Black Diamond was predominantly a working-class community, consisting largely of immigrants, supported by a narrow economic base focused principally on the salmon fishery.

On the other hand, Santa Paula was more diversified, characterized by an increase in businesses associated with professional services, specialization, and leisure/recreational pursuits. Sanborn maps from 1888 to 1907 (Figures 56 and 57) reveal a steady increase in the built-environment from Main Street between Davis down to 10th Street. In this community, as in thousands of other small towns, Main Street was the hub for commerce, trade, and social activities. In 1888, buildings filled approximately half of Santa Paula's commercial downtown, including general merchandise stores, scattered residences, a tin shop, and a livery stable. By 1892, buildings filled approximately three-fourths of this area,

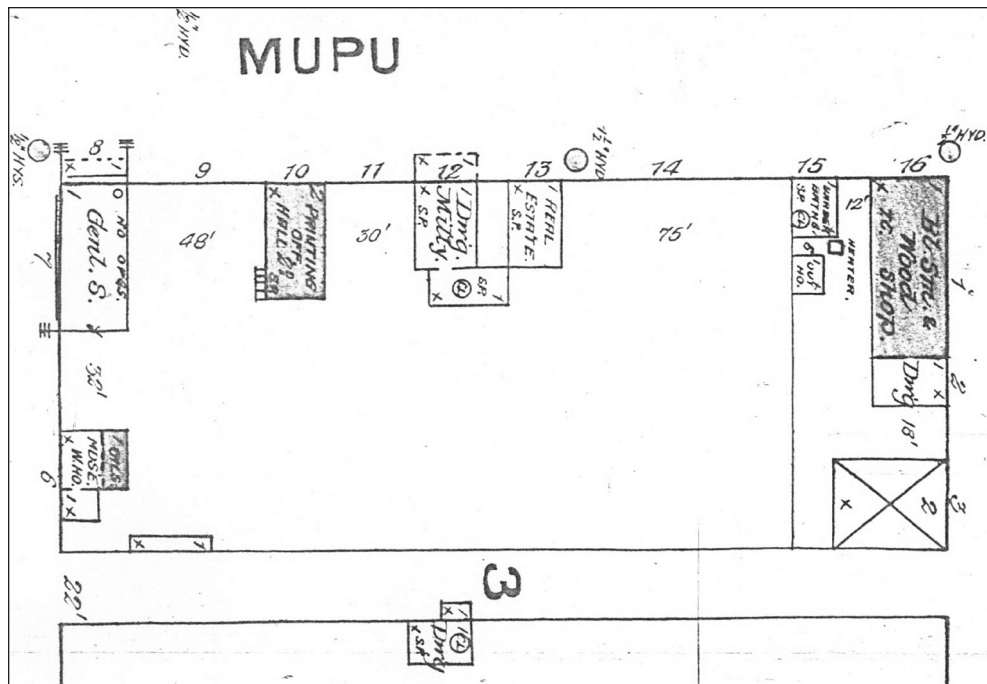


Figure 56. 1888 Santa Paula Sanborn Map. This storefront block on Mupu Street (called Main Street by 1907) between Mill and 10th Street is entirely filled by 1907. Already this block featured a printing and a real estate office, which were not common in most California townsites at this time. These offices reflect a more diversified economy (Sanborn Map Company 1888).

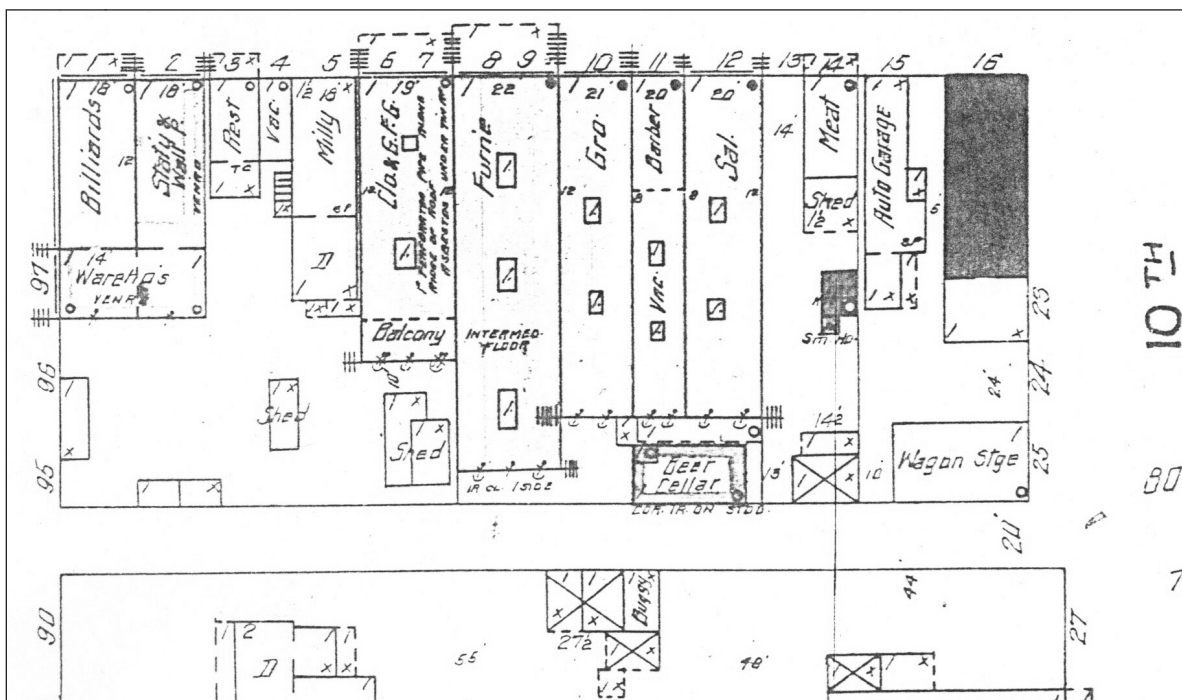


Figure 57. 1907 Santa Paula Sanborn Map. This block is entirely filled with storefronts by 1907, featuring assorted stores specializing in stationary, furniture, and clothing, among others. Most importantly, an auto garage is located in the eastern portion of the block (Sanborn Map Company 1907).

with an increase in specialty shops that included two jewelry stores, a florist, tailor shop, and furniture store.

By 1907, most of the available lots in Santa Paula had been in-filled with professional and retail-service type businesses, including an auto garage, bicycle repair shop, billiard hall, and a candy store. Santa Paula business directories expand upon the Sanborn fire insurance maps, listing several new businesses in 1901 that were not found in 1890, including a bowling alley, physicians, restaurants, and a professional painter and photographer. Furthermore, although Santa Paula is recognized for its citrus industry, it also had an extensive link to the petroleum industry in the late-19th century. Oil discovered in the Santa Paula Canyon led to the creation of four oil companies listed in business directories, which subsequently merged in 1890 to become Union Oil Company.

A comparison with Lockeford reveals a very different pattern of growth (Figures 58 and 59). Lockeford, located in San Joaquin County, about 16 miles northeast of Stockton, was founded by Dr. Dean Jewett Locke, who arrived in the area in late 1849. Beginning in 1884, Sanborn fire insurance maps list the population of Lockeford at 350, yet by 1912, the population had only increased by 100 to 450, as opposed to the steady growth experienced by the other three sampled towns (see Figures 58 and 59). In 1884, two blocks of Main Street were half filled-in with several saloons and hotels, general merchandise stores, a feed shop, and a wagon shop. Lockeford's business district expanded, albeit modestly, between 1884 and 1890, when a new cigar store, saloon, and meat market were added to the commercial downtown. However, between 1890 and 1898, Lockeford's population had expanded by only 50 people, no noticeable infill occurred downtown, and its centrally located hotel named the "Live Oak" sat vacant. By 1912, the hotel had been converted to dwelling houses, the Enterprise Hotel sat vacant, and one whole city block that formerly comprised a carriage facility had been leveled, likely by fire. Lockeford's stagnation was, in part, associated with the collapse of the wheat industry and the subsequent expansion of other towns more suitable to trade and commerce in the area, particularly Stockton. Rail transportation reached Lockeford in the late 1870s, but the rail line itself had only modest importance because the area's economic base had virtually collapsed.

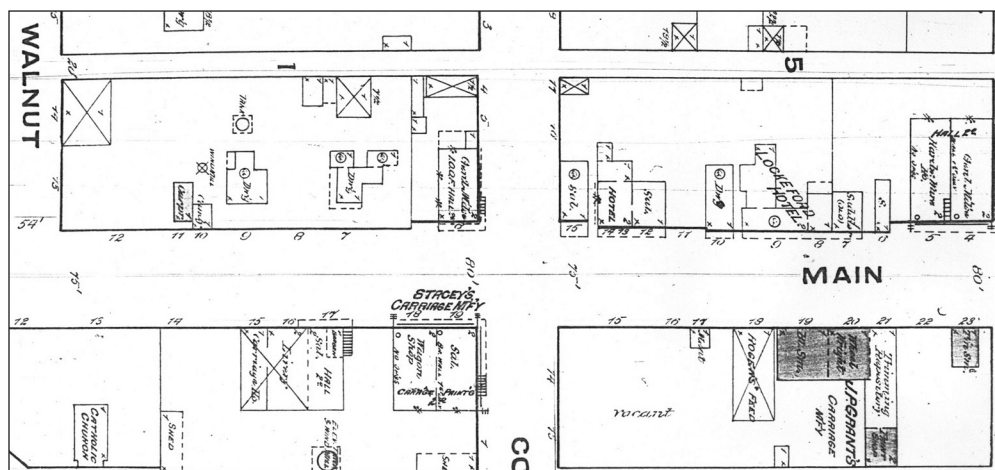


Figure 58. 1884 Lockeford Sanborn Map. This area comprised Lockeford's main downtown segment (Sanborn Map Company 1884).

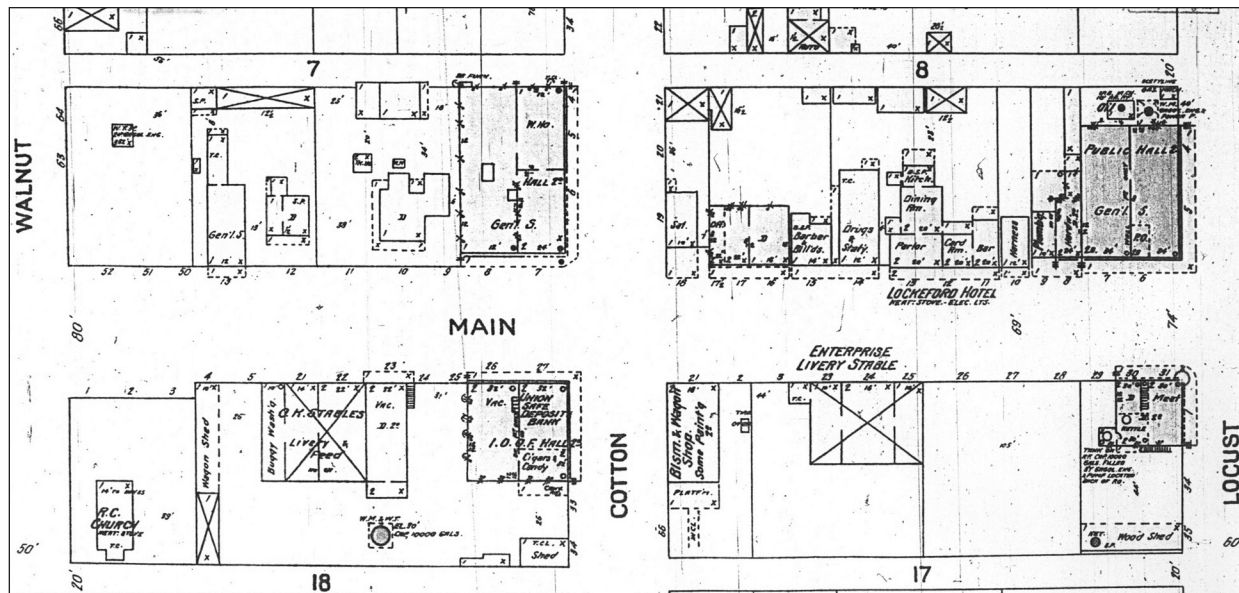


Figure 59. 1912 Lockeford Sanborn Map. This same area did not change much from 1884 to 1912, except that Colton Street had become Cotton Street (Sanborn Map Company 1912).

Yreka demonstrates the growth experienced by its prominence as county seat (Figures 60 and 61) and as a regional center of trade for northern California, following the discovery of gold in the early 1850s. The 1885 Sanborn map for Yreka illustrates three blocks of storefronts along Miner Street (Yreka's Main Street), from Maine to Oregon, as nearly entirely built. The densely in-filled business district included 12 saloons, a drug store, millinery, barbershop, cobbler, saddler, printing press, furniture store, 2 grocery stores, and 5 general merchandise stores. Yreka's importance as a center of commerce is also illustrated in business directories, which list a significantly higher number of general merchandise stores and saloons than the other three towns examined in this study (see Table 3). City directories also list attorneys, assessors, and other professionals working and living in the community, likely owing to the city's importance as the county seat of government.

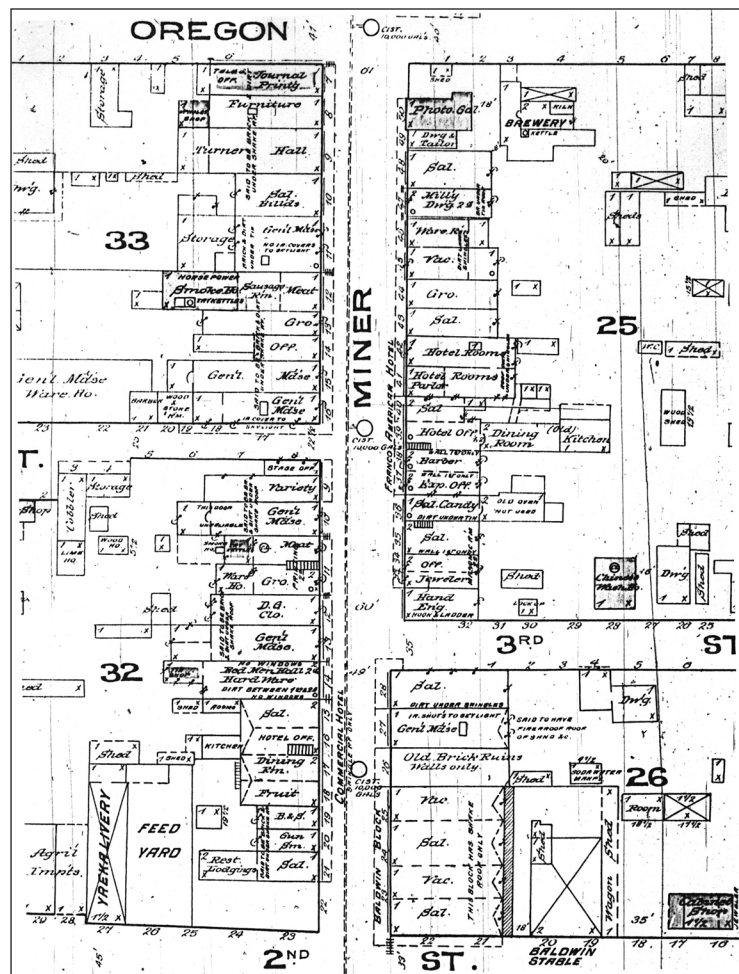


Figure 60. 1885 Yreka Sanborn Map. Yreka's numerous saloons, hotels, and merchandise stores reflected its position as county seat, even as far back as 1885 (Sanborn Map Company 1885).

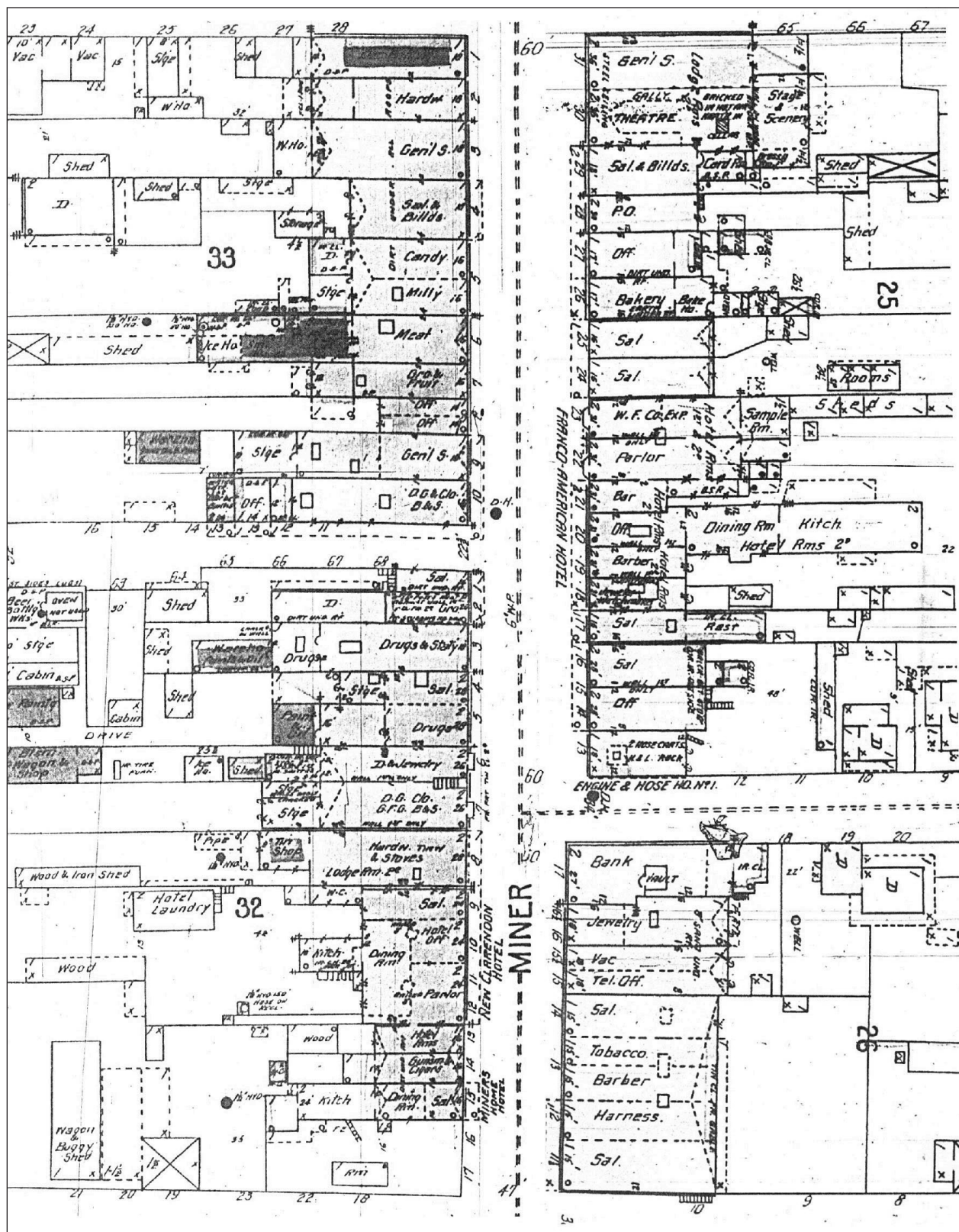


Figure 61. 1908 Yreka Sanborn Map. Yreka's downtown segment remained fully occupied from over two decades prior (Sanborn Map Company 1908). Note the dark color on the map indicates paste-overs by the Sanborn Map Company suggesting additions, alterations, etc. to buildings over two decades prior to 1908.

By 1890, new businesses in Yreka included a cigar store, a paint/oils store, a Wells Fargo bank, and two doctor's offices. By 1897, there was an opera house, law offices, a new hotel, a free reading room (library), and a hardware store selling stoves. By 1908, the opera house sat vacant and a new theater opened. Clearly, Yreka's model of development shares many of the characteristics associated with gold rush towns in the Mother Lode region, predicated upon the discovery of minerals and the boom-and-bust mentality of rapid growth. Yreka, unlike other mining camps in Siskiyou County, survived the ebbs and flows of expansion and contraction in the mining industry because of its central location as the county seat and the commerce and trade between California and Oregon. In addition, the region developed as a center of hay production in California, marketing agricultural products through the Yreka Railroad, which was incorporated in May 1888.

In conclusion, Sanborn fire insurance maps and city and county business directories can be valuable tools in comparing towns locally, regionally, and statewide, and evaluating spatial (physical), sociocultural, and economic change over time. Sanborn maps can also be used in more ways than expressed in this study, such as to determine a town's piping infrastructure and common building practices, or lack thereof. Furthermore, the spatial distribution of structures can also denote events of significance and ethnic identities. Geographic or spatial analyses of towns can lead to greater understanding in comparing complex changes from one community to another and help guide archaeologists when framing research questions specific to a particular community.

ETHNIC AND CULTURAL HISTORY OF TOWNS

Considering California's cultural diversity, it is difficult to discuss in any depth every group that contributed to the social, political, and economic development of the state. Therefore, the purpose of this section is to identify the wide range of cultural groups that settled in small towns throughout the state and to describe some of their contributions to the development of California (Table 4).

Visible traces or markers of the contributions and presence of some ethnic groups in California have disappeared over time, while the existence of other ethnic assemblages and cultures persist. For example, the Chinese contribution to the state, through their labor and skill on major infrastructure projects, such as railroad and levee construction, along with their proclivity to inhabit specific areas of a town in the face of discrimination, is well documented and may overshadow the historical record of ethnic groups with much smaller population numbers, such as the Assyrian community in Turlock. Regardless of the nature or scale of these contributions, both ethnic groups are important to telling the story of California's cultural and physical development.

While the term "cultural" is used in this study to define the broadest scope of human intervention in the state's physical character, the term "ethnicity" has many definitions. For the purposes of this study, ethnicity is defined as a quality or affiliation resulting from racial or cultural ties. The definition of ethnicity is challenging, and the characterization of a particular ethnicity often comes from a perspective outside the cultural group being defined. Siân Jones (1997:84), in *The Archaeology of Ethnicity*, suggested that the definition of ethnicity has been shaped from the late 1960s onwards by the dominant view within Western social-scientific traditions that ethnic groups are "self-defining systems," and consequently certain ethnic groups have been defined on the basis of self-identification and some through identification by others. The view of others towards a particular ethnic group certainly influenced class status and relations. In California, contributions from Spanish, Chileans, Cornish, Japanese, Portuguese, Armenians, Swedes, Scandinavians, Serbians,

Table 4. Sampling of Ethnic Communities in California.

Amador County - Fiddletown, Volcano (Chinese), Drytown (Mexican, Chinese), Jackson (Serbian, Chinese)
Calaveras County - Mokelumne Hill (Chinese), San Andreas (Mexican, Chinese)
Contra Costa County - Martinez (Italian, Greek)
El Dorado County - Placerville (Mexican, African-American, Chinese, Jewish)
Fresno County - West Fresno (Chinese)
Kern County - Bakersfield (Chinese)
Los Angeles County - Coastal country north of Los Angeles (Chinese, European)
Mariposa County - Bear Valley, Mariposa, Hornitos (Mexican, Chinese), Coulterville (Chinese)
Mojave and Colorado Deserts - Calico (Irish, Swedish, German, Italian, English, Chinese)
Monterey County - Monterey (Chinese, Portuguese, and Italian), Salinas (Italian-Swiss, Mexican, Filipino, Japanese)
Napa County - St. Helena (Chinese), Napa (Italian)
Nevada County - Nevada City (Chinese), Grass Valley (Cornish, Chinese)
Placer County - Newcastle (Chinese), Rocklin (Chinese, Finnish, Spanish, Japanese)
Sacramento County - San Joaquin Delta/Walnut Grove (Chinese, Japanese), Locke (Chinese), Isleton (Chinese, Japanese), Courtland (Chinese), Lisbon District (Portuguese, specifically Azorean)
San Francisco Bay and Peninsula - Nortonville (English, Welsh)
Santa Clara County - Menlo Park (British, Italian, Portuguese)
South San Francisco - (Italian, French, Chinese)
Trinity County - Yreka/Weaverville (Chinese)
Tuolumne County - Sonora (Mexican, Italian, Chinese), Chinese Camp (Chinese), Big Oak Flat (Chinese), Groveland (Mexican)

Italians, Italian-Swiss, Russians, Filipinos, India-Pakistanis, to name just a few, characterized many of the state's 19th- and early-20th-century settlements (Figure 62). Physical markers of these ethnic groups can be found throughout the state from the Saint Sava Serbian Orthodox Church in Jackson, Amador County; the orchards and temples of Sutter County, whose Sikh population comprises the world's second-largest concentration of Punjabis outside of India; to the windmills of the 1910 Danish colony of Solvang.

It is important to note that many ethnic groups were misidentified in census records under broad categories for a variety of reasons. Sikhs, for example, were enumerated as southern Asian, and Croatians were often recorded as Italian, Austrian, Hungarian, or Turkish. Under the category of description, the U.S. Bureau of the Census recorded "color" or "race"—i.e., black, white, mulatto, Chinese or Indian—not ethnicity, and under "place of origin," it recorded U.S. state or territory, or if



Figure 62. Chilean miner, circa 1850 (Courtesy of The Bancroft Library, University of California, Berkeley).

foreign born, the country of origin. This accounts for many of the discrepancies. These discrepancies make assessing the contributions and settlement patterns of these cultural groups more challenging but certainly not impossible.

Beyond the built environment, a town's spatial layout can provide clues to its settlement patterns; ethnic neighborhoods speak as much about a settlement's social environment and geographic limitations as they do about its economic character. Chinatowns, often a symbol of racial and social exclusion as much as one of ethnic solidarity, are perhaps the most well-known type of municipal ethnic enclaves in California and have been the subject of numerous historical and archaeological studies (Brienes 1983; Chan 1986, 1991; Great Basin Foundation 1987; Chen 2000) (Figure 63).

The spatial orientation, architecture, and function of ethnic neighborhoods are important factors when trying to determine economic, racial, and social relationships. The interface between commercial downtowns and residential districts may reveal degrees of assimilation and acculturation among different ethnic groups over time.

California's cultural history from the gold rush era onward involved the interaction between multiple ethnicities, which in turn influenced the development of the cultural and physical landscape of the state's towns and settlements. Unfortunately, in many cases contact between differing nationalities resulted in discrimination and inequality for many groups. The subjugation of California Native Americans during the 19th century is well documented, and during the gold rush, Latin Americans were victims of unfair mining practices and social inequality, as were Overseas Chinese, in regards to labor practices and property ownership. In some cases, this discrimination led to vigilante violence and even death. Not discounting the important role that California Native Americans played during the first few years of the California gold rush, with the exception of communities along the north coast, generally speaking, California Native Americans made up a small fraction of the population of small towns.

Past and current cultural histories of California have focused on five distinct non-European American ethnic groups who are acknowledged as major contributors to California's gold rush and post-gold rush cultural history. Native Americans, African Americans, Chinese, Japanese, and Mexicans receive particular attention in California Department of Parks and Recreation (1988) publication *Five Views: An Ethnic Sites Survey for California*, from which much of the following information is drawn. Other books, journal articles, and more-specific cultural surveys of California have focused on ethnicities that have exerted influence in agriculture, mining, commerce, and trade. The Caltrans (2007) *A Historical Context and Archaeological Research*



Figure 63. *Chinese New Year parade, Oroville, circa 1900 (Courtesy of Oroville Chinese Temple, Oroville).*

Design for Agricultural Properties in California discusses the contributions to California's vast agricultural empire by Filipino, Mexican, and Chinese immigrants. Similarly, *A Historical Context and Archaeological Research Design for Mining Properties in California*, also published by the Caltrans (2008), relates in some detail the efforts of Asians, British Islanders, Europeans, South Americans, and African Americans to assimilate in California's multitudinous and diverse mining camps. Despite the importance of these published studies, one of the best sources of information regarding the cultural history of small towns is through local publications, some produced by genealogical or historical societies. In recent years, the *Images of America* book series has produced hundreds of local histories, most comprised predominantly of reproduced photographs with minimal text.

The following are brief summaries of some of the principal cultural groups that lived and worked in many of California's towns.

AFRICAN AMERICANS

During the first few years of the gold rush, California as a whole had a very small African American population. Most African Americans were employed in the gold-mining regions of northern and central California. During the mid-to-late-19th century, census data identify African Americans residing in many, if not most, of California's mining communities. Other evidence of African American settlement patterns in California during the 19th century includes African American churches, such as those in Sacramento and Placerville built during the 1850s.

By the early-20th century, the migration patterns of African Americans led to many of the state's more urban centers, such as Los Angeles, Bakersfield, San Francisco, and Oakland, to name just a few.

Initially, African Americans received a mixed reception due to the complex nature of the slavery issue, and opinions regarding the "African" presence in the gold mines varied widely. California's constitution deemed it a free state, but the debate over slavery continued within its borders until the end of the Civil War (Richards 2007:67–68). Many African Americans came to the mines as slaves with their masters. Often they worked an agreed-upon amount of time for their freedom, as many slave owners figured to obtain enough wealth to forego the need of slave labor (Johnson 2000:68). Other slaves relied on their position on "free soil" to secure their liberty or the hopes of procuring enough gold to buy their way out of slavery (Johnson 2000:70,190) (Figure 64).

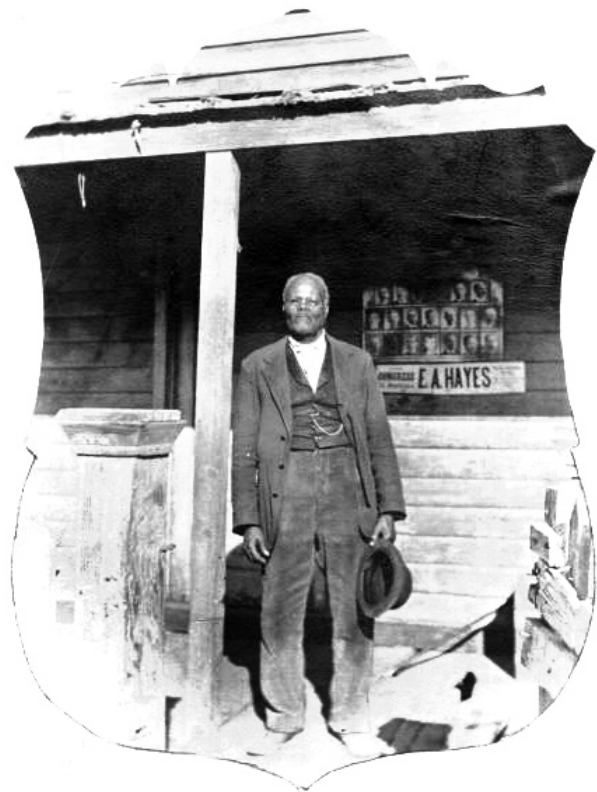


Figure 64. *Jim Williams, circa 1905. Williams was reportedly the first African American in Santa Clara (Courtesy of the City of Santa Clara History Collection).*

The end of the Civil War brought about more changes for African Americans as social attitudes toward them relaxed, allowing the establishment of churches, community groups, and new-found, although limited, support from the white community (Mann 1982:172–173). Prior to 1900, California laws made it illegal for non-whites to homestead. Regardless, San Bernardino County reportedly had 20,000 acres homesteaded by African Americans in 1914 (Ramsey and Lewis 1988:67).

By 1900, California's African American population was more evenly distributed in the state, rising to nearly 8,000. After 1900, African Americans concentrated in many of the state's larger urban centers. There were, however, enclaves of African Americans who settled in the Central Valley, as a result of the cotton boom. Many came from the rural South, Texas, and other southeastern states. In 1908, African American Colonel Allen Allensworth established the town of Allensworth in Tulare County as an African American–governed town. Depleted water supplies brought about its demise by the 1920s. Today, Allensworth is a state historic park. Although Allensworth was largely a failure, there were other small towns in the Central Valley that had predominantly African American populations, many of which survived relatively intact through the latter part of the 20th century.

By the 1930s, most economic prospects for African Americans appeared to stem from labor markets in the larger cities, particularly in factories. There, larger populations, and especially African American populations, contributed to more-lucrative business opportunities. Furthermore, larger, concentrated African American populations afforded more representation and protection through groups such as the California Association of Colored Women's Clubs and the Home for the Aged and Infirm Colored People (Ramsey and Lewis 1988:71; Richards 2007). The contribution that African Americans made to small towns in California is a story that has largely gone untold. Future research will certainly uncover more African Americans who played important roles in the cultural and economic development of these communities.

CALIFORNIOS AND LATIN AMERICANS

Hispanics, including Sonorans from Mexico, Peruvians, and Chileans, were present in relatively large numbers during the first few decades following the discovery of gold at Coloma in 1848, owing in part to the history of California as a Spanish then Mexican territory and because of their previous experience in gold and silver mines in Mexico and Latin America. The United States–Mexican War, from 1846 to 1848, ended with the signing of the Treaty of Guadalupe Hidalgo, and the United States gained California and other lands. The treaty guaranteed ownership of the land already settled by its Mexican owners, but the lengthy and expensive process of proving land titles oftentimes resulted in loss of land for Californio families.

Even prior to the gold rush, Hispanic people had made significant contributions to the region that later became California. With the influx of new immigrants during the gold rush, “Californios feared losing their privileged status and being lumped in with the thousands of Spanish-speaking immigrants from Mexico and other parts of Latin America who arrived in California during the gold rush” (Paddison 2010). In 1848, at the time of the gold rush, there were approximately 10,000 Californios living in California. In time, with the loss of their large landholdings, Californios lost their positions of prestige, along with their economic and social status.

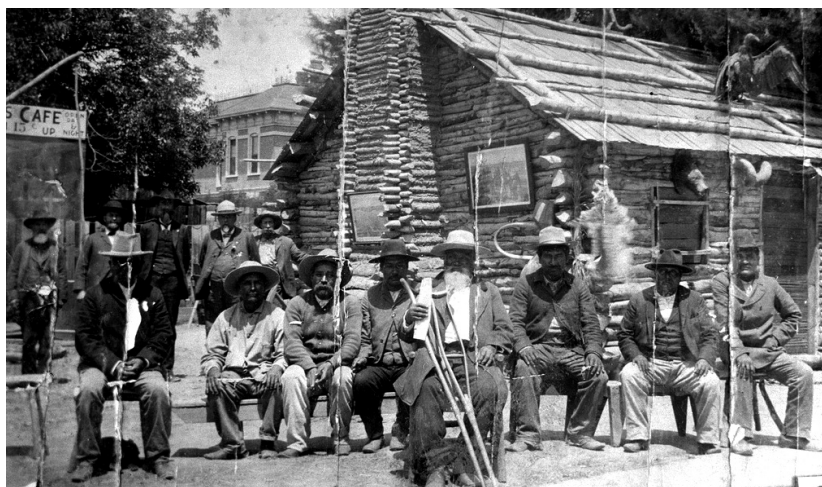


Figure 65. *Pioneer Mexican Americans at the “old Log Cabin,” San Bernardino, circa 1890 (Courtesy of San Bernardino Public Library).*

The California gold rush brought another wave of Spanish-speaking peoples into the region, this time from northern Mexico, Peru, and Chile. Latin American miners followed alongside other argonauts during the 1850s, already having experience working in the mining industry, particularly in the Mexican and Peruvian silver mines. Equally important was the fact that vessels bound for California during the gold rush acquired supplies and passengers at vari-

ous Latin American ports, such as Valparaiso, Chile. Access to mining was ultimately restricted with the Foreign Miner’s Tax targeting both Hispanic and Chinese miners in the goldfields (Fernandez 2001). Even with the high numbers of Hispanic immigrants in the state, by 1870, Spanish speakers in California consisted of only four percent of the total population (Pitti et al. 1988:209).

Integrating into the state’s labor market in the 19th century as unskilled or semiskilled manual laborers, Mexican Americans experienced job displacement, and in some areas, and restricted occupational mobility (Figure 65). Euroamerican hostility and low levels of education limited their access to jobs, and Mexican Americans encountered obstacles to upward mobility even in occupations in which they had considerable skill and experience, such as agriculture.⁴ In Los Angeles, for example, Mexican Americans disappeared completely from the ranks of hat makers, masons, and tailors. Despite long pastoral experience, Mexican Americans found employment on ranches only as ranch hands, and Euroamericans held most supervisory positions. Another trend during the late-19th century was the entry of Mexican American women into the labor market. As Mexican American men found themselves more occupationally disadvantaged, women became increasingly employed as domestics, laundresses, farm laborers, and cannery and packinghouse workers. A rise in the proportion of female-headed households at the close of the 19th century reflected these socioeconomic changes.

Some traditional Mexican towns became transformed into barrios as Euroamericans immigrated and established their own segregated neighborhoods or as newly established Euroamerican towns expanded to a point that they enveloped historic Mexican communities. Displaced Chicanos and immigrating Mexicans often established new barrios and *colonias*. Barrios and *colonias* developed and survived through a combination of force and choice. In towns dominated by Euroamericans, anti-Mexican segregation was often embedded in restrictive covenants on real estate.

In Chicano-dominated towns, traditional extended family and community social life flourished. There were bullfights, rodeos, horse races, and various fiestas, including the celebration of Mexican Independence Day (September 16) and Cinco de Mayo (May 5)—the 1862 Mexican victory

⁴ Although there is some difference of opinion regarding the period in which the term “Chicano” was applied to U.S. citizens of Mexican descent, the term began to be widely used during the Chicano Movement, primarily amongst Mexican Americans, especially in the movement’s peak in the late 1960s and early 1970s.

over the French at Puebla). The Catholic Church provided a focus for social as well as religious life. Mexican American political, cultural, patriotic, and mutual aid organizations began to develop, and Chicano newspapers strengthened community cohesion and spoke out against injustices (Pitti et al. 2000).

By the 1920s, Mexican Americans or Chicanos, as they came to be called, had emerged as one of the most populous cultural groups living in small towns across California. While the state's Central Valley and the Los Angeles Basin had a high concentration of Latinos during the 1910s, Mexican migrants could also be found in far northeast California and widely distributed throughout the Imperial Valley near the Mexican border. This phenomenon of migration continued through the 1940s, with considerable urban migration occurring after that, particularly into the greater Los Angeles Metropolitan Area, Fresno, Bakersfield, and coastal communities, such as Watsonville and Castroville.

CHINESE

Before the gold rush, very few Chinese made their way to the shores of California. By the mid-1850s, Chinese immigrants who came through San Francisco Bay created a thriving community known as San Francisco's Chinatown. San Francisco's Chinese took advantage of the state's demand for immigrant laborers and provided monetary support (to be paid back in the form of peonage) for passage to the "golden state." Sacramento, Marysville, and Stockton were important cities for Chinese settlement. Chinese named San Francisco "Dai Fou" (First City), Sacramento "Yee Fou" (Second City), and Marysville "Sam Fou" (Third City) (Chan 1984:278). These cities were important to the Chinese communities at large because they operated as the primary suppliers of goods, supplies, and services to the Chinese employed throughout the state. The smaller Chinese communities scattered throughout the state assisted newly arrived immigrants to acclimate to their new surroundings and served as a base for cultural cohesion by providing places to worship, financial assistance, personal advice, legal counsel, and housing (Figure 66).

Chinatowns varied because of a wide range of environmental, economic, and social factors, but most were considered by western journalists to be "sub-standard," lacking basic health and sanitation standards, hotbeds of decay and vice, and harbingers of infectious disease (Fong 2002). Historical documents reveal that Chinese frequently communicated with friends, family, and colleagues in large urban centers, even though they lived and worked in rural areas of the state. This was often done through telegrams that linked many California towns and cities by the 1870s (Dressler 1927).



Figure 66. Chinese Funeral, Colma, 1903 (Courtesy of The Bancroft Library, University of California, Berkeley).

During the early 1850s, most of the Chinese who entered California found work in the mines. Later, Chinese worked in the state's fishing industry, principally in the salmon canneries along the Delta, and along the coastline from Monterey to Fort Bragg. The Chinese became very adept at bridge, railroad, and road building, and consequently participated in many of the state's early construction projects, such as building the Central Pacific Railroad and swampland reclamation projects. Chinese were perhaps the most important labor force in California's agricultural industry through the 1880s.

By 1870, Chinese lived in nearly every county in California (Wey 1988:115). During the second half of the 19th century, the Chinese in rural California comprised the majority of all Chinese living in the United States. By the late 1870s, the Chinese population in California was distributed throughout large cities, such as San Francisco, San Jose, Los Angeles, Stockton, Sacramento, and smaller towns, such as Marysville, Yuba City, Grass Valley, San Luis Obispo, Monterey, Watsonville, and Yreka.

Chinese often faced racial discrimination. For example, during the 1860s, Chinese fishermen were forced to purchase special fishing licenses in an effort to keep them from providing business competition against whites, and in 1882, the Chinese Exclusion Act restricted Chinese skilled and unskilled laborers from entering the United States for 10 years. This was extended twice and then made indefinite through 1943, when President Franklin Delano Roosevelt signed an "Act to Repeal the Chinese Exclusion Acts, to Establish Quotas, and for Other Purposes." Many counties took measures to completely expel the Chinese from their boundaries. In 1885, Eureka in Humboldt County used the accidental shooting death of a city council member, reportedly by a Chinese, as grounds to expel all Chinese from the county and shipped them aboard steamers to San Francisco with a mere 48 hours notice. In early 1886, Del Norte County also expelled all Chinese from its borders (Wey 1988:118). In the 1870s, the Chinese were expelled from various towns, such as Truckee. Suspicious incendiary fires were relatively common in Chinese communities of the late-19th and early-20th centuries. Nonetheless, a few Chinese persevered and continued to live and thrive in small towns throughout California. By the 1920s, most Chinese lived in the state's largest cities, such as San Francisco, Stockton, and Los Angeles.

One of the most compelling Chinese communities in the state that sustained a large population of Chinese from the late-19th century through to the present was the community of Locke in the heart



Figure 67. Chinese Joss House or Temple, Weaverville (Courtesy of The Bancroft Library, University of California, Berkeley).

of the San Joaquin Delta. Locke was not the only home to Chinese living and working the Delta, but it symbolized the tenacity of immigrant Chinese who overcame prejudice and segregation and formed a cohesive community with the full range of businesses, social, and religious institutions, and residential housing (Leung and Armentrout 1984). In northern California, Weaverville in Trinity County had one of the largest Chinese populations. The Weaverville Joss House or Temple still stands as a reminder of the town's Chinese citizens (Figure 67).

JAPANESE

In 1869, a group of Japanese from Aizu Wakamatsu in modern Fukushima Prefecture, led by Prussian-born John Henry Schnell, arrived in California and established the Wakamatsu Tea and Silk Farm Colony at Gold Hill. The colonists, who journeyed to San Francisco with Schnell and his Japanese wife, Jou, were in all likelihood the first group from Japan to arrive and settle in the United States. The Wakamatsu party arrived in Sacramento and then proceeded to Placerville and nearby Gold Hill where Schnell had arranged to purchase 160 acres from Charles M. Granger. They brought mulberry trees, silkworm cocoons, tea plants, and bamboo shoots in the hopes of establishing an agricultural settlement (Allen and Wooten 2009). The Wakamatsu Tea and Silk Farm Colony's success was short-lived. Struggling with an insufficient water supply, lack of adequate funding, and poor leadership, the colonists disbanded in 1871. Two members of the colony stayed on as friends and employees of the neighboring Veerkamp family; another colonist moved to Sacramento (American River Conservancy 2008). In 1870, 55 Japanese were living in the United States, with 22 in Gold Hill alone (U.S. Bureau of the Census 1870).

During the 1880s, Japan's labor agreement with Hawaii sugar plantations opened the doors for Japanese immigration into the United States via Hawaii. By 1890, just over 2,000 Japanese were living in the United States, with over half in California. The majority of all Japanese migrants entered the United States through San Francisco Bay (Waugh et al. 1988:161–162).

At the beginning of the 20th century, the “Gentlemen’s Agreement,” as it was named, restricted Japanese immigration. However, it did allow for the migration of parents, wives, and children of those already in the United States. The act also provided reentrance to those who had previously been in America. As the measures of this agreement did not reduce immigration as much as its proponents hoped, the Immigration Act of 1924 completely restricted all Japanese immigration until 1952.

During the 20th century, Japanese settlement spread throughout California, including Los Angeles, San Francisco, the Delta region of the San Joaquin Valley, and the coastal areas of central California. During the early 1900s, the Japanese population moved into agricultural work and related occupations, and sizeable Japanese agricultural communities formed in Florin in Sacramento County, Bowles in Fresno County, Livingston in Merced County, in portions of Orange County, and the Delta Islands between Stockton and Antioch (Waugh et al. 1988:164). Japanese agricultural workers often took part in specialized agriculture, including raising fruits, nuts, and rice throughout California's valleys. One notable example of an influential Japanese industry was the development of a national chrysanthemum market based in Redwood City, eventually earning the town the title of “The Chrysanthemum Center of the World” in 1926 (Jagruti 2004:12). However, these workers also faced discriminatory laws, such as the 1913 Web-Hartley Act (California Alien Land Law), which restricted further purchase of land by aliens unable to attain U.S. citizenship, and allowed land leases for only 3-year periods. The Japanese of California were also engaged in other business pursuits, such as owning and running boarding houses, restaurants, and providing provisions and equipment for agricultural workers.

In towns across California, Japanese integrated into the communities remarkably well, forming alliances with local businesses and establishing whole districts catering to Japanese workers and



Figure 68. *Japanese baseball team, Vacaville, circa 1920 (Courtesy of Japanese American Archival Collection. Department of Special Collections and University Archives, the University Library, California State University, Sacramento).*

families. Japanese engaged in American sports such as baseball and formed local teams, as depicted in Figure 68, a Japanese baseball team (circa 1920s) from Vacaville.

Like Chinatowns, Japantowns formed strong alliances and engaged in a wide variety of economic and social pursuits. By the 1920s, many Japantowns became self-sustaining parts of larger communities and fostered local development and cultural events.

SIKHS

There is only scant evidence that Sikhs and East Indians had any measurable presence in California during the 19th century. Instead, large-scale Sikh immigration to California, driven by social, political, and economical turmoil in India, began after 1900 (La Brack 1988:52). The first stage of immigration, roughly between 1904 and 1923, consisted of itinerant agricultural workers who moved between seasonal jobs, harvesting, planting, and cultivating crops in Marysville, Lodi, Sacramento, Stockton, and the Bay Area (Figure 69). These workers struggled to retain their social and religious customs amidst the same type of discrimination endured by the Japanese, Chinese, and other immigrant groups (La Brack 1988:56,72,131,164). Prevented from landownership under the 1913 California Alien Land Act, Sikhs continued working California's fertile Sacramento Valley as well as the Imperial Valley. The construction of Gurdwara in Stockton, a traditional center of social and religious life and the only such center in California at the time it was built, helped unify the Sikh community throughout the state (La Brack 1988:56,127). Soon thereafter, Sikhs began obtaining farmland in Butte, San Joaquin, Sutter, Yuba, and Glenn counties where they planted crops such as rice and cotton. With a population of approximately 2,600 in California in 1919, up from just 652 in 1910, and in control of over 100,000 acres of leased or owned cultivated land, Sikh settlers gradually exerted their influence over the regions in which they settled and California's commercial agriculture industry (La Brack 1988:157–164).



Figure 69. *Sikh family in Sutter County, circa 1930 (Courtesy of Sutter County Public Library, Yuba City).*

FILIPINOS

Prior to 1900, Filipino immigration to California was limited (Orpilla 2005:8,30). Like many immigrant groups, Filipinos in California settled in enclaves that became the center of Filipino social and cultural life. Many came to California to study at American universities under sponsorship of the Philippine government. Some students were under contract to return home, but many remained in California after the completion of their schooling to work in various occupations (Crouchett 1982:31).

Conflict between the United States and the Philippine government over American colonization in 1903, and subsequent national immigration laws, prevented sustained immigration until around 1920 (California Department of Industrial Relations [CDIR] 1930:9; Crouchett 1982:33). The American government's exclusion of immigrants such as Chinese and Japanese in the 1920s did not apply to Filipinos. In the Sacramento and San Joaquin Delta regions, these policies impacted the balance of labor, and according to Eiichiro Azuma (1998:169), "the California Alien Land Law of 1920 and the Immigration Act of 1924, brought to the delta an influx of Filipinos, who quickly dominated the local labor market and gradually threatened Japanese tenancy."

In other areas, Filipino workers not only filled the needs of agricultural work but also for domestic labor. Many came from Honolulu, Hong Kong, Manila, and Shanghai to work in the farms and fields of California's San Joaquin Valley, where they harvested asparagus, hops, beets, celery, rice, fruit, and other local commercial crops (CDIR 1930:9,13,23). Anti-Filipino sentiment increased only after Filipinos made important strides as agricultural laborers, hotel keepers and restaurateurs. This tension manifested in anti-Filipino riots in Exeter, Tulare County, and in Watsonville, Monterey County, in the 1920s, as white and Filipino laborers struggled to live and work together. By the 1930s, Filipinos could be found in most agricultural regions of the state, and their past experience and willingness to work under harsh conditions earned them a reputation as dependable employees (CDIR 1930:12–13). Many also engaged in domestic work in urban areas as well.



Figure 70. Filipino Club, Susanville. Note the sign that reads "Tobacco-Candy-Pool-Welcome." Susanville had a large Filipino population that were employed in the area's agriculture (Courtesy of The Bancroft Library, University of California, Berkeley).

Unlike Japanese and Chinese, Filipinos did not form large cultural enclaves in California towns, but rather they integrated into the larger community. There were exceptions, however, where towns catered to large groups of Filipino laborers, as was the case in Watsonville, Monterey County, during the 1910s and 1920s. Filipino-owned businesses provided traditional foods, boardinghouses offered day and weekly lodging, and clubs offered places to socialize (Figure 70).

NORTHERN EUROPEANS

SWEDISH

Swedish immigration to California began in the early 1870s when a small group of Swedes entered into farming in Kingsburg, Turlock, and smaller areas in the northern San Joaquin Valley (Mathes 1991:1). The Central Pacific Railroad added Kingsburg as a station in 1872 to transport agricultural products and settlers to and from the San Joaquin Valley, allowing easier access for immigrants and industry (Mathes 1991:2). Because of the climate and cheap, available land, a large group of Swedes from Ishpeming, Michigan, chose Kingsburg as their new home in 1886 (Mathes 1991:24). Soon Kingsburg became a major destination for Swedes already living in the eastern and midwestern United States and for those still residing in their native country. From this point, Swedes accounted for over 90% of the town's population until the arrival of Dust Bowl refugees in the early 1930s (Mathes 1991:25). This high concentration of Swedes, combined with their difficulty assimilating into mainstream American culture, earned Kingsburg the moniker of the "Swedish Ghetto" in reference to the insulated nature of the Swedish community (Mathes 1991:38). Other regions of California with large Swedish populations included the Turlock-Hilmar area (Figure 71) and portions of San Luis Obispo County, particularly in and around Solvang.



Figure 71. Swedish baseball team, Turlock. Note the lettering on the nearby hotel that is advertising the Swedish affiliated "Hilmar Colony Land Agency" (Courtesy of California State University, Stanislaus).

Swedish immigrants generally settled in small towns; many scattered throughout the San Joaquin Valley and along the central coast. Swedes retained many traditional customs, and Swedish churches became important religious and social institutions strengthening bonds among members. Unlike Chinatowns, Swedish communities were never marginalized but were part of the broader community. In the San Joaquin Valley, Swedes competed with Azorean dairy farmers in local and regional markets. The competition, and more importantly, differences in language and culture, led to some neighborhoods and zones settled exclusively by Swedes and others by Azoreans. These cultural differences are still apparent today in small towns such as Hilmar in San Joaquin County.

FINNISH

Between 1850 and 1920, Finnish immigration was concentrated in four California counties: San Francisco, Mendocino, Alameda, and Humboldt. From 1850 to 1900, San Francisco and Mendocino counties received the biggest increase in Finnish population, and Alameda and Humboldt counties did so from 1900 to 1920 (Schofer 1975:20).

The Finnish immigrant population was primarily employed in the fishing and lumber industries. From 1870 to 1910, Humboldt and Mendocino counties went from a Finnish population of 30 to 2,140, with the majority working in the lumber industry and sawmills in the redwood forests (Schofer 1975:40). Fort Bragg in particular had a sizeable Finnish population engaged in the city's fishing industry, and many lived and worked alongside or near the city's harbor. The contribution of Finnish immigrants are not as apparent as other groups, in part because Finns tended to blend into other Western European cultures and worked mainstream occupations in various industries.

EASTERN EUROPEANS

SERBIANS

Serbian immigration began during the late 1840s in California, although most of the immigration from the southern Adriatic coast occurred after 1860, primarily to San Francisco and adjacent communities. The California gold rush inspired many Serbians to immigrate. Many tried their hand at mining, settling in Placer, El Dorado, Amador, and Calaveras counties. Serbian immigrants also found success in mercantilism, opening saloons, hotels, coffee shops, fruit stores, and other commercial ventures. By 1870, Serbians established settlements in Sacramento, San Francisco, San Diego, Los Angeles, and Jackson, California (Figure 72). During the 1880s to 1900s, Serbians migrated to Fresno where they were employed in agriculture. Most Serbians living in Amador County worked in the hard rock mines, particularly the Kennedy Mine (Thernstrom et al. 1980:919).

CROATIANS

In the early-19th century, Croatians originally settled in large numbers in the southern United States, particularly Louisiana, Florida, and Texas, where they worked as oystermen, fisherman, mariners, and other similar occupations. Coming west with the discovery of gold in California, Croatians continued working as fishermen but also as saloon keepers, fruit and liquor dealers, and miners. Settling mainly in San Francisco and Amador counties, the Croatian population also comprised those who came from the southern United States and the coastal areas of Croatia, including Dalmatia, Boka Kotorska, and Dubrovnik (Eterovich 2000:2–8,175). With the decline of placer mining, many turned to the planting of vineyards and wine production along with sardine fishing, or they went to work for larger mining concerns in the Mother Lode. Firmly established both culturally and commercially in California by the late 1850s, Croatian settlers in San Francisco created a Croatian Society and cemetery in 1857, further solidifying their presence in the state. Several newspapers and a library were founded in San Francisco between 1859 and the 1870s, and in Sutter Creek, Amador County, the first American Croatian Hall was constructed in 1874. Further efforts to unify their community included the founding of a Croatian Fraternal Union in Angels Camp, Jackson, and other areas. Remaining for the most part in San Francisco



Figure 72. Serbian Church, Angels Camp, 1940 (Courtesy of The Bancroft Library, University of California, Berkeley).

and the Mother Lode region, a small number of Croatians established an agrarian settlement in the San Joaquin Valley in the 1920s, where they cultivated the region's fertile soil alongside other immigrant groups that had settled there (Eterovich 2000:2–194).

ARMENIANS

Armenian immigration to California largely occurred after 1900. Many Armenians settled in the San Joaquin Valley towns of Turlock, Kingsburg, and smaller agricultural areas, including those in Riverside and San Bernardino counties during the early 1900s. Intermixed with Japanese, Swedes, and Portuguese, Armenians entered into farming, vineyard cultivation, and rug making, and other owned businesses in San Bernardino in the 1940s (Figure 73). Many Armenian women, in attempts to provide income, practiced their cultural crafts, including jewelry making, needlework, crocheting, and embroidery (Mathes 1991:38). By the 1920s, Armenians were involved in all aspects of industry in the San Joaquin Valley. Fresno, in particular, had a relatively large Armenian population, most engaged in farming (Mathes 1991:36–38).



Figure 73. Armenian immigrant in front of his grocery store in San Bernardino, circa 1940 (Courtesy of San Bernardino Public Library).

RUSSIANS

The establishment of an agricultural colony in 1812 by the Russian-American Company at Fort Ross, in present-day Sonoma County, constituted the first large settlement of Russians in California. John Sutter's purchase of the fort in 1841 ended the concentrated presence of Russians in the area, although many natural landmarks and settlements in Sonoma County and its immediate vicinity take their names and descriptions from these early settlers. Most notable are the Russian River and Russian Gulch. During the gold rush, Russian miners established Russianville at the "junction of the Little North Fork [and] the North Fork of the Salmon River" (Gudde 1975:299).

In order to escape religious persecution by the Russian monarchy at the turn of the 20th century, many groups of Russian sectarian peasants came to the western United States, numbering about 6,000 individuals by 1921. The sectarian groups in California—consisting of Molokans, Holy Jumpers, and Wet and Dry Baptists, among others—largely settled in colonies in San Francisco and Los Angeles, maintained their religious traditions, and continued to speak and teach their children Russian. These colonies pooled their money and sent scouting families to purchase and work tracts of agricultural land in the Central Valley and as far as Washington, Utah, and Honolulu. However, most of these ventures failed because of the lack of funds necessary to buy large tracts of land, their unfamiliarity with California's soil and climate, and being duped by complicated land contracts. In 1911, a group of families from the Los Angeles colony traveled to Glendale, Arizona, and started a successful agricultural colony that numbered 700 individuals by 1921 (Speck 1921:24–30, 175–176).

POLISH

Polish settlement occurred sporadically throughout the state during and after the gold rush. In the south, the Polish settled in the Alhambra Valley, San Juan Capistrano, Los Angeles, Anaheim, Paso Robles, and in smaller, agricultural-based communities, and in the north, towns like Sutter Creek, Drytown, San Francisco, and Sacramento contained relatively high numbers of Polish immigrants (Haiman 1940:51–56). With a growing population in the state, in the 1860s, Polish committees formed in cities like San Francisco and Sacramento to assist immigrants and to raise support for Poland’s ongoing struggles against Russian occupation (Haiman 1940:74–75). One of the nation’s most notable Polish immigrants during the 19th century was actress Helen Modjeska (Figure 74).

Figure 74. Polish-born Shakespearean actress Helen Modjeska from Anaheim, circa 1880 (Courtesy of Anaheim Public Library).



WESTERN EUROPEANS

CORNISH

Immigrants from the British Isles who settled in California during the gold rush occupied important social and labor positions in the mines and camps. Of the main groups of immigrants, the Cornish were the most central to the mining industry (Mann 1982:143). As mining in Cornwall sank into a deep economic depression, Cornish miners came west in search of better conditions and new opportunities (Paul 1963:69). Arriving with extensive knowledge of hard rock mining techniques and stone masonry, they found ready employment in the ever-increasing number of lode mines in California and Nevada (Paul 1963:69). The Cornish played an important role in the quartz mines surrounding Grass Valley as well as influencing life and culture in the region (Mann 1982:142). Armed with superior mining skills, many Cornish rose to prominence as engineers, superintendents, and other positions of authority, and they exerted influence over the customs and culture of the California mines (Mann 1982:146).

IRISH

The census of 1850 lists over 2,400 Irish-born residents living in California. Many of these were itinerant miners working placer claims in the Mother Lode region. Evidence of the Irish presence in California’s gold regions include El Dorado County’s Irish Creek, numbering over 250 inhabitants in 1850, and Amador County’s Irish Hill and Irishtown (Gudde 1975:170–171). The Irish came to California, either directly from Ireland, from urban centers on the East Coast, or gradually “leapfrogging” westward as they found jobs in the country’s developing agricultural and industrial sectors (Blessing 1977:175). By 1860, the Irish had become the largest European-born population in California, accounting for nine percent of the state’s population; they would retain this status until 1880 (Blessing 1977:266). At the end of the placer mining era, Irish immigrants, being a large group, tended to settle where job opportunities were available rather than in small

communities with their fellow compatriots (Figure 75). As a result, no regulated pattern of Irish settlement developed, as many sought jobs in railroad and freighting, general labor, agriculture, and building trades (Blessing 1977:281–287).

GERMANS

Before immigrating to California, the majority of Germans worked and lived in eastern cities such as Philadelphia, Baltimore, and New York. Upon their arrival, they worked in the same occupations they had in the east or in Germany, including mining, furniture manufacture, mercantilism, hotel and saloon keeping, brewing, butchering, and baking. Many gold rush towns contained commercial establishments owned and operated by German Jews, who recognized mercantilism, rather than mining, as a path to success. In

El Dorado County, a group of Germans settlers established an enclave where mining composed the principal activity. Other regions with a strong German presence during the gold rush were Nevada County's German Bar and Calaveras County's German Ridge, where, according to Erwin G. Gudde (1975:130), Germans operated a number of mines. Like the Irish and other large European groups in post-gold rush California, Germans gravitated toward areas that promised work and opportunity rather than insulated, homogenous communities. Perhaps the most notable post-gold rush German settlement was the 1857 establishment of a cooperative, agrarian community in present-day Anaheim with a special focus on viticulture and wine production (Paule 1952:1).

With extensive experience in livestock, viticulture, and agriculture, Germans were well suited for life in California's varied provinces, making them ubiquitous components in the settlements and cities of the state. Many towns across the state featured German Turn Verein halls that served as recreational, political, and social centers for the local German community. Germans opened many of their annual picnics and functions to the public, helping them assimilate into local communities more rapidly than other ethnic groups. In urban areas with more-diverse populations, like San Francisco, Germans settled in areas that already included a high number of immigrant families of German descent. German immigration increased annually throughout the 19th century with few exceptions, and by the turn of the century, Germans were involved in all aspects of California business, agriculture, and service industries.

German Jews played a particularly important role in the economic development of California during the 19th century, especially in the creation of new retail businesses. One of the most famous Jewish personages in the retail business in California was Levi Strauss, world-renowned for his sturdy work pants made out of heavy denim (a French material for tents), reinforced with rivets, and today commonly referred to as "Levis." Strauss would become an international icon, and his company the world's largest maker of apparel, including jeans. Other successful Jewish



Figure 75. Irish-American Hall, San Francisco Bay Area, circa 1880s (Courtesy of The Bancroft Library, University of California, Berkeley).

businessmen in the San Francisco Bay Area during the 19th century included Bissinger, Brandenstein, Dinkelspiel, Fleishhacker, Gerstle, Greenebaum, Haas, Helbing, Hellman, Kohl, Koshland, Levison, Levy, Liebes, Lilienthal, Magnin, Meyer, Schwabacher, Seligman, Sloss, Stern, Sutro, Weill, and Zellerbach (Rochlin and Rochlin 1984; Levinson 1994; Kahn and Dollinger (2003).

SOUTHERN EUROPEANS

BASQUE

The Basque, or Euskaldunak, are a politically and culturally autonomous ethnic group from the area around the western Pyrenees and the Bay of Biscay, a mountainous region between Spain and France (Echeverria 1999:12). Basque immigrants began settling in the western United States, especially Idaho, Nevada, and California, during the gold rush, but the peak of immigration was between 1890 and 1930 (Echeverria 1999:1).

In California, they found employment as ranch hands, especially in sheepherding, which reflected their native agricultural roots to some degree, although sheepherding did not tend to be a native occupation in their homelands (Echeverria 1999:21). In addition, Basque families often ran boardinghouses and restaurants, such as the St. Francis Hotel in Susanville (Figure 76), which was a popular Basque lodging house, as well as bar and restaurant. Similar hotels, lodging houses, and restaurants were built or acquired by Basque families in California, and today many still serve Basque foods and act as Basque social halls for community events and meetings. Basque communities flourished within larger townsites, especially in the southern Central Valley towns of Bakersfield, Los Banos, and Fresno. The restaurants and boardinghouses, called *ostat-uak*, in these communities helped newly arrived immigrants establish roots in the United States. “In exchange for the promise of loyal patronage and friendship, Basque *hoteleros* provided food and shelter, arranged jobs, encouraged recreation, and served as translators for . . . newly arrived Basques” (Echeverria 1999:1). California continues to have one of the largest Basque populations outside the traditional Spanish-French regions. These communities remain active today, providing a cultural continuancy, as several existing Basque social clubs and/or restaurants attest (Echeverria 1999:16).



Figure 76. St. Frances Hotel, Susanville, Lassen County. The hotel was a popular location for Basques living in the region, providing lodging, food, and social events (Courtesy of euskalkultura.com).

SPANISH/PORTUGUESE

Portuguese immigrants to California first arrived as miners, as evidenced by the Portuguese Gold and Silver Mining Company founded in 1863, but the majority found jobs in whaling and agriculture. The first sizeable wave of Portuguese immigration to California occurred between 1850 and 1880, with settlement occurring predominately along the central coast of California (Figure 77). By 1880, upwards of 75% of California’s Portuguese population resided in this region because of its close proximity to the sea for whaling and its agricultural opportunities (Graves 2004:21).

Portuguese whalers held a prominent role in offshore whaling in the region until the industry “suffered complete dissipation” by the 1880s (Graves 2004:21). Up until this time, Portuguese whalers provided an important linkage to the western Azores and were thus responsible for increased Portuguese immigration into the United States. Additionally, many New England whaling boats made their last stop in the Azores to fill their crews before heading to various ports in California.



Figure 77. The Portuguese family of P. J. Sarmento at their home in Hanford, in Central California. (Courtesy of San Joaquin Valley Library System and the Online Archive of California).

After the demise of the whaling industry, the Portuguese largely worked in agriculture and dairying. By 1880, over 60% of the state’s working Portuguese population participated in some form of agriculture (Graves 2004:25). From 1880 to 1910, the San Francisco and Oakland Bay Area featured the most Portuguese growth in California, with Portuguese in Alameda County soaring from 2,500 to 7,650 (Graves 2004:34). From 1911 to 1914, Portuguese working on sugar plantations in Hawaii also immigrated to California in large numbers (Brown 1944:68). Although the Portuguese settled throughout the central coast region, large communities also existed in the Central Valley, Sierra Nevada foothills, and northern California (Graves 2004:27).

ITALIANS/ITALIAN-SWISS/SWISS

Although California’s first Italian immigrants arrived prior to the 19th century, mostly as missionaries and adventurers, large-scale immigration began during the gold rush (Sensi-Isolani and Martinelli 1993:7). Italians found work in the gold mines of the Mother Lode region during the late-19th and early-20th centuries and played an important role in the state’s agriculture industry, particularly in the wine-growing regions of the state (Kosberg 1952:8). The first wave of Italian immigration into California came predominately from northern Italy, but southern Italian immigration gradually increased towards the end of the 19th century. Italian immigration to California was quite significant in numbers compared to other ethnicities, and by 1870, over half of all Italian immigrants in California resided in the greater San Francisco Bay Area (Sensi-Isolani and Martinelli 1993:10) (Figure 78).



Figure 78. Italian-owned ferriers, Oakland, circa 1907 (Courtesy of Oakland Public Library, Oakland History Room).

The Italian-Swiss also immigrated to California in large numbers, many settling along the northern coast and in the Mother Lode region, particularly throughout El Dorado, Amador, Calaveras, Stanislaus, and Tuolumne counties. Most of these immigrants came from the Canton Ticino region of Switzerland, although most spoke an Italian dialect. Reportedly, over 20,000 Italian-speaking Swiss immigrated to the United States between 1850 and 1930, fleeing poverty and territorial disputes (Rolland 2008).

SUMMARY

Interpreting the evolution of towns in California requires a broad understanding of local, state, regional, national, and, in certain instances, world events that influenced immigration, altered the marketplace for goods and services, and created new technologies. Notwithstanding the broader implications of economics, culture, and technology, California's towns shared many common characteristics and evolved at various rates due to their proximity to transportation networks, navigable rivers, reliable supplies of water, cultivatable lands, and sources of energy. The sustainability of certain industries often held the key to prosperity of towns, and in other situations, prosperity was tied to a town's ability to be flexible and change direction during periods of crisis, such as natural disasters or economic downturns. Small towns may have lacked the same level of infrastructure as large urban centers, but many small towns nonetheless were quite diverse. As described in Chapter 4 of this study, as compared to large cities, many small towns possessed the full range of property types, including municipal buildings, factories, business districts, residential neighborhoods, water and sewer systems, schools, and parks. The interrelationship between culture and work is critical towards interpreting the site-specific context of towns. Towns that relied on single industries for their economic sustainability often felt the greatest impact from cyclical changes in the local, regional, national, and world economies. Whether addressing site-specific town features or an entire town, evidence of cultural and economic shifts should be visible in the archaeological record. As noted in the beginning of this chapter, because of the diversity of towns in California and the sheer size of the state with marked differences in climate and geography, it would be impossible to capture all the nuances of every town. Instead, the thematic approach taken in this chapter is intended to provide the reader with the broadest of information to help construct specific historic contexts and to support scholarly archaeological research questions, and ultimately, defensible recommendations for site significance.

CHAPTER 3: ARCHAEOLOGICAL PROPERTY TYPES

The next step in creating a context for evaluation is to identify relevant archaeological property types that link the historic context to the site. This section uses the historic data presented in the previous chapter to develop a list of archaeological property types that may be present in town-sites. This chapter emphasizes the types of properties that are likely to be encountered and scales that are conducive to evaluation. These properties fall into the following research themes: Townsite Creation, Infrastructure, Industrial, Service Industry, Mercantile, and Residential. The property types are listed in Table 5.

ARCHAEOLOGICAL FORMATION PROCESSES AND SURVIVAL

Archaeological sites are created and altered in a variety of predictable ways. Over the past 30 years, archaeologists in California have modeled these formation processes and developed schemes to predict the potential for archaeological deposits in towns and cities where the historical ground surface is obscured. The following questions are based on criteria developed by Peter Schulz (1979):

1. Did the site's occupants engage in activities that would have created features or durable remains in sufficient quantity for archaeological analysis (e.g., household, blacksmith, laundry, store, warehouse, industrial process, etc.)?
2. Was the area in question occupied before or during a transitional event, either regulatory (e.g., city water/sewer installation), natural (e.g., fire or flood), or personal (e.g., death, household moving) in nature?
3. Is there evidence that archaeological remains created by these events or processes may have survived to the present (i.e., absence of deep basements, the presence of protective concrete surface)?

An affirmative answer to some or all of these questions may indicate that potentially important archaeological remains were created and may have survived to the present. Conversely, where it is unlikely that either archaeological remains ever existed in a particular location or that postdepositional forces have destroyed or compromised them, archaeological test investigations should be focused in more sensitive locations or may be entirely unnecessary.

WHAT IS AN ARCHAEOLOGICAL PROPERTY TYPE?

The *Secretary of the Interior's Standards and Guidelines* (48 FR 44716–44742) define a property type as “a grouping of individual properties based on shared physical or associative characteristics.” The property type links the events and processes described in the context with categories of archaeological features and sites that were created by those historic processes. We can predict that the site of a mid-19th-century single-family domestic complex, for example, is likely to contain several categories of archaeological remains based on what we know of this type of facility: buildings (dwelling, carriage house, etc.); perimeter features (fence line, planting, etc.); utilities (well, cold cellar, etc.); and open space (formal garden, kitchen garden, etc.). What constitutes a property type in this case will depend on the investigation's goal and where the significance of the property lies. If the entire complex is being evaluated, then it may be useful to define the property type as “mid-19th-century domestic complex.” In this way, the site as a whole can be compared to other domestic sites. Often the residential lot is the most useful scale for evaluation

Table 5. Property Types in Townsites.

Townsites Property Themes	Property Type Category	Property Type Features
Townsite Establishment and Evolution	reclamation, restructuring, and flood protection	landfill, terrace, channelized waterway, levee, ditch
Infrastructure Development: Utilities	waste disposal facilities water systems electrical systems transportation facilities	sewer, refuse dump reservoir, conduit, pump station generation station, transmission line road, bridge, ferry crossing, railroad, support facility
Infrastructure Development: Municipal Facilities	public service facilities (e.g., courthouse, church, assembly hall, hospital, fraternal organization, jail, etc.) public open space facilities (e.g., park, fairground, arena) schools	structural remains, waste accumulation, designed yard or ground, artifact cache public garden, ad hoc open space, activity area building, yard or activity area, privy
Industry	building structural remains disposal features social spaces	foundation, forge, casting floor, machine mount raw material, by-product, waste accumulation rest break area
Commercial Behavior: Service Industries	building structural remains disposal features	foundation, cellar, basement food waste accumulation, artifact cache, by-product
Commercial Behavior: Mercantile	building structural remains stock	foundation, cellar artifact accumulation
Domestic Behavior: Townsite Residents	buildings yards refuse disposal features	house foundation, storage dugout activity area, garden, fence, path, well sheet refuse, artifact cache, privy

as contemporaneous remains on a single parcel functioned together and are best understood as elements of a system. Conversely, if only a portion of the property is being examined, then the scale of analysis might be reduced to individual features—such as the stone-lined remains of the household’s cold-storage dugout—each of which might constitute a property type. In short, property types should be defined at whatever scale will be most useful for evaluation and decision-making.

WHAT IS AN ARCHAEOLOGICAL FEATURE SYSTEM?

Although site constituents or property types may be evaluated individually, treating each as an isolated element may not do justice to their research potential as a combined unit because these components functioned within larger structures. The spatial arrangement of a series of domestic buildings and structures, for example, constitutes important data in its own right in addition to information that may be gleaned by investigating each component individually. Site elements that functioned together in this way are known as feature systems (Hardesty and Little 2000:23). The content of a feature system is derived from documentary, ethnographic, or oral sources, in addition to archaeology, and may include several property types that functioned together at one time. Townsites typically include many of the property types identified below. The challenge to the researcher is to identify the functional and chronological linkages that will assist in determining the properties' research potential.

TOWNSITE PROPERTY TYPES

Table 5 depicts example property types found in towns and is organized by the kinds of activities that created them. These small-scale property types—often individual archaeological features—may be evaluated singly or linked in feature systems to create larger property types that capture the site's values more completely.

TOWNSITE ESTABLISHMENT AND EVOLUTION

This category encompasses the archaeological manifestations of the processes by which townsites were created and how towns assumed their basic configuration, both through intentional design and vernacular influences. Towns were formed through a variety of processes, including the creation of formal plat maps and subdividing land as well as the purposeful shaping of natural features through techniques such as cutting and filling, channelization, draining and terracing (Figure 79). In cities such as San Francisco and Sacramento, preparing the site was often undertaken jointly by government—which would raise the streets—and landowners who then had to fill their parcels and convert a ground floor into a basement. Smaller towns with concomitantly smaller purses would usually forgo these major public works projects. The result tended to be ad hoc solutions, based on the needs and resources of individuals.

Archaeological remains of these efforts may consist of layers of clean fill or fill mixed with rubble and waste deliberately deposited to level uneven ground, elevate a ground surface above flood stage, or to construct a levee. Cultural materials in the fill usually lack tightly defined contextual association and may have limited information value aside from their ability to help date fill events. Cutting episodes may be less archaeologically distinct. These are often evidenced by the absence of waste that would have accumulated on long-occupied surfaces or physical evidence of cutting itself such as marks left in rock or a stratigraphic disruption.

Catastrophic events that shape or reshape a community such as a flood or fire might be represented by broad layers of silt or ash. These strata may be dated through archival research and by interpreting stratigraphic relationships of features constructed in response to the events.

Postholes, sometimes with remnant posts, are evidence of backyard fences or enclosures. By themselves, postholes would not meet the threshold of importance under NRHP Criterion D, but they may provide evidence of lot layout and conformance (or otherwise) with legal property boundaries.



Figure 79. Building platform, Feather River, Butte County. Excavation into the hillside created a level surface. The arrow indicates stone terracing (Photograph by ASC, Sonoma State University).

Physical remains include landfill that created buildable surfaces out of the humps and concavities of the natural site. Figure 80 shows a cross-sectional trench excavated through part of a filled-in creek. These strata and their contents enable us to reconstruct the process (was it a single event, a series of events, or a long process of natural alluviation?) and its timing. Floral remains in these pollen traps may show how urbanization affected the local vegetation. To protect themselves from seasonal floods, low-lying towns channelized creeks and built levees (Figure 81) that frequently became roads.



Figure 80. Filled-in creek channel to make buildable land, Stockton, circa 1890 (Photograph by ASC, Sonoma State University).

INFRASTRUCTURE DEVELOPMENT: UTILITIES

This subcategory includes the remains of water supply systems, sewers, and waste disposal (Figure 82); electrical power generation and distribution systems; and similar utilities. These features may have been created by municipal or private entities and often correlate to information on Sanborn and other maps. Where deviation appears, it provides a means for addressing research issues such as actual application of available technology.



Figure 81. Levee road, Oroville vicinity. *The proclivity of early Californians to build towns on floodplains was mitigated by building levees whose tops were used as roads (Photograph by ASC, Sonoma State University).*



Figure 82. Brick vault and stoneware sewer pipe, Woolen Mills Chinatown, San Jose, circa 1887 (Photograph by Jerry Doty, KEA Environmental).



Figure 83. Redwood box drain, Woolen Mills Chinatown, San Jose, circa 1887 (Photograph by Jerry Doty, KEA Environmental).

Physical remains of water or sanitation systems might include reservoirs, wells, ditches, and pump stations to transport the water to town; stoneware, terra cotta, or redwood pipes (Figure 83); drainage ditches, sometimes lined with redwood planks to create hydrologically efficient trapezoidal drains; brick or concrete sewer vaults for clean-out access; manhole covers; and lead, copper, cast-iron, or composite metal pipes for drinking water and hydrant systems.

Waste disposal facilities such as municipal dumps also fall in this category; however, ad hoc waste accumulations on individual lots fall into other categories (Commercial Behavior: Service Industries, Commercial Behavior: Mercantile, and Domestic Behavior: Townsite Residents) depending on the entities that created them. Formal municipal dumps would be distinguished by larger quantities of materials and are likely identified as such through archival research. Distinguishing formal municipal dumps from ad hoc disposal features is important to address issues such as the impact of sanitary codes.

INFRASTRUCTURE DEVELOPMENT: TRANSPORTATION

The infrastructure category also includes the remains of transportation facilities, which may still be in use. The flat grade necessary for a railroad bed frequently had to be cut through natural topographic rises, creating two archaeological phenomena: a level grade and a cut (Figure 84). Viaducts had to be constructed over creeks and other defiles. Abandoned railroad lines often run down streets, buried by a recent layer of asphalt. Remains of roads would be evident as linear features consisting of materials ranging from hard-packed earth, sometimes with wagon ruts, to gravel, oiled gravel, asphalt, macadam, or even concrete. Ferry crossings may be marked by massive ringbolts set in

bedrock on both sides of the crossing and associated lengths of cable or chain (Figure 85) used to drag the ferry between the banks. These privately operated facilities often predate publicly constructed bridges that had to wait until confidence in the future coincided with an adequate tax base. The remains of early bridge abutments are often found close to existing bridges.



Figure 84. Cut-and-fill landscape features created by railroad construction, Butte County (Photograph by ASC, Sonoma State University).



Figure 85. Ringbolts associated with a ferry landing are sunk into bedrock, Feather River near Oroville, circa 1880. Sections of the massive ferry chains can be found nearby (Photograph by ASC, Sonoma State University).

INFRASTRUCTURE DEVELOPMENT: MUNICIPAL FACILITIES

This subcategory includes the remains of parks, hospitals, schools, jails, fraternal halls, cemeteries, and similar public facilities. These features may have been created by municipal or private entities and often correlate with information on Sanborn and other maps. Differences between the archaeological remains and archival sources may provide data to address research issues such as actual application of technology.

This subcategory includes the remains of both public and private institutions that provide a public service seen as fundamental to community infrastructure. Unlike the transportation subcategory, these sites tend to be complex feature systems that reflect a range of social behaviors. These site types have more of a human or social footprint than, for example, infrastructure related to roadways, and present an opportunity to examine issues of class, gender, and social differentiation. Although the remains of these public-oriented facilities systems are quite different from one another, they are linked by their focus on public benefit.

Physical remains of public service spaces and buildings might include wood, stone, brick, or concrete foundations, either slab or raised. Hospitals, for example, were generally purpose-built (Figure 86). The degree to which a particular building adhered to the medical theory of the time can be approached by comparing archaeological data and contemporary public-health theorists. As a practical matter, builders' trenches may appear as linear alignments contiguous with brick walls, and robber trenches indicate that bricks had been salvaged for reuse. Often the functions of these buildings are best determined through archival research rather than discerning specific functional areas from the archaeological remains because of the physical similarity of these remains. However, where documentary information is absent, the archaeology might inform on local innovations in building techniques. Schools, as with parks, may be distinguished by open spaces for recreation areas.

Parks are recreational open spaces often created by formal planning decisions—such as Sonoma Plaza, a National Historic Landmark—or from the grounds of historic homes that became encapsulated by the expanding town (Figure 87). In either case, archaeology can reveal the space's evolution and functions, both formal and informal. While extant features are properly the territory of landscape historians, the remains of superseded and decayed walls, walkways, retaining walls, etc. may fall under the purview of archaeologists who would be wise to consult their colleagues in understanding these elements. In emergencies, parks frequently became temporary camps for the displaced population or military encampments. Thus, in addition to the expected infrastructure—pathways, planting beds, and perhaps a bandstand—a park may contain many of the elements of a residential site: building platforms, sanitary facilities, and artifact accumulations. Although cemeteries are best known for what is under the ground than on the surface, like parks, they have distinctive infrastructure and decorative elements (Figure 88). The 19th-century rural-cemetery movement separated church from graveyard and transformed the formerly

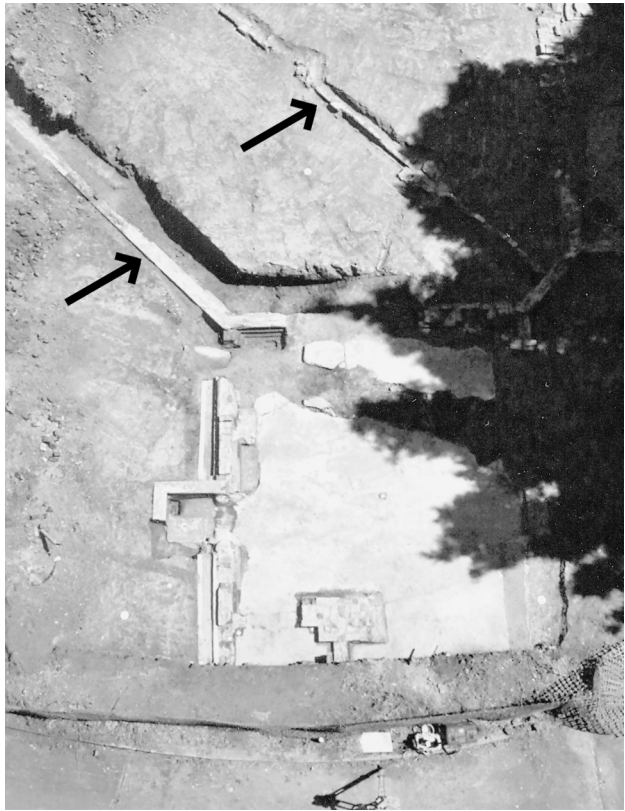


Figure 86. *Brick and concrete remains of the Merchant Marine Hospital, San Francisco Presidio, 1875. By this time, hospitals were purpose-built and followed, to various degrees, the advice of public health professionals—such as building in long wings (as in this example) to maximize sunlight (Photograph by ASC, Sonoma State University).*



Figure 87. Park landscaping, Alum Rock Park, Santa Clara County, circa 1920s. Public parks often evolved from earlier incarnations and incorporated existing landscaping, building platforms, roads, and bridges (Photograph by ASC, Sonoma State University).



Figure 88. Hamilton Cemetery, Butte County. Established in the 1850s, it is now overgrown, yet remnants of its original park-like landscape are visible (Photograph by ASC, Sonoma State University).

random accumulation of burial plots into a designed, park-like environment for public use. Hard surfaced paths encouraged contemplative strolling and families might picnic under plantings of somber cypress trees. Many of these features and activities leave archaeological signatures.

INDUSTRY

The industry category includes the physical remains of the manufacturing workplace, including buildings, structures, agricultural landscapes, industrial facilities, and industrial by-products such as foundry slag, as well as objects that represent the workers themselves. Industrial features may include structural remains, such as basements or building foundations, made of brick, concrete, wood, stone, or earth. Metal foundries required a cupola in which to melt the metal, a casting floor where the molten metal was poured into the mold, facilities to store fuel and raw materials, as well as machine shops for finish work. A coking oven may have been present to reduce coal to coke. The casting floor might be evidenced by sand with ash and coke. Mill foundations or machine mounts by their very nature must be substantial features, so would consist of brick or concrete embedded with vertical bolts (Figure 89). In many cases, the remains will correlate to structures depicted on Sanborn insurance maps and other documents. The larger purpose and function of industrial structural remains such as foundations are often more readily determined through archival research than archaeological excavation.



Figure 89. Engine Foundations, Stockton. Developed in a pressurized boiler, steam was piped to the engine where it was injected into a piston chamber that converted its expansion into energy. Steam engines developed strong vibrations due to the action of the piston and had to be securely bolted down to stop the engine from shaking itself from its foundation (Photograph by ASC, Sonoma State University).

Small-scale workers in wrought iron—blacksmiths and farriers—were ubiquitous in 19th-century California. Every one- or two-man shop would contain a forge, an anvil (frequently stabilized by attaching it to a buried section of tree trunk), and a workbench. At blacksmith shops and farrier-ies, iron filings will be found at the bench location where cold-working processes such as filing and grinding took place. Hammer scale is evidence of hot-working techniques by which hot iron is formed on the anvil. Material storage areas are indicated by concentrations of iron stock; they may be inside or outside the former building. Industrial waste may include furnace clinker, slag, hammer scale, filings, tools, iron stock, metal hardware parts, coke, ash, firebrick, and masonry and concrete rubble.

Care should be taken with industrial remains as they may be contaminated with hazardous materials. Where preliminary archival research indicates that the archaeologist may encounter toxic deposits, it may be appropriate to test soil samples for contamination or consult a Certified Industrial Hygienist. Of course, the contaminants are themselves evidence and may be important sources of information about California's industrial beginnings.

The field of industrial archaeology is concerned as much with workers as with the processes of industry. In small-scale enterprises, work and non-work space tend to be physically close or intermeshed: the home of the blacksmith or japanner commonly adjoined his shop. In larger businesses, division of labor and on-the-job status differentiation may separate the shop floor from a formally or informally constituted break room. Artifacts from workers are variable and may include food remains and the evidence of personal behavior such as smoking paraphernalia or alcohol containers. A concentration of these types of artifacts in an industrial context may mark employees' non-work spaces. A dump area may have been established to receive both industrial and workers' refuse (Figure 90).



Figure 90. Ad hoc refuse dump, Empire Mine, Nevada County (Photograph by ASC, Sonoma State University).

COMMERCIAL BEHAVIOR: SERVICE INDUSTRIES

This category includes the physical remains of commercial establishments in which personal services were acquired or dispensed, such as hotels, brothels, saloons, social clubs, restaurants, theatres, laundries, and tailors/seamstress' shops. Livery stables and, as the automobile changed the transportation landscape, garages and service stations fall into the service industry category. Again, there is overlap between these categories; in many small communities, livery stables had an associated blacksmith shop, a property type considered within the Industry categories.

These remains may be manifested as structural remains or discarded artifacts in the form of sheet refuse or hollow-filled features (Figure 91). Physical remains possible in this category are very broad given the diversity of functions included herein and overlap with the Commercial Behavior: Mercantile and Domestic Behavior: Townsite Residents category. Because many service entrepreneurs conducted business out of their homes, it is often difficult to distinguish artifacts that represent domestic behavior from those created because of their work. The archaeologist's challenge is to interpret the remains in light of that fact. Trying to separate a domestic feature from a strictly commercial one may be a fruitless effort in the field, but it may be possible after the materials have been cataloged and analyzed.

Structural remains associated with the service industries might include foundation remains discussed above, as well as features such as a brothel crib or base of a laundry boiler (Figure 92). Again, these entities will be difficult to distinguish from their archaeological signature alone. Rather, archival research into land-use history will allow the archaeologist to identify the business that created the archaeological remains.

Ad hoc waste accumulations may simply consist of a sheet deposit of artifacts strewn across a



Figure 91. Shallow trench filled with sediment and artifacts (both domestic and commercial). This trench, located at the rear of a parcel in Oakland, is believed to have drained wastewater from the Chinese laundry that occupied the front of the lot; it was filled by the early-20th century (Photograph by ASC, Sonoma State University).



Figure 92. Brick furnace, Stockton's Sing Lee Laundry, operated 1890s–1930s. The business heated water in a boiler mounted above this brick furnace (Photograph by ASC, Sonoma State University).

former backyard or household waste tossed into a disused backyard pit, privy, or well. As these collections provide the archaeologist with a highly focused picture of the establishment and people who used it, they can often be used to address important research themes.

Backyard privies, pits, and wells might consist of wood- or brick-lined refuse-filled holes dug into the surrounding native soil (Figure 93). The features may be only a few feet deep or may extend more than 25 feet deep depending on the water table. Privies may be 2-1/2 or 3 feet square or consist of several contiguous units creating a “two-seater” or more. A backyard privy had a use life of 5–10 years, depending on household size. If not cleaned out, a new privy pit would often be dug close to the old one and the outhouse itself moved to cover it. In such situations, the household refuse in the abandoned privies could be used to address issues of household change over time. Wells may be 3–5 feet in diameter but might also be square, and they may have pipe casing if used into the 20th century. Often privies and wells were situated in close proximity, an important factor for studying sanitation and adoption of municipal codes. In some circumstances, sewer pipes will be present, indicating the privy was converted to an outdoor water closet rather than bringing the toilet into the house. This factor will be useful for interpreting adoption of local municipal codes (Figure 94).



Figure 93. Refuse pits, Golden Eagle Hotel, Sacramento. *These purpose-built refuse pits were surely intended to be filled, cleaned out, and refilled. Conditions changed and the features were abandoned by the early 1860s; they had been filled with a large and diverse collection of artifacts and faunal bone (Photograph by ASC, Sonoma State University).*

Sheet deposits of artifacts often accumulate over time on a living surface as people discard unneeded objects in their yards and work areas. This was a common practice before the advent of municipal refuse collection. These may be primary deposits created by a specific activity at that location, secondary deposits consisting of objects removed from elsewhere, or a mixture of both. Sheet refuse may have also been introduced as fill to raise low ground. Accumulation that takes place over a considerable period creates both problems and opportunities for the archaeologist. A sheet deposit created by several occupants is more difficult to interpret than one formed by a single event or by a documented business even over a long period. The latter can be used to understand the business and how it changed over time. A sheet refuse layer that is composed of a dense concentration of artifacts and is capped by a layer that represents a documented event, such as a fire or flood, may retain its integrity of association with the business that created it. In this situation, sheet refuse may often be used to address important research themes.



Figure 94. Redwood drains, Heinlenville, Santa Clara County, circa 1880s. To prevent construction of Heinlenville in the 1880s—a Chinese and then Japanese community—local officials insisted that the development have individual sewer connections. The redwood drains soon gave out and by about 1906 were replaced with a modern system of ceramic pipes plumbed into the main sewer (Photograph by ASC, Sonoma State University).

COMMERCIAL BEHAVIOR: MERCANTILE

Mercantilism subsumes a broad range of commercial establishments that provided goods and nonpersonal services to the general public or wholesale to the trade. These include the remains of retail store buildings (e.g., general merchandise, chandlers, butchers, junk dealers, etc.) and warehouses, as well as the commercial artifacts they contain.

Structural remains from these establishments might include foundations (of wood, stone, brick, or concrete); cellars or basements for storage; or specialty areas such as icehouses or refrigeration units for cold storage. Commercial establishments were often housed in substantial brick buildings to protect them from the fires that frequently leveled California towns. These buildings had either perimeter or pier foundations (Figure 95).

Ad hoc accumulations of artifacts may be present in the form of sheet refuse strewn across a former backyard or unsalable stock disposed of in a pit or in a disused privy or well (Figure 96).



Figure 95. Square brick piers supported the wooden floor joists of commercial buildings. High real estate prices encouraged merchants to construct multistory buildings in which commercial and residential functions were separated according to floor (Photograph by ASC, Sonoma State University).



Figure 96. Ceramic stock of a Chinese merchant, circa 1860s. The redundancy of this collection of Chinese ceramics testifies to its origin in a general store. The materials were deposited in the 1860s. Every piece is either cracked, chipped, or broken, and consequently unsalable (Photograph by ASC, Sonoma State University).

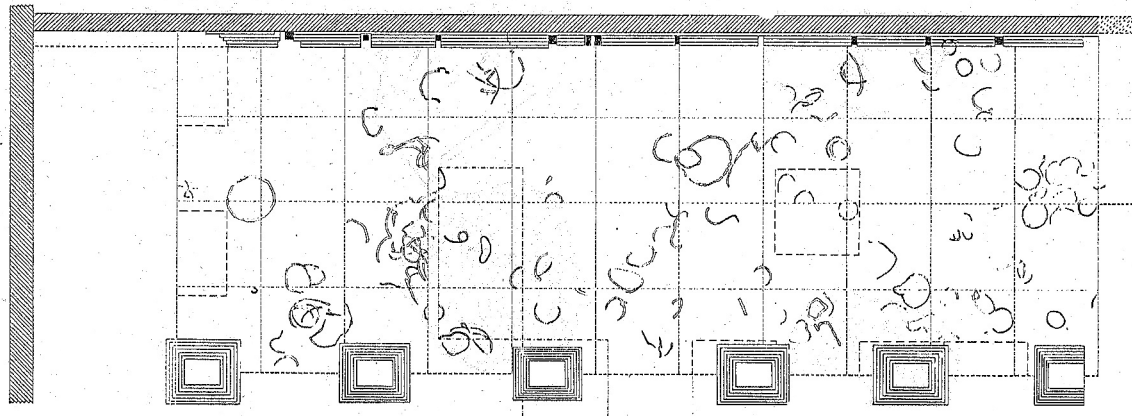


Figure 97. Distribution of burned barrel hoops, Warren's store, Sacramento, 1852. The distribution of burned artifacts—such as the barrel hoops shown in this graphic—document how stock was laid out in the store (Graphic by Brenda J. Butler, California State Parks).

Artifacts from the enterprise may be found in the backyard or on the premises, particularly if a catastrophic fire or earthquake destroyed the building and it was abandoned (Figure 97). Alternatively, fill might have been brought in to level a lot after such an event, capping the mercantile remains. Primary deposits such as these provide information about the availability of types of artifacts in early California as well as the physical layout of these establishments.

DOMESTIC BEHAVIOR: TOWNSITE RESIDENTS

It is perhaps a conditioning of contemporary society that the single-family home is considered the most common type of residence. While many research questions are readily approached with remains from this category of site, it is not the most common form of residence in townsites. Archaeologists often contend with remains from (1) boardinghouses, including lodging houses,

and hotels, which include both the boarder and host families; (2) tenement dwellings, where individual/extended families lived in multiunit apartment buildings and flats (i.e., suites of rooms within what was once a single-family home); (3) nuclear/extended families living in commercial/residential mixed-use buildings; and (4) nuclear/extended families living in single-unit buildings (i.e., the traditional home and yard setting).

There is considerable overlap between residential and service industry sites. Boardinghouses and hotels, for example, are considered the latter, although they were also residences. Many people conducted business out of their homes, and it may be difficult to distinguish remains of domestic behavior from those of the commercial establishment.

Archaeological remains on residential sites often fall into one of the following categories: buildings and structures, yard and domestic infrastructure, and refuse disposal features. While brick and stone features can be readily identified archaeologically, the sills of many wood-framed buildings were placed directly on the ground and leave only the most ephemeral of remains such as stone or concrete steps leading up to a wood-framed house. Specialized cooking structures associated with traditional ethnic foodways may be found near the residence (Figure 98).

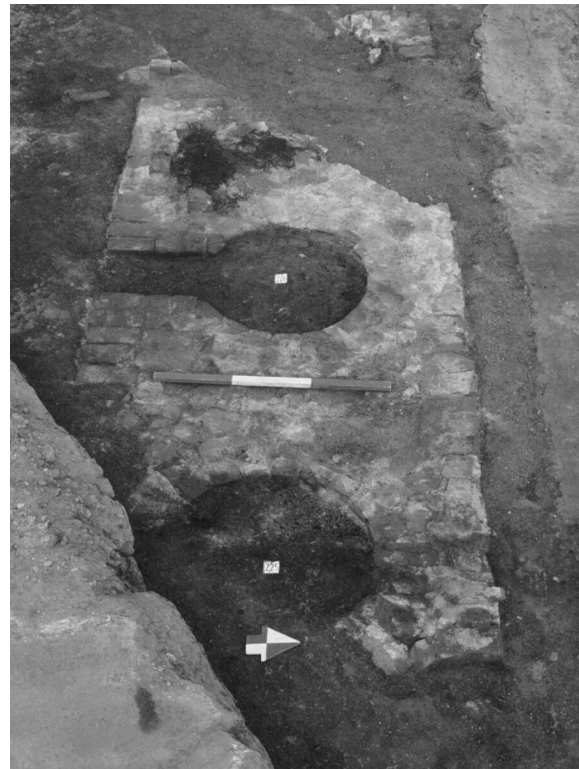


Figure 98. Chinese wok stoves, Los Angeles. Two stove bases of a row of four have survived in this example from a Los Angeles Chinese boardinghouse (Photograph by ASC, Sonoma State University).

Historical maps are often used to define house lots and orientate the archaeologist. Valuable as they are, these maps tend to show only officially designated divisions rather than the details of the vernacular landscape of a private garden based on the archaeology of fence lines, pathways, borders, and planting trenches (Figure 99). Although privy pits began to give way to plumbed sanitary sewers in the late-19th century, the outhouse frequently stayed in the backyard (Figure 100). Backyard wells were either drilled or dug by hand. The former is nothing more than a vertical hole in which was placed a hollow casing surrounded by a gravel pack. Hand-dug wells, however, are 3–4 feet in width and frequently lined with offset brick. The transition from privy to sewer and from well to municipal water created holes in need of filling, in which accumulated the domestic discards that are so informative of life in the past (Figure 101).



Figure 99. Fence post–marked boundary, Oakland. This line of fence posts from an Oakland backyard indicates a user-defined space rather than a legal boundary depicted on maps (Photograph by ASC, Sonoma State University).



Figure 100. Refuse-filled privy, Oakland, after excavation. A variety of technologies are shown by this privy, which had been abandoned by the 1880s (Photograph by ASC, Sonoma State University).



Figure 101. Artifact-filled well, Los Angeles. In cities, the transition from hand-dug wells to municipal water supply was largely complete by the early-20th century—a process that created a bonanza for urban archaeologists. In smaller towns, however, the change often occurred later (Photograph by ASC, Sonoma State University).

CHAPTER 4: RESEARCH IN TOWNS

This chapter begins with a review of recent historiographical trends that are relevant to archaeology conducted within towns. The subsequent section focuses on published historical and archaeological literature organized by the four identified themes: Structure of a Community: Townsite Establishment and Evolution and Infrastructure Development; Industry: Social and Technological Implications; Commercial Behavior: Service Industries and Mercantilism; and Domestic Behavior: Townsite Residents.

The following discussion should not be considered an exhaustive examination of all the extant literature; the sheer magnitude of scholarship that has been and continues to be produced precludes any such claims. Rather, the following research design is merely a starting point for understanding the potential historical significance of the property types defined in the previous chapter. At the end of each subsection is a list of research questions—questions raised by the scholarship in light of the archaeological remains of the given property type—that are intended to guide subsequent investigations. Additionally, the resulting archaeological and historical research domains and questions are presented in tabular form. The table in its entirety can be found in Appendix A.

SMALL TOWNS IN AMERICA

Until recently, American urban historians have concentrated their time, energy, and attention on a small segment of the population: the nation's largest urban centers. The major eastern metropolises and several mid-size American cities distributed across the nation have been scrutinized in various studies that have contributed to our knowledge of 19th-century urban life, such as Barbara Berglund's (2007) *Making San Francisco American: Cultural Frontiers in the Urban West, 1846–1906*. Yet each of these cities, such as San Francisco, had a population of at least 25,000 or more in the late-19th century and were among the top 75 largest cities in the United States in 1860. While such studies provide insights into urban life, they only capture a small portion of the population of the United States. In fact, in 1860 less than 10% of the population nationwide lived in those larger cities. Although urbanites in large cities outnumbered those in small towns, the smaller town was a more omnipresent institution and played an important role in the broader marketplace for rural populations (U.S. Census Bureau 1975:11–12). Therefore, this study focuses on the development of towns or townsites throughout California, including towns that in the recent past have been encompassed by large metropolitan areas. The analyses and insights derived from study of urban centers may be generally applicable to small towns provided the difference in scale and related factors are acknowledged.

Hundreds of books and articles published from the 1850s through the present chronicle California's physical and cultural development by region and county, although many are largely descriptive or biographical. John S. Hittel's *The Resources of California*, published first in 1863, and reprinted in 1866, 1869, 1874, and 1879, is one of the earliest and among the most popular books written about the Golden State in the mid-19th century. Hittel (1863) provides detailed descriptions of the region's resources and their potential wealth. In addition, Henry De Groot published an "informational, general, and statistical" guide to California in 1884. By the late 1870s and 1880s, hundreds of publications promoted California's climate, soils, and unlimited opportunities, including the Southern Pacific Railroad Company, *Out West*, and *Sunset* magazines.

In addition to historical treatments of California's growth, city and county directories documented the commercial and demographic attributes of towns, cities, counties, and rural areas. Printed as early as 1850, just 2 years after the discovery of gold in the state, these directories not only informed residents and visitors about a town's population and available services, but they also helped forge community identity. Initially, prominent gold-rush towns like Marysville, Sacramento, and Grass Valley produced directories as did large cities like San Francisco, but as the expansion and industrialization of settlements fostered incorporated towns and general community solidification, the production and demand for directories increased until even the remotest areas of the state, such as Del Norte County, were covered (Quebedeaux 1992:16–17,54).

Inclusion of towns and cities in directories depended upon factors such as population, location, and political importance. Many county directories encompassed several counties, such as G. W. Rentschler's 1893 *Directory of Yolo, Solano, Sutter, Butte, Colusa, Glenn, Placer, Nevada, Yuba, Tehama, Sacramento and Shasta Counties*, and others focused on singular counties or localities. Aside from standard regional, city, county, multicounty or business registers, certain directories performed even more specialized functions. Wells Fargo's 1871 and 1873 Chinese directories listed principal Chinese merchants and businesses of San Francisco; their expanded 1878 and 1882 directories covered prominent Chinese businesses in Sacramento, Stockton, Marysville, San Jose, Portland, Oregon, and Virginia City. Publishers Hamilton and Brown and McKenney, George Crofutt & Co., among others, published railroad directories between 1870 and 1875 and included tourist guides and business, statistical, and social information of towns located on principal rail lines (Quebedeaux 1992:42,116,218–220).

Business and residential directories were published by a variety of companies during California's early period and grew along with the needs of the state's population. Eventually, smaller publishers gave way to larger, prominent companies who streamlined and popularized directories. Notable publications include G. Owens' (1866) regional work *A General Directory and Business Guide of the Principal Towns in the Upper Country, Embracing a Portion of California*, providing information on eight cities and towns; Henry G. Langley's *Pacific Coast Business Directories* (various years) that included information for cities and towns located in other states; L. M. McKenney's array of multicounty directories beginning in 1871, as well as his *Coast County Directories* (various years); L. L. Paulson's three regional directories published between 1874 and 1875; and R. L. Polk's *California State Gazetteer and Business Directory* published from 1888 to 1898 (Quebedeaux 1992:210–211).

THE “NEW URBAN HISTORY” AND THE “NEW WESTERN HISTORY”: AN OVERVIEW OF HISTORIOGRAPHICAL TRENDS, 1970–2000

THE “NEW URBAN HISTORY”

Historians first began using the phrase “the new urban history” in about 1968. This “new” approach was characterized by several traits: (1) an interest in linking the disciplines of sociology and history by applying sociological theory to historical data; (2) a methodological emphasis on the use of quantitative data to test hypotheses and answer analytical historical questions; and (3) an eagerness to widen the scope of urban studies to include the social experiences of ordinary, unexceptional people, that is, to write history “from the bottom up” (Thernstrom and Sennett 1969).

The new urban historians were preoccupied with a limited range of problems, chief among them the social and economic questions of urban stratification and social mobility and the geographical questions of urban population fluidity (physical mobility or migration), urban spatial structure, and patterns of urban growth (Thernstrom 1970, 1972; Warner 1970, 1978; Knights 1971). As the quantitative methods became more sophisticated, historians addressed more complex historical questions, such as class and ethnic differences in spatial and social mobility; rates and trends in social mobility; immigration, migration, and differential opportunity; family structure of whites, blacks, and other ethnic minorities in 19th-and-early-20th-century cities; the texture of neighborhood life in distinct sections of a city; urban institutions (schools, churches, reformatories, voluntary associations); the urban environment; and the social organization of work and the family. Sociological notions of status change, family structure (age, sex, married/single, family size, etc.), and mobility exercised a strong attraction for the new urban historians because they combined measurable elements of both social structure and processes of change, development, or transformation.

Some of the proponents of the “new urban history” were uncomfortable with the rubric itself because they believed the “new” method of historical inquiry had implications far beyond urban history as a specialized field. At the very least, measurement and quantification offered the possibility of testing the reliability of interpretations based upon colorful examples and casual impressions. The full implications of the computerization of a great deal of social and urban historical data unfolded over the following decades. Since the 1960s, the census manuscripts, for example, have become a familiar research tool for all students of U.S. history and have been utilized for a variety of research purposes. They were especially helpful to pioneering scholars in the 1970s in investigating patterns of social and geographic mobility, family structure, and residential location.

An even larger impact on the historical profession, however, has been a general reorientation of the discipline over the past three decades toward studies of the ordinary and everyday, which has resulted in a wholesale transformation of the subject of history. Since the 1960s, academic historians have focused more on issues of race, class, gender, and sexuality, issues that had formerly received little or no attention from the discipline. This reorientation of scholarly historical inquiry received a further boost in the 1980s with the so-called cultural/linguistic turn as historians began to follow more of the theoretical approaches of sociologists and anthropologists such as Clifford Geertz (1973) and Claude S. Fischer (1975). Consequently, in the study of urban life, greater emphasis has been placed on urban “cultures,” their diversities and commonalities. Scholars of American history, for instance, looking for sharp distinctions between East and West, on the whole did not find them. Settlers in the West, concluded Dean May (1994) in his study of three western frontier communities, “did not come to remake the world as much as to change their own place in it.” More-recent social histories of the 1980s and 1990s that utilized older quantitative approaches failed to find evidence that opportunity, social mobility, and economic equality were greater in the West than in the East, but the studies turned up a wealth of information on social experiences of ethnic groups, women, and immigrants in western communities (Faragher 1979; Mann 1982; Hurtado 1988; West 1995; Rohrbough 1997).

To understand American cities is important, but to understand the experience of the majority of common, everyday elements of the American population, we must study small towns and rural areas. Both the quantitative techniques and the qualitative ones employed by historians over the past 30 years can be used to analyze small towns. Indeed, as the vast majority of the population in the late-19th-century American West lived in small towns and the surrounding countryside, it is important to do so. The so-called new western history points the way.

THE “NEW WESTERN HISTORY”

The “new western history” developed around the same time as the “new urban history.” One of its central contentions was that the settlement of the Trans-Mississippi West was not a process of agrarian development of virgin land but was one essentially of continual imperial conquest. Historians, also committed to the concepts of “new urban history,” argued that population of the far western regions of the continent centered on towns and cities. Historians have focused on the major frontier cities of the American West because these were initially the centers of commerce and wealth in the region and remained so for the most part. As urban historian Blake McKelvey (1963) noted long ago, few small or middle-sized western towns achieved major proportions as urban centers unless they had done so by about 1890. Assuming this statement to be true, it is imperative that historians of towns and cities ask themselves the question—why? In addition, what of the process of decline in towns that flourished early and showed great promise, but withered and no longer exist?

A new generation of western historians has refocused attention on the role, function, and nature of small towns in the conquest and control of western space in North America. These studies have potential to materially alter our concepts of the relationship between urbanism and colonialism in settlement of the American West. Local histories of individual towns and urban places are numerous, but these “urban biographies” rarely contribute to the goal of understanding the relationships among towns and generalizations about western towns as a group and their mastery over the trails, mountain passes, river junctions, and coastal waters of the Far West. The phenomenon of town location in relation to settlement and colonization of space on the frontier, town building and the characteristics and tendencies in the organization of towns, and the factors involved in the growth process are key elements in understanding the broader context of the settlement of California in the last half of the 19th century. As Earl Pomeroy (1965:6,84,120) pointed out many years ago in his history of the states of the Pacific slope, the Far West was “more distinctively urban” than other earlier frontiers, and as of 1860, California was considerably more urban than the rest of the nation. Towns and cities in the West, wrote Adna Weber (1963:30–32) in his broad study of urban growth in 19th-century America, were out of proportion to rural districts elsewhere in the country and constituted 44.8% of the population in 1890. By that time, a vast network of villages, towns, and cities had spread across California that served as conduits between its centers of capital and resource-filled hinterlands.

STAGES OF URBAN GROWTH

Understanding town history requires knowledge of the underlying dimensions by which towns differ from one another. Furthermore, it is useful to develop predictable relationships that contribute to classification of towns according to some common characteristics. One method of doing this is to analyze changes in the structure of towns over extended periods of time. Rather than engaging in theory construction, most urban historians tend to create typologies that incorporate elements of time and space into a framework that is evolutionary in nature. While focusing on economic aspects of urban development, Wilbur R. Thompson (1965), for example, argued for four stages of urban growth: (1) export specialization, characterized by dominance by one industry or firm; (2) export complex, wherein exports become more diversified and the number of firms increases; (3) economic maturation in which local industries replace imports; and (4) regional metropolis, where export of services becomes a major function. Towns, however, are more than marketplaces and such an approach would need to identify parallel stages for political, social,

and cultural facets of a city's life cycle (Knight 1973:27–42). For instance, in these generalized stages, are there comparable societal structures that are useful indicators of changing vertical social stratification, such as income, wealth, occupation, ethnicity and religion?

In Thompson's stages, in the first stage of community development one would expect an autocratic system with high vertical differentiation or considerable inequality in the distribution of status, power, income, and wealth. The social structure would be pyramidal in nature and the status system rigid, with little mobility from one stratum to another. There would also be a tendency for this type of social structure to be associated with an autocratic (paternalistic) political system. Historically, autocratic-type communities have had a simple economic base, which has placed constraints on opportunities for individual upward mobility and on the degree of horizontal differentiation in these communities. Some were one-industry towns with an economic base dependent on lumber, mining, or textiles. Usually there was little specialization within the labor force. The number of these towns was larger when the society was at a relatively low level of industrialization and had a very labor-intensive economy (Hollingsworth and Hollingsworth 1979).

As communities became somewhat larger in the second stage of growth, one would expect that the economic and social structure became more complex with a larger middle stratum. With a more complicated economic base, manufacturing and commercial activities expand, and this type of town would have been more integrated into the national and regional economy. The power structure of the community would be more fragmented than that of a pyramidal social structure, political activity at a somewhat higher level of bureaucratization and professionalization, and the political process more formal. Oligarchy is the type of political system generally associated with these phenomena (Hollingsworth and Hollingsworth 1979). Frequently, those who exercised major control over the community's economic resources in small towns at this stage of development also dominated the town's social and political activities. These were typically local entrepreneurs and businessmen who had sufficient social contact with the citizenry through churches and other organizations to legitimize their authority to a broad stratum of society. Occasionally, the elites poorly articulated the values of the community, and ethnic, class, ideological, and other disputes erupted (Gutman 1976; Montgomery 1980).

Measuring social structural relations vertically and horizontally would provide comparisons of occupational complexity that might be attached to stages of economic growth. Generally, smaller cities are less differentiated horizontally than larger towns. As towns grow in size, so does the horizontal differentiation, with a resulting "diamond shaped social structure," including a complex middle stratum with a smaller upper and lower stratum, a structure generally associated with a polyarchic type of political system in which polity and political power is diffused or decentralized. Somewhat higher levels of income, wealth, and education transfer into demand for more-elaborate commercial buildings, improved medical and public health facilities, churches, libraries, fire and police protection, and transportation systems. This occurs, in part, because growth causes a town to coordinate and supply many functions for a larger area of smaller villages and their surrounding countryside.

These idealized stages of growth and types of towns are extracted from primary and secondary historical sources. They do not necessarily exist in reality but are conceptual tools used for making historical comparisons and generalizations. Individual communities will deviate from these predictive types, but the types may be useful to make comparisons among individual towns and cities and serve as a baseline for understanding more subtle and complex patterns of social change.

THE PROGRESSIVE MOVEMENT AND CITY CHARTERS

Municipal governance, political corruption, and the reform of municipal government have been major topics for historical scholarship in the field of urban history. In California, in the later 19th century, there was a great deal of urban growth stimulated by land speculation and the real estate boom of the 1880s. Local governments were weak, relatively poorly financed, and often in the control of businessmen with personal agendas. The inability to raise money hampered urban growth because infrastructure improvements, such as harbors, municipal water and power systems, roads, and sewage disposal systems, required public financing. The solution to this situation was the creation of charter cities.

Charters were granted to cities by state legislatures on a case-by-case basis, which gave to these municipal corporations broad police powers. Typically, these powers enabled local jurisdictions the financial autonomy they needed to raise money for infrastructure purposes, keep the peace, abate nuisances, and to generally keep order in the urban environment and harmony among their inhabitants so as not to disrupt private enterprise. Expansion of these municipal powers was sought by some cities in the middle decades of the 19th century to cope with rising crime, poverty and disease, or with physical threats to the city such as fire, poor sanitation, and moral corruption. Granted special taxing powers to cope with these “social evils,” cities created full-time police forces, fire departments, almshouses, and reformatory institutions. By the late-19th century, several states, including California, had altered the manner in which legislatures dealt with municipalities by passing general incorporation laws and granting specific powers to certain classes of cities based on population. Size played a significant role in distinguishing among municipalities and their powers. Larger cities were granted extra powers in order to cope with the special problems posed by large numbers of people. Towns and second-class cities, small enough theoretically to remain unburdened by urban problems, did not receive expanded powers to create boards of health, police departments, fire companies, or other governmental or semi-governmental structures (Boyer 1978; Teaford 1984; Monkkonen 1988).

By the early-20th century, California Progressives were interested in cleaning up government at all levels, but corruption in cities was particularly abhorrent because as crucibles for economic activity they influenced the rest of society. Progressive measures for the cities aimed at reform by removing them from the influence of self-serving political machines and modernizing the city by providing the necessary infrastructure for commerce through planning and physical infrastructure improvements, such as better street lighting, efficient garbage pickup, improved electric and water service, sanitary disposal, flood control, and planned transportation corridors. The urban agenda of the Progressives was buttressed by engineering, primarily sanitary engineering, and planning, especially promoting efficiency and commerce through land-use controls, i.e., zoning. Business leaders forged a political role for themselves that matched their ideology by working with mayors and other politicians as informal advisors and quasi-public consultants (Fogelson 1967:211–218; Boyer 1986:61).

PROPOSED THEORETICAL ORIENTATION: CONTEXTUAL ARCHAEOLOGY

Contextual archaeology emphasizes the specific historical, social, and cultural contexts of behavior rather than the supposed universal influences sought by the practitioners of processual archaeology. This approach parallels the general trend in the social sciences towards 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 creation of the past.

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. Many archaeologists have found the processualist hypothetico-deductive model useful in achieving methodological rigor. Others, however, feel that the approach has solidified into a canon that does not tolerate alternative ways of knowing. Philosophers of science have been insisting for some time that rigor in archaeology does not require an exclusively hypothetico-deductive approach (Feyerabend 1988; Wylie 1992, 2002). Wylie is critical of the perspective that archaeological data are important to the degree that they help scholars “answer questions” about the past and says 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 construction of chronologies. This claim reveals a naïveté about the process of historiography and the potential contribution of historical archaeology under other paradigms.

James Deetz (1988b:367) characterizes the nature of 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 the historical archaeologist and the social historian alike, questions serve to guide research not to constrain it. They 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 themselves taken up the banner, finding it desirable 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 quite dissimilar ideas about what artifacts mean. While processual archaeologists strive for predictability, postprocessualists insist that this is a vain search—that the meaning of artifacts changes with the context of their use (Hodder 1986; for several California examples, see Praetzellis and Praetzellis 2001).

Processual archaeologists are concerned with the development of general principles in relation to grand explanatory models in which individual cases are seen as only means to an end. Post-processualists often work in very different territory: they examine at the smallest of scales, the (re)constructed experiences of families and even individuals within those elements of contemporary social life to which the researcher feels they have access. The contextual approach is based on something that historical archaeologists have known for years: some of our most effective work is done at the small-scale, emphasizing the commonplace and bringing the lives of the

disenfranchised into focus. It is this very characteristic of the data—their placement in the realm of the small-scale, mundane, and personal—that puts household-level historical archaeology in a position to undermine and offer an alternative to universal interpretive models. According to archaeological theorist Matthew 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 suggests, tends to mask and homogenize the diversity of past human experience that can only emerge 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). Taking a contextual approach to historical archaeology provides us 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).

ARCHAEOLOGICAL RESEARCH DOMAINS AND RESEARCH QUESTIONS

Research domains are based upon past historical and archaeological findings and comprise ideas that form the highest, most generalized level of research orientation. The transformation of everyday life due to the development of industrial capitalism is one example. As Hardesty and Little (2000:26) point out, research that elucidates these ideas may provide insight into the human condition itself and can be investigated through a range of interpretive schemes (e.g., hypothetico-deductive, hermeneutic) and theoretical approaches (Marxism, feminism, etc.). Research domains change over time as scholarly and public interest in the topics evolve. Archaeological data contribute to this endeavor by addressing questions that align general research domains, and specific research themes that emerge from them, with particular archaeological contexts through a hierarchy of questions that differ in scale and specificity.

The hypothetico-deductive method may be useful to establish baseline information about an archaeological site. Using this method, one can ask and expect answers to practical, lower-order questions about a property’s structure, content, and condition. Of course, all archaeological sites speak of their own structure and content. This level of characterization is prerequisite to the evaluation of a site, but in most cases these data do not constitute the important information required by Criterion D (see Steps 1 and 2 in Chapter 5). Important sites also contain information about the historical conditions that created them because they are, to varying degrees, local manifestations of forces that affected society at large. Thus, important research questions will often be designed to show how general forces played out in specific contexts (see Step 3 in Chapter 5).

The notion of “questions that count” is useful but potentially misleading because the concept of “question” presupposes its corollary “answer.” While it may be possible to reconstruct with finality the evolution of a piece of technology or the layout of a homestead, the evolution of everyday life is an open-ended research domain whose function is to stimulate questioning, not to close it off.

Considered in isolation from their scholarly context, many of the research questions that follow may provoke a “so what?” for they may not appear intrinsically important, nor are they likely to elicit simple unequivocal answers. Instead, their role is to stimulate the researcher’s imagination in productive directions relative to the research themes from which they were developed. The answer to “would this piece of industrial technology have been considered up-to-date, archaic, or

somewhere in between?” is not particularly important unless the result is an insight into some larger process that addresses other more interesting, higher-order questions such as: Why was archaic technology used at this place and time? What factors were behind the builder’s decision to either use older technology or newer innovations?

TOWNSITE RESEARCH THEMES

This section identifies research themes, based on property types, which may be useful for evaluating the significance of towns under NRHP Criterion D. The relevant literature has been grouped into four themes: (1) Structure of a Community: Townsite Evolution and Establishment and Infrastructure Development; (2) Industry: Social and Technological Implications; (3) Commercial Behavior: Service Industries and Mercantilism; and (4) Domestic Behavior: Townsite Residents.

The themes are grouped as a way to highlight particular aspects of human behavior, although most topics are in reality inextricably linked. The most important topics animating current research are included, but this research design should not be considered comprehensive. It is merely a place to initiate investigations. Not every research theme is expected to apply in all situations. Individual researchers may modify and supplement these themes and questions as appropriate, given the specific site conditions and historic context. The historic context provides base-level data necessary for the formulation of research questions and theoretical assumptions regarding towns in California.

ORGANIZATION OF RESEARCH QUESTIONS

The organizational structure of this chapter is a departure from the current accepted standard for historical archaeological research designs. It is organized along property themes that crosscut more-theoretical issues such as understanding behavioral expressions of gender, ethnicity, or Victorian ideologies. Rarely does one set out to “dig up” gender or some such construct. Rather, the archaeologist identifies a property that contains sufficient materials and strong historical association that permits understanding of household behaviors, behaviors which are expressions of ethnic identity, gender roles, etc. In order to maintain the relationship between the archaeology and those higher-level conceptual issues, this chapter provides several levels of research questions that should help researchers develop these connections.

The larger historical inquiries about California towns can be framed by rather simple questions that belie their deeper ramifications and the complexity involved in answering them. There are multiple levels of inquiry, from basic “how” and “when” questions to overarching theoretical constructs. In this research design, research issues that are largely addressing historical issues are captured in the first set of bulleted items. The second grouping of bulleted items are questions that have been derived from the historical literature and are offered here to help direct the construction of site-specific archaeological research questions. The questions are unlikely to be addressed solely through archaeological research; however, the archaeological findings can and should be interpreted back to a higher level that might help inform on other avenues of inquiry.

The final level of questions is contained in Tables 6 through 11 (also compiled in Appendix A), that follow each thematic research summary. These questions are distinct from the bulleted research questions in that they are at least partially addressable through archaeological means. Some of the questions may be more readily addressed through documentary sources; however, that

does not preclude them from being relevant research questions in the contextual theoretical framework. Many questions are “building blocks,” such as who and when, that in and of themselves do not meet the criteria of importance necessary for National Register eligibility under Criterion D. Building-block questions, however, must be answered in order to move on to higher-level research issues that would meet the National Register criteria of importance.

Although documentary sources provide a necessary framework for understanding townsites, questions used to evaluate sites under Criterion D should focus on how archaeological data can resolve issues that documents alone cannot address. To that end, the questions in the tables following each research theme are organized along property type features. Features such as cut-and-fill episodes will address different issues than refuse accumulation features. In many cases, one property type will have the potential to address multiple research issues and questions.

STRUCTURE OF A COMMUNITY: TOWNSITE ESTABLISHMENT AND EVOLUTION AND INFRASTRUCTURE DEVELOPMENT

TOWNSITE ESTABLISHMENT AND EVOLUTION

This section addresses the processes by which towns were created or shaped by vernacular influences and how they assumed their basic configuration. Towns were formed through a variety of processes, including the creation of formal townsite plat maps, subdividing land, natural occurrences such as floods, avoidance or incorporation of natural features, as well as the purposeful shaping of natural features through techniques such as cutting and filling, draining, terracing, channelization, and construction. Locations of natural resources or commodities such as timber or ore were also frequently a factor in townsite creation, such that resource areas may be limiting factors in town placement. Interpreting town formation involves both landscape archaeology and historical landscape architecture, in that each discipline focuses on past landscapes through physical, archaeological, and documentary evidence, and in some cases, oral history (Kelso and Most 1990).

The rise and fall of towns in California can be credited to a range of environmental, political, economic, and cultural factors. Clearly, environmental factors such as floods denuded or destroyed entire towns and caused them to relocate. Mining towns located in precipitous high elevations required dependable transportation systems for long-term sustainability and survival. When transportation systems failed, in some cases, so did the towns. Politics shaped the cultural landscape of California. When county seats were vacated or relocated, the result was a precipitous decline in local revenue and a loss of business. For many California towns, when natural resources neared depletion, there were few opportunities available for sustaining a viable economy. The result was out-migration and economic decline. This was particularly true in single-resource-dependent towns tied to mining, logging, and agriculture. While some communities shrank into obscurity, others managed to survive, despite economic downturns, principally when communities were able to diversify their economic base. The railroad and later the automobile revolutionized transportation and created a network of goods and services, in many cases well outside the cores of the central business districts of small towns. Factories began to relocate to the outskirts of towns where land was cheap and labor was plentiful, resulting in the creation of suburbs. California's highway system, which developed in the first two decades of the 20th century, induced further expansion to the periphery of towns, providing more efficient intra-town access and, in some cases,

resulting in the creation of entirely new communities. The rise and decline of California towns are fundamental parts of the state's evolving landscape. Understanding the reasons for these phenomena are integral to interpreting local and regional change that shaped the character of communities and created the present cultural landscape.

Historians and others have used classical central-place theory to explain city location as a function of distance, geography, mass production, and competition. The theory helps explain the spatial distribution of both large and small towns. It is based upon the notion that towns or cities evolve from the center and expand outward into the periphery, either through planned or unplanned development. Over time, the relationship between the town center and the periphery changes, as residential housing expands outward and factories relocate outside the core areas of the town. Over the past few decades, this theory has been modified so as not merely to describe gradations but also to understand functional differences within towns, the concept of range in consumer patronization of smaller or larger supply centers, the importance of exchange to the creation of centrality, and the pivotal role of the entrepreneur as a source of economic value (Beavon 1977; Barton 1978; King 1984).

Town builders in frontier California who sought their fortunes in the new communities they founded also viewed their mission as transforming these patches of undeveloped and hostile wilderness into more-appealing, productive, and civilized territory. The ubiquity of the town as a mode of frontier colonization begs such questions as: What types of people chose to reside in these small towns, and who were the town builders, merchants, saloon and hotel keepers, madams of brothels, boardinghouse operators, and other townsfolk? Only a few comparative studies have been done regarding town builders or merchants as a group (Mann 1982). Historical narratives of the colonists, capitalists, and entrepreneurs who founded cities and towns in 19th-century California emphasize the ingenuity and pragmatic approach of town builders in extending the nation's rule and its dominant economic, intellectual, and cultural institutions to new regions of the state. They did this through building businesses, industries, commercial buildings, seats of government, schools, churches, libraries, public works, civic and voluntary associations, and building hotels and residences to house visitors and local families alike. Given the colonial context in which these narratives were written, it can be expected that they are ethnocentric and self-serving texts. Nevertheless, it seems obvious that leadership and business acumen in town building were key elements bringing in the accretions to prosperity that determined the success or failure, as well as the growth curve of towns.

The roots of the landscape archaeology approach in North America are in the environmental archaeologies of the 1950s, the spatial analyses of 1960s "New Archeology," ecology, and the desire to reconstruct prehistoric ecosystems, as well as the cultural geography of Carl Sauer and the Berkeley School. Outside academia, archaeologists were enlisted from as early as the 1930s to help reconstruct historical environments such as Colonial Williamsburg and Monticello, as well as a variety of military sites whose extant features had long since disappeared. Although all these approaches are still practiced, recent years have seen the rise of postprocessual orientations that seek the social meaning of landscapes, which are seen as the venue for manipulation of symbols at a large scale, often for the purpose of social reproduction (Tilley 1994). Urban landscape archaeologists work at a variety of scales, from an individual backyard to an entire town. From a practical perspective, the "landscape" is a useful concept that takes the results of the small scale ("site") at which archaeologists usually work and makes it relevant to larger issues.

In contrast to traditional interpretations that saw town layout as merely a functional response to environmental conditions or an expression of the era's aesthetics, contemporary researchers emphasize its ability to mold the ideology of its residents. According to Ostrogorsky (1987:13), "the social terrain came to mirror the physical" after the re-creation of Seattle following the fire of 1889. Ethnic (Penner 1997) and utopian communities (Porter and Lukerman 1976) provided explicit and readily understandable examples: Tarlow's (2002, 2006:133) work at the Koreshan Unity Settlement as well as Hine's (1953) and Van Bueren's (2006) research at Llano del Rio all emphasize archaeology's ability to reveal the territory "between vision and practice."

Critical theory has been used effectively to understand the political dimensions of 18th- and 19th-century town layout. Miller (1988) and Leone and Hurry (1998), among others, have shown how baroque city design helped to reproduce a town's social hierarchy. Baroque city design, stemming from the Italian Renaissance, utilizes prominent city structures in establishing power and authority. Generally, this design involves building significant city structures at important parts of the city's landscape, with main roads connecting them and serving as grand approaches. Smaller side streets fill the triangular-shaped areas in between the main roads. Archaeologists have pointed out that although towns' formal plans are well known, informal walks, fence lines, and other features revealed by archaeology are a record of variability that can be seen as resistance to these seemingly irresistible forces. Informal landscape modification has been the subject of research of several archaeologists in Boston. Nancy Seasholes (1998) showed that local people began filling the town's millpond before it was officially reclaimed for construction, and Balicki (1998) documented similarly unsanctioned drainage projects. Both also recorded variations in the structure of wharves and the bulkheads used to contain street fill.

Changing urban environments also have been reconstructed through palynology. Schoenwetter and Hohmann (1997), for example, examined the pollen record of Las Vegas from its inception in the 1840s to the beginnings of the modern town in 1905. Beaudry and Mrozowski (1987) used both pollen and plant macrofossils to reconstruct the rate of ecological succession and biotic variation.

According to Deetz (1977:15), "fill is an artifact itself, and intelligent study of it can be most instructive." This sentiment is echoed by Geismar (1987:49), who observed that the history of a city as seen via the content and structure of the fill on which it sits "tells it like it was." Yentsch (1993) has written an excellent discussion of the research potential of urban landfill. Classifying fill as either "purposeful" or "inadvertent," Yentsch discussed its importance both as a stratigraphic phenomenon that is evidence of a town's growth, as well as the artifacts, abandoned structures, and environmental remains it contains. Most archaeological studies of fill have been carried out in large urban cities such as New York, Providence, Philadelphia, and San Francisco. However, smaller towns that boomed in the 19th century only to fade were also built partly on fill and have attracted archaeologists' attention (Arnold and Keyes 2000). Landscape architects and historians interpret horizontal stratification and fill through a variety of techniques that involve analyses of aesthetics, cultural influences, and city planning.

In summary, the above literature review identifies several overarching principal research issues under the Townsite Establishment and Evolution theme where archaeological research can be instructive:

- Reconstructing the processes by which townsites were established and changed over time
- Documenting the technology of townsite creation by cuts, fills, street bulkheads, buried ships, etc. Documenting ad hoc and unsanctioned efforts to fill, drain, and otherwise create usable land
- Understanding the interactions between townsites and larger regions, with a focus on how these relationships compare to other California towns and towns within the American West
- Reconstructing vegetation succession and environmental change at various scales
- Assessing the relationship between townsite design and ideology
- Understanding the mechanisms that cause the decline of a community

The following bulleted questions on the Townsite Establishment and Evolution theme have been derived from the historical literature and are offered here to stimulate creativity in constructing site-specific research questions. The following are unlikely to be addressed solely through archaeological research; however, the archaeological findings should be interpreted back to a higher level that might help inform on other avenues of inquiry.

- Were there stages of growth in California towns, and if so, how do you define those stages? Were there defined periods of growth associated with events causing economic change? How can we characterize the difference between large communities and cities and small towns that resulted in differing growth patterns? How were public and private spaces distinguished? Were those distinctions a basis for controlling various aspects of social interactions?
- Can a profile of town builders be identified through creation of typologies? How did town builders or leaders choose carefully among alternative townsites? How did they attract residents, investors, financial institutions, merchants, or industries? What techniques did they use to promote and build their towns, and are those techniques comparable from town to town? When did these town builders arrive during the life cycle of a town, how long did they stay, and did they move from one upstart town to the next? How readily were newcomers accepted into the power structure of small frontier towns? What were the loci of local control—the saloon, the general store, churches, a dominant industry, or the courthouse and law enforcement?
- Why did some towns flourish and become large cities, while others stagnated, and still others languished and died? What were the political, social, cultural, and economic dynamics that contributed to town growth or diminution?

Table 6 presents a series of questions pertinent to features relating to the Townsite Establishment and Evolution theme, and these are keyed to the principal research issues. These questions are distinct from the research questions above in that they are at least partially addressable through archaeological means. Appendix A contains all research questions in an easily accessible table format.

Table 6. Research Questions for Townsite Establishment and Evolution.

Property Type Features	Research Issue	Archaeological Research Questions
THEME: Townsite Establishment and Evolution – Reclamation, Restructuring, and Flood Protection Properties		
Fill, terrace, channelized waterway, levee, ditch.	Reconstructing the processes by which townsites were prepared and structured and changed over time.	What is the relationship between the archaeological and documentary evidence of initial town layout? To what degree did preexisting conditions influence town layout? Can stages in the development of California towns be discerned through the archaeological evidence of townsite creation?
	Documenting ad hoc and unsanctioned efforts to fill, drain, and otherwise create usable land.	How does this feature relate to municipal ordinances regarding infrastructure improvements? Is it possible to distinguish ad hoc and unsanctioned efforts to fill, drain, and otherwise create usable land? What was the scope of community acceptance and participation in municipal improvements? For example, how quickly do individual property owners comply with requirements for establishing sidewalks or conforming to street grades? Is there evidence of unsanctioned (i.e., illegal but perhaps socially accepted) efforts to create usable land? What is the evidence of nonlegal owners' improvements (i.e., the expression of possessory rights)?
	Understanding the interactions between townsites and larger regions.	How did urban places (of all sizes, e.g., villages, towns, and cities) relate to their larger zones of influence during the frontier and succeeding stages of development? How was town layout shaped by outlying contacts, transportation routes, and avenues of supply?
	Documenting the technology of townsite creation by cuts, fills, street bulkheads, buried vessels, etc.	How was town layout influenced by geological features? How was the environment physically modified to create the townsite? How were engineering features (such as levees) created? What physical changes were necessary to modify the original site to conform to the vision promoted for it (for example, the imposition of a street grid on steep topography)? What does it indicate about modifications necessary to conform to culturally defined notions of habitability?
	Reconstructing plant succession and environmental change at various scales.	Is it possible to reconstruct plant succession and environmental change at various scales? What does such information indicate about changing land use? What was the pre-townsite environment and what was the impact of non-native introduced species? What was the groundcover preceding the gold rush? How was this affected by initial settlement? How did early land use vary from place to place? How was land used around dwellings? How did the domestic landscape compare with that of workplaces? What is the pollen signature of post-disaster (e.g., fire, earthquake) environment? What evidence is there of species succession?

Property Type Features	Research Issue	Archaeological Research Questions
	Assessing the relationship between townsite design and ideology.	To what extent does the physical layout of the town reflect the vision proposed by townsite boosters? Where there is lack of conformance, what causal factors might be responsible? For example, did carrying out the plan require extreme engineering efforts (e.g., a grid over steep/hilly site)? What do ad hoc and unsanctioned land modification efforts indicate about the relationship between townsite design and ideology (real vs. ideal behaviors)? What implications did the placement of fences, buildings, and landscaping have for modes of social interaction?

INFRASTRUCTURE DEVELOPMENT

This section addresses resources that fall under the rubric of infrastructure. Following Joel Tarr (1984) and others, these include the remains of transportation features, water supply, sewers and waste disposal, power (electrical or gas) systems, parks, hospitals, schools, jails, cemeteries, and similar public facilities.

Of the property categories presented in Chapter 3, infrastructure has received the most explicit attention by architectural historians. Studies have been made of the political dimensions of town building, law enforcement, and fire protection, but since the 1970s, much of the historical literature on infrastructure has focused on the ecological, cultural, environmental, and socioeconomic dimensions of town building. Indeed, a whole subset of scholarship has emerged since the 1970s that melds urban and environmental history into a single field: urban-environmental history (Rosen and Tarr 1994; Stine and Tarr 1998; Keyes 2000).

UTILITIES: PUBLIC HEALTH AND SANITATION

The first-generation urban-environmental historians focused on certain important issues, among them the timing and health consequences of the industrial revolution in urban environments. Among the central themes explored were the transition from private to public water supply and how cities dealt with the increasing volumes of industrial and human waste (Melosi 1980, 1981; Tarr and Dupuy 1988; Tarr 1996). Whereas the first generation of urban-environmental historians focused on scientific expertise and technology in remediating environmental problems, during the following decades, the next generation focused more on culture, politicians, civic leaders, and the formation and limitations of public policy as key aspects in shaping the urban environment. More recently, urban-environmental historians have begun to ask larger, more complex questions about human action and nature in the urban environment, the multifaceted influences of human habitation on urban natural resources (land, water, air, etc.), and the reciprocal influence of “nature” on the built environment and its residents (Cronon et al. 1991).

For instance, Blake Gumprecht’s (1999) *The Los Angeles River: Its Life, Death, and Possible Rebirth* dealt with those who lived along the Los Angeles River, starting with Native Americans, followed by Spaniards, Mexicans, and Anglos. As in nearly all towns and cities of any age, the process he described of residential invasion and succession were early and regular features of the landscape.

In a similar fashion, Ari Kelman (2003), in *A River and Its City*, explored sequential and differential use of space on levees in New Orleans. He examined how different groups conceptualized the Mississippi River and its levees as useful urban space from the early-19th to mid-20th century. For French Creoles, the river was a promenade in the European tradition. For African American slaves, it was an escape route. And for New Orleans businessmen, the Mississippi River waterfront was a commercial space. Other important studies include those undertaken by Ann L. Buttenwieser (1987) and Lois Wille (1991), focused on the filling in and shaping of the New York and Chicago waterfronts, respectively. Ann Vileisis's (1997) *Discovering the Unknown Landscape* described the filling of U.S. wetlands in urban settings. The evolution of San Francisco's waterfront from a small village to the metropolis of the Pacific is explored by James P. Delgado (2009) in his important recent book, *Gold Rush Port: The Maritime Archaeology of San Francisco's Waterfront*.

In her article on "The Postmodernization of Landscape: A Critical Historiography," Dianne Harris (1999) discussed postmodern trends in urban landscape history noting that by using a broadly interdisciplinary framework, recent scholarship has revealed a new landscape history based on the study of human interaction with landscapes, including parks, urban open spaces, cemeteries, and gardens. Linda Nash (2006), in *Inescapable Ecologies: A History of Environment, Disease, and Knowledge*, explored the relationship between bodies and the environment in California's Central Valley from the mid-19th century to the present. In doing so, she revealed the massive industrialization and shaping of the landscape as representative of human alienation from the environment, when in fact the landscape profoundly affected those bodies inhabiting these areas through health concerns, physical complications, and disease.

These works notwithstanding, urban-environmental historians tended largely to be concerned with either urban planning and design or urban systems. One of the first works to explore urban planning in light of urbanites' attempts to reconcile the city and nature was Peter J. Schmitt's (1969) *Back to Nature: The Arcadian Myth in Urban America*. Stanley K. Schultz's (1989) *Constructing Urban Culture: American Cities and City Planning, 1800–1920* examined the interaction of city planning, law, public health, and urban technology and engineering in structuring the nature of urban life itself. Additional important works include Anthony Sutcliffe (1980), *The Rise of Modern Urban Planning, 1880–1914*; Donald Krueckeberg (1983), *Introduction to Planning History in the United States*; Harold L. Platt (1983), *City Building in the New South: The Growth of Public Services in Houston, 1830–1915*; Christine Boyer (1986), *Dreaming the Rational City: The Myth of American City Planning*; Richard E. Foglesong (1986), *Planning the Capitalist City: The Colonial Era to the 1920s*; Daniel Schaffer (1988), *Two Centuries of American Planning*; William Wilson (1989), *City Beautiful Movement*; Harold Platt (1991), *Electric City: Energy and the Growth of the Chicago Area, 1880–1930*; and Ann Keating (2002), *Building Chicago: Suburban Developers and the Creation of a Divided Metropolis*.

Sanitation infrastructure is largely an invisible part of the urban landscape but is an essential component of urban life. The culmination of nearly 30 years' of work as an environmental and urban historian, Martin V. Melosi's (2000) monumental synthesis of the evolution of urban infrastructure, *The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present*, is an indispensable resource for understanding three major aspects of urban sanitary systems: solid-waste disposal, wastewater and sewage removal, and water supply. The extensively researched book is an excellent entrée into the scholarly literature on the subject. Melosi focused on the physicians, engineers, and politicians who brought the urban infrastructure into existence. In each major section of the book, Melosi outlines the major demographic, economic, political, social,

medical, scientific, and legal contexts of urban sanitation and developing views on disease, public health, and the environment. Using contemporary engineering periodicals, he explains relevant sanitary technologies, charts their diffusion from a broad national perspective, and describes their specific application in various urban contexts.

Environmental historian Tarr (1996:9) pointed out that water supply and disposal were generally the first elements of a growing town's infrastructure to become outmoded. Early sewers, he asserted, were built to receive storm runoff, not household wastes. The mid-19th-century sanitary movement achieved rapid results: by 1880, about one-quarter of urban households nationwide had abandoned their earth privies and cesspools for flushing toilets, and water carriage technology was giving way to sewers and piped water (Tarr 1996:181–183; Melosi 2000:110). In California, small towns lacked the infrastructure dollars that larger cities had to implement sewer and water construction hookups to in-town residents. Some rural towns in California lacked town-wide sewers until the late 1910s or 1920s.

Environmental and urban historians have focused on case studies of disposal technology systems to reconstruct the contexts for understanding the transition from individual to community-wide sanitation facilities in American towns and cities (Tarr 1984:52), and historical archaeologists have tended to focus on individual features—notably privy pits—more for the artifacts they contain than their role in urban sanitation. Several exceptions to this pattern are found in Kathleen Wheeler's (2000) edited volume *View from the Outhouse* in which archaeologists focus on structure rather than archaeological content. Although these studies focused on cities rather than small towns, the approaches are applicable here. Brian Crane (2000), Jay Stottman (2000), and John McCarthy and Jeanne Ward (2000) all examined residential sanitation technologies. The strongest common theme was the degree of local variation in waste disposal practices.

Although municipalities adopted ordinances that banned or required various technologies to be implemented, as might be expected archaeological studies have found that enforcement was spotty, and implementation of citywide sanitation improvements took time and were differentially achieved. A neighborhood's wealth and dominant ethnicity appear to have been determining factors in the level of compliance with local codes. The symbolic significance of waste and the impact of this attitude on disposal affected public health: privy vaults 30–40 feet deep placed the effluvium out of mind but into the town's groundwater where it spread a variety of diseases (Stottman 2000:54). These findings lend support to historian Maureen Ogle's (1996) contention that changes in American culture and values, rather than scientific-technological innovation, were the prime movers behind this era's sanitary revolution.

Over the past decade, germ theories have received considerable scholarly attention in the inter-related areas of epidemiology and urban water supplies (Tomes 1998; Warboys 2000). Beginning in the early 1880s, the science of bacteriology gave chemists and microscopists from medical colleges new perspectives that cast doubt on the design of many urban water-management systems. To the scientist, by the turn of the 20th century, the logic of the equation between protection of the environment and the health of a city appeared to be self-evident. The strong link between water quality and public health in American cities was unassailable. Any water management plan based on the use of lakes or streams without some method of purification was problematic. By the 1910s, towns and cities across the country without filtration systems began adding chlorine to their drinking water to ward off outbreaks of typhoid fever (Johnson 1913).

Water supply issues have brought forth considerable scholarship. There is Nelson M. Blake's (1956) *Water for the Cities: A History of the Urban Water Supply Problem in the United States*, which examined how Boston, New York, and Philadelphia obtained water and the ecological ramifications of dams and reservoirs. The most dramatic story of water "theft" is Los Angeles—explored in Remi Nadeau's (1974) *The Water Seekers*, Abraham Hoffman's (1981) *Vision or Villainy: Origins of the Owens Valley-Los Angeles Water Controversy*, and William Kahrl's (1982) *Water and Power: The Conflict Over Los Angeles' Water Supply in the Owens Valley*. Norris Hundley, Jr.'s (2001) *The Great Thirst: Californians and Water* made similar arguments about water "imperialism" by municipalities in the East Bay, San Francisco, and San Diego. Fern Nesson (1983) studied the decision-making and costs of acquiring a protected watershed area for Boston in *Great Waters: A History of Boston's Water Supply*. Charles H. Weidner (1974) has done something similar for New York City in *Water for a City: A History of New York City's Problem from the Beginning to the Delaware River System*. Sarah S. Elkind's (1998) *Bay Cities and Water Politics: The Battle for Resources in Boston & Oakland* was a comparative study of regional water-supply issues. Most of these studies focused on development of distant municipal-water systems for major urban centers; the story of water supplies for small towns has not received as much attention. Most California towns in the 19th century relied on wells. The early construction of many water systems for the small burgeoning towns of the Bay Area is described by Sherwood D. Burgess (1992), the author of *The Water King: Anthony Chabot, His Life and Times*. Likewise, J. D. Galloway's "Design of a City Water System" (1923) explored the transition of small Sacramento Valley town—Davis—from a private to a public municipal system in the 1910s and the problems of public financing.

More-recent work has explored wastewater collection. In *All the Modern Conveniences: American Household Plumbing 1840–1890*, Maureen Ogle (1996) considered 19th-century household plumbing, demonstrating how town and city dwellers devised ingenious water-supply and wastewater disposal technologies in the absence of sewers or piped-in water. Joanne Abel Goldman (1997), in *Building New York's Sewers: Developing Mechanisms of Urban Management*, examined more of the development of centralized sewers and of centralized management.

Permanent residential settlement in towns and cities increased the amount of waste produced per acre and the severity of waste management problems. Industrialization compounded the problem by increasing the volume of waste produced per capita. During most of the 19th century, removal and disposal of municipal waste was largely the responsibility of private households and businesses. Municipal authorities assumed that households would dispose of it by pitching it into the streets or carrying it out of town. Although Los Angeles boasted as having municipal garbage men in the 1880s, they merely deposited the leavings in a riverbed below the city to be devoured by wild animals or removed by the natural flow of the river. In some towns, scavengers were allowed to rummage through garbage to collect whatever they found useful. Some cities even paid them to do so, but this crude form of recycling did little to reduce the volume or offensiveness of the trash problem. Concerns about the sanitary evils of garbage led to the adoption of municipal refuse policies in the late-19th century.

To archaeologists, refuse deposits found on domestic sites are a source of information about diet, health, and consumer behavior. To 19th-century municipal governments, civic and business leaders, and public health reformers, these same deposits were regarded as unattractive, offensive, odiferous, noxious effluvia, and a source of disease. In the 1870s, solid-waste disposal became a popular political and social movement among physicians, moral reformers, and civic leaders in many larger American cities. In California, some communities allowed human waste to

flow directly into open ditches and from there into natural watercourses. Other towns relied upon privy vaults or cesspools. In 1880, the city clerk of Stockton, reported “there is no system of sewerage adopted by the city” (Stockton City Council n.d.).

City officials instituted collection of night soil from privies, then garbage collection (organic refuse), and finally by the end of the 19th century, rubbish collection (inorganic refuse). Towns and cities also passed stricter nuisance laws designed to enforce public health policies and to move from private methods of waste disposal to comprehensive public systems of sewerage and garbage management. Even where civic leaders adopted the best available technologies to address community needs, the systems employed were relatively inflexible and lacked the resilience to adapt to urban growth (Melosi 1993; O’Kane 1995). Management of urban garbage brought varied responses from American cities and towns that assumed some responsibility for public health and sanitation in the latter part of the 19th century. In terms of garbage disposal, these methods ranged from using garbage as food for swine, to landfill, to fertilizer, to rendering, to burning, and to dumping into watercourses, lakes, or the ocean (Leavitt 1982).

Open municipal-refuse dumps were the norm until the 1930s when the problems of these facilities—flies, odor, and groundwater and air pollution—led to their decline in favor of sanitary landfills (Melosi 2000; Sullivan and Griffith 2005). The archaeological study of municipal dumps, loosely defined here as collective refuse deposits for urban areas, has taken two directions: (1) using the material to study the people who disposed of the refuse and (2) studying the dump itself as a research entity. The potential of the first approach is limited, as it is not possible to reconstruct the artifacts’ immediate origins (LeeDecker 1991:31; Yentsch 1992:4–105). Where the community as a whole is distinct, however, comparisons are possible with other communities. The Woolen Mills Chinatown provided one such example where the refuse dump provided data that facilitated comparison with other late-19th-century western U.S. Chinatowns (Allen and Hylkema 2002).

The second type of study has proven more fruitful. The best-known archaeological work on refuse dumps is Bill Rathje’s (Rathje et al. 1992; Rathje and Murphy 2001) studies of modern sanitary landfills. They have provided information on the impact of recycling programs on household discard, biodegradation, hazardous wastes, and the proportions of solid wastes that actually make up landfills. Unusual classes of artifacts that reflect the time and place of the dump’s creation are sometimes forthcoming; Garaventa and Pastron’s (1983) study of Chinese coins is a case in point. Joan Geismar (1987) studied historical waterfront fill sequences in New York City, tying variation through time to changing health and sanitation legislation and also to recorded epidemics, such as outbreaks of yellow fever. In one of the few conventional publications on the topic, Harris et al. (2004)—a team of archaeologists and historians—presented a sophisticated archaeological research design for research into the 19th-century municipal dump of Brisbane, Australia. Studies have also been conducted of the 1937 Fresno Sanitary Landfill in connection with its nomination as a National Historic Landmark (Melosi 2002). This modern landfill was the prototypical model for municipal solid waste.

The adoption of sanitary practices was far from even, and Crane (2000) suggested several factors that may explain the discrepancies, including cultural background, occupation, and home ownership, among others. Stuart Galishoff (1976) noted that the combined system of private and public sewers in Newark, New Jersey, built between 1854 and 1919, left thousands without sanitary facilities for the disposal of human waste. The poor remained unconnected to the sewer system because they could not afford to pay to lay lines from their houses to the street, or because their

landlords refused to do so. Sarah S. Elkind (1998), focusing on Boston and Oakland's early water and sewer services, showed that services depended on the willingness of residents to pay directly for those services; therefore, well-to-do residents enjoyed improved services before their poorer neighbors. Her study also provided an interesting comparison between bay cities on the East and West coasts. In one of the few case studies of waste management policy in a California city, Adam Diamond (2006) looked at the past century of solid-waste management and municipal refuse reform in Los Angeles.

MUNICIPAL FACILITIES

Several recent works have focused on urban parks and urban nature. These include David Schuyler's (1986) *The New Urban Landscape: The Redefinition of City Form in 19th Century America*, and *The Park and the People: A History of Central Park* by Roy Rosenzweig and Elizabeth Blackmar (1992). Schuyler's work examined the park as an alternative urban environment—nature within the city rather than an extension of the city. Rosenzweig and Blackmar took a more social, political, and bureaucratic approach, discussing the ramifications of changes in Central Park's administration, in New York City politics, and metropolitan land use. The location, design, and use of urban parks as places to contemplate nature versus promoting active recreation and the spatial transformation of urban parks in the 1890s were at the center of Julie Tuason's (1996) study of gendered urban landscapes.

Much of the historical archaeological research at school sites has focused on obtaining information on site layout and construction methods, particularly determining the period of use for various schools and use of the school lot. More ambitious research designs have attempted to examine how education-related artifacts might be indicative of larger changes in societal understanding of the purpose and goals of education, as well as examine how domestic artifacts might indicate social activities held at the school, given its focal point as a location for community gatherings. Unfortunately, most excavations at schools have resulted in limited data sets, such as a few slate pencils or marbles and a preponderance of architecturally related debris (Gibb and Beisaw 2000). Although domestic artifacts are relatively infrequent on school sites, Rotman (2003:10) has argued that their information value is actually considerable; domestic artifacts "had to be brought to the site with a degree of deliberate intention" because there was no direct occupation of the site.

The classical design and architectural detailing lavished on courthouses and similar public edifices were designed to impress. Yet these often-ornamented façades sometimes concealed shoddy workmanship due to graft—as was the case in San Francisco (Tobriner 2006)—or the local vernacular building tradition, evidenced by hastily built civic buildings during the gold rush. In an example of the latter, Arnold and Keyes (2000:342) identified the remains of a storm-destroyed courthouse built in 1860 and documented the building's unusual construction. The courthouse was found to be built of "shell-crete," a local technique that involved burning layers of oyster shell then laying strata of lime and timber.

Prisons are another essential, albeit less common part of the infrastructure component of most towns—most were constructed beyond the city limits or at the edge of the city, as was the case with Folsom and San Quentin prisons. Nineteenth-century prison administrators and social reformers advocated separating inmate populations according to perceived potential for reform in order to limit the corrupting effects of the main population to younger, less-hardened inmates. In addition, criminologists of the day advocated morally acceptable and economically productive

manual labor as a means toward improvement of convicts (Casella 2001:48; Spencer-Wood and Baugher 2001). Historical archaeologists have analyzed architectural remains, landscapes, and material culture as evidence of reformers' success or lack thereof (Spencer-Wood and Baugher 2001). Casella (2000, 2001) interpreted the differential distribution of artifacts recovered from a female convict prison in Australia as indicating illicit barter networks, including sexual barter and black market exchange that fuelled an underground economy. Specifically, kaolin tobacco pipes and olive glass alcohol-bottle fragments found in solitary confinement cells were evidence that inmates engaged in forbidden activities (Casella 2001:61).

Other institutions sought to reform the morally degenerate or provide care and shelter for the sick or otherwise destitute. Lu Ann De Cunzo's (1995) study of the Magdalene Society—an organization committed to reforming “fallen” women—is an outstanding multidisciplinary analysis. De Cunzo moved beyond the conventional interpretation of these institutions as the purveyors of social order (Boylan 1988) to the “institutionalization of the female purification ritual” through symbolic performances and ritual (De Cunzo 1995:vii). Almshouses (sometimes called poorhouses) provided the elderly and others in reduced circumstances a place to live. These institutions ranged from small houses for a few widows or retired seamen to mansions supported by wealthy benefactors. Baugher and Spencer-Wood (2001) examined almshouses to uncover both the living conditions of the poor as well as changing social attitudes to those who lived with charitable assistance. Conditions of life in hospitals and orphanages have been examined by archaeologists Starbuck (1990) and Feister (1991), respectively. But health care was not only administered in hospitals. Excavations by Cabak et al. (1995) at the Wayman African Methodist Episcopal Church revealed that the congregation used both folk healing and conventional medical practices at the church itself as a strategy for coping with the abysmal care available to African Americans. Jean Keller's dissertation focused on health and disease at an Native American school in Riverside, California (Keller 2001).

Cemeteries have been studied by a wide variety of scholars, so many in fact that it is not practical to offer a survey here. Rather, this paragraph focuses on studies that are relevant to the larger research goals of historical archaeological analysis of townsites. Among historians, general trends in cemetery studies include the change in management and control of death in the 19th century: the change from churchyard interments to rural cemeteries that was popular in the United States from 1831 to 1865; the change in role of undertaker from furniture maker to supplier of funeral services; the “beautification of death” movement that resulted in ostentatious mourning rituals practiced by middle-class Victorians; and the change in location of the funeral itself from the home parlor to the “funeral parlor” that occurred after 1885 in the United States (Farrell 1980). Historical archaeologists have used data from cemeteries to examine the relative health of segments of a population (Buzon et al. 2005), define parameters making it possible to distinguish children's graves from those of adults (McKillop 1995), and understand attitudes towards death that may reflect religious or cultural beliefs (Bromberg and Shepard 2006). Gravestones and other cemetery landscape elements provide information on stylistic changes in material culture that may relate to larger changes in society (Deetz 1977:64).

In summary, the above literature review identifies several principal research issues under the Infrastructure Development theme where archaeological research can be instructive:

- Documenting local vernacular solutions as well as illicit activities in the construction of public facilities

- Assessing the relationship between the availability of technologies and their local acceptance
- Documenting institutional living conditions and ways of life
- Explicating the symbolic dimensions of public facilities and how these factors affected the facilities' structures and functions
- Assessing the relationship between urbanism and environmental change and degradation

The following bulleted questions on the Infrastructure Development theme have been derived from the historical literature and are offered here to stimulate creativity in constructing site-specific research questions. The following are unlikely to be addressed solely through archaeological research; however, the archaeological findings should be interpreted back to a higher level that might help inform on other avenues of inquiry.

- What kinds of environmental and public health problems emerged from rapid town growth? Were municipal services created before or in response to these conditions? What factors explain the uneven adoption of sanitary practices between and within towns?
- Did California towns founded in the last quarter of the 19th century create municipal services or social services prior to experiencing rapid municipal growth and the kinds of problems experienced in cities, or in response to such pressures?
- Was there a point at which regulatory or nonregulatory processes divided towns into business, residential, tenderloin, ethnic, and industrial precincts? What does the appearance of later legislative regulatory zoning tell us about the processes of town growth?
- How did small towns go about managing urban growth to avoid the crisis atmosphere (overpopulation, ethnic diversity, disease, bad housing, political corruption, etc.) that urban reformers faced in big cities with booming population growth and rapid industrialization?

Table 7 presents a series of questions pertinent to features relating to the Infrastructure Development theme, and they are keyed to the principal research issues. These questions are distinct from the research questions above in that they are at least partially addressable through archaeological means. Appendix A contains all research questions in an easily accessible table format.

Table 7. Research Questions for Townsite Infrastructure Development.

Property Type Features	Research Issues	Archaeological Research Questions
THEME: Infrastructure Development – Waste Disposal Facilities		
Sewer, refuse accumulation (e.g., municipal refuse dumps)	Documenting local vernacular solutions as well as illicit activities in the construction of public facilities.	How does the structure of this feature relate to municipal ordinances regarding infrastructure improvements? How can this feature contribute to our understanding of the scope of community acceptance and participation in municipal improvements (e.g., the rate at which individual property owners comply with requirements to tie into municipal sewer lines)?
	Assessing the relationship between urbanism and environmental change and degradation.	What environmental pollution was created by this property? Would its deleterious effects have been immediate (e.g., lead contamination of soil) or more widely spread (e.g., chemical contamination of groundwater)?

Property Type Features	Research Issues	Archaeological Research Questions
	Assessing the relationship between the availability of technologies and their local acceptance.	Was this an ad hoc or a designed structure, would its design or location have been considered up-to-date, and what might the implications be of this? What was the relationship between this property's period of use and contemporary science (e.g., germ theory and the rise of the public health profession)? Is there innovation in design or construction, and what might those innovations be attributed to (ethnicity, regionalism, expediency)?
THEME: Infrastructure Development – Municipal Facilities		
Structural remains (e.g., foundation of courthouse, church, prison, etc.)	Documenting local vernacular solutions as well as illicit activities in the construction of public facilities.	How do construction techniques evidenced here relate to municipal ordinances for standards employed in construction of public buildings? To what degree does the property show innovation in design or construction? To what degree does the property reflect popular/conventional design and/or construction techniques or regional, ethnic, or vernacular tradition? Is there evidence of expedient construction using whatever was at hand? Is it possible to understand the relationship between the availability of technologies, their cost, and the evolution of their local acceptance? To what extent were building codes and standards complied with and what does that indicate about the community?
	Explicating the symbolic dimensions of public facilities and how these factors affected the facilities' structure and function.	To what degree does the property's design exemplify the ideologies of its creators? How did this design affect its operation?
Refuse accumulation (e.g., sheet refuse, hollow refuse-filled features).	Documenting local vernacular solutions as well as illicit activities in the construction of public facilities.	How was waste disposal treated at this municipal facility? How do actual practices compare with municipal standards and codes?
	Documenting institutional living conditions and ways of life.	What was life like for inmates and staff in this institution and how did it compare with that presented in official policies? How did the institution's managers impose its ideology and how successful were they? What evidence is there of unsanctioned activities on the part of inmates or staff that indicates resistance to this ideology?
THEME: Infrastructure Development – Schools		
Building and landscape features (e.g., building, yard, activity area)	Documenting institutional living conditions and ways of life.	How is community diversity (gender, economic, ethnic, religious, or political) manifest in the school grounds (for example, male vs. female play areas)? What community activities occurred on the school grounds? What evidence is there of divisions within the community at these activities? For example, the presence of certain families may suggest ostracism of others based on ethnic, religious, or other differences.

theme continued on next page

Property Type Features	Research Issues	Archaeological Research Questions
Refuse accumulation (e.g., sheet refuse, hollow refuse-filled features).	Documenting institutional living conditions and ways of life.	How do classroom activities or other in-school behaviors change over time and what may those changes be attributed to? What social-role training occurred at the school? What were the social dynamics of the institution? How structured was the classroom? For example, did the school use portable desks or desks bolted to the floor? How effective were educational reform movements in the operation of individual schools?
THEME: Infrastructure Development – Public Open-Space Facilities		
Formal public garden, ad hoc open public space, activity areas	Explicating the symbolic dimensions of public facilities and how these factors affected the facilities' structure and function.	To what degree did ideological and/or pragmatic considerations contribute to this public garden's form? What activities occurred in public spaces, either sanctioned or unsanctioned? How was this public space used as an emergency urban open space (e.g., post-fire housing or military camp)?
	Assessing the relationship between urbanism and environmental change and degradation.	How was the natural environment modified to create the property? What is the pollen evidence of floral succession? How was vacant land used?
THEME: Infrastructure Development – Transportation Facilities		
Road, bridges, railroad	Documenting local vernacular solutions as well as illicit activities in the construction of public facilities.	How do the materials, techniques, and designs used to create this property compare with official codes and standards? In what ways does the property show innovation in design or construction? In what ways does the property reflect popular/conventional design and/or construction techniques or regional, ethnic, or vernacular tradition? What evidence is there of extemporized construction that used whatever materials were at hand?
	Assessing the relationship between the availability of technologies and their local acceptance.	Would the materials, techniques, and designs used to create this property have been considered up-to-date or old fashioned, and what might the implications of this be? What evidence does the property contain of local innovation, improvisation, or the use of "appropriate technology" as opposed to the adoption of standardized design and materials? Is there innovation in design or construction, and what might those innovations be attributed to (ethnicity, regionalism, expediency)? To what extent were building codes and standards complied with and what does that indicate about the community?

INDUSTRY: SOCIAL AND TECHNOLOGICAL IMPLICATIONS

This section addresses resources that fall within the province of industrial archaeology and includes the physical remains of the manufacturing workplace, including buildings and structures, industrial by-products such as slag, as well as objects that represent the workers themselves. Industrial landscapes can range from foundries and blacksmiths to agricultural landscapes.

Considerable literature exists on the artisans and craftsmen of pre-20th-century California. Indeed, before the gold rush, a whole network of trained and untrained artisans and craftsmen resided in Alta California who were accomplished in masonry, carpentry, blacksmithing, and other building trades necessary to complete construction of the frontier structures used to house soldiers, civilians, settlers, clerics, and neophytes. The missions were the primary economic engines; presidios and pueblos became partially self-sustaining but also depended upon the missions for food, goods, and labor. Native American artisans and laborers were indispensable in colonial California and were the backbone of the workforce (Hackel 2005:272–320). Mission and pueblo artisans included stone and brick masons, carpenters, potters, shoemakers, millers, weavers, saddlers, blacksmiths, and leather workers. The indispensable work on the subject of artisan workers in California to 1850, including a biographical outline and roster of all known artisans, is Mardith K. Schuetz-Miller's (1994) *Building and Builders in Hispanic California, 1769–1850*. The Russian colony at Fort Ross also had an industrial complex, including a tannery, carpenter and blacksmith shops, cooper and tin shops, leather works, a flour mill, furniture shop, and boat-building facilities (Wrangel 1969:205–215; Gibson 1976:116–119; Watrous 1998:14–15; Lightfoot 2005:121–127).

Many of the argonauts who came to California knew little or nothing about mining, quartz milling, mining equipment and machinery, or gold extraction technologies. Engineering as a profession was in its infancy, and most of those who called themselves engineers were pragmatic technicians, inventors, and mechanics without formal education. Practical engineers in the gold rush adapted existing machines and methods to local conditions and developed innovative home-made solutions—Washoe pan, rocker, hydraulic nozzle (called monitors or giants), and Knight and Pelton wheels. In remote hard-rock mining districts, heavy machinery was broken down into parts for ease of transport, and machinery was improvised and recycled as necessary to minimize transportation difficulties (Swope 1993). Certainly, there were a few mining engineers and geologists who came to California or were sent by mining companies during the gold rush and in the following years of hard rock mining who were educated in mining technology and had prior practical experience mining in Europe, South America, and the eastern seaboard of the United States. They brought with them their knowledge of hydraulic processes, rock-crushing techniques, and amalgamation. They professionalized the mining industry.

By the late 1850s, these individuals had made significant contributions to a new era of industrial mining in California. Still, most mines were in the hands of small-time operators or companies, what Limbaugh and Fuller (2004) called the “mom and pop units” of the industry. Working with less capital investment, fewer men, less equipment, and antiquated methods and equipment, their numbers were large, but the volume of their output small. These enterprising amateur mine owners depended upon an army of artisans and non-miners (mechanics, blacksmiths, millmen, boilermakers, self-taught engineers, iron and brass foundry workers, wire and rope makers, and other artisans) who worked independently, lived, and had shops in small mining towns. These local artisans had brought their special skills to California, were in great demand in the mining districts, and likely made significant contributions to the innovative or adaptive technology that drove

California gold mining. The pragmatic adaptation of California miners to environmental conditions led to technological innovations, upgrading of traditional techniques, and new technologies based on scientific breakthroughs in how mining was done, in California, the American West, and, indeed, worldwide. Spence (1970), Young (1970), and Limbaugh (1999) covered the contributions of amateur and professional mining engineers in California from 1849 to about 1870 but rarely discussed the mills, foundries, blacksmith shops, etc. located in towns.

San Francisco, the main port of entry for the professional engineers and geologists and the center of finance, capital, and manufacturing on the Pacific Coast, became the major center for advancement of mining technology used at large industrial mines in the Mother Lode region. Most historians writing on the subject have chosen to focus on these companies and their contributions to California mining history and technology. These well-financed and well-equipped blacksmith shops, foundries, and machine shops on the San Francisco waterfront became corporate laboratories for the improvement and refinement of Old World mining processes and techniques and the scene of many very significant mining inventions. In the decade following the gold rush, 47 foundries and machine shops were founded on the bay, and by the 1870s, their market extended to the nine western mining states as well as Canada, Central and South America, Australia, Japan, China, and Russia. Many of these shops had started as maritime repair facilities, but demand quickly turned them into suppliers of mining equipment.

San Francisco's monopoly on West Coast mining equipment only lasted 20 years until the completion of the transcontinental railroad opened the market to cheaper eastern competitors. By the 1890s, most San Francisco foundries had closed or had changed to development of other product lines. The single-best history of mining equipment manufacturers in California during the last half of the 19th century is Lynn R. Bailey's (1996) *Supplying the Mining World: The Mining Equipment Manufacturers of San Francisco, 1850–1900*, which as the title suggests, largely focuses on San Francisco. Her work is derived principally from articles and line drawings appearing in the *Mining and Scientific Press*, the major mining journal of the era, published in San Francisco. Bailey has little to say about the independent foundries located in scattered, small towns all across California. However, the *Press* did send journalists into the field to make observations and publish information, such as “foundry notes,” on local mining and mining-related business enterprises, like Knight's Foundry in Sutter Creek, Amador County.

Industrial processes left behind considerable physical remains whose analysis has contributed to the field of industrial archaeology over the last several decades. Industrial archaeology was conceived in the United Kingdom in the 1950s and 1960s and oriented toward the technologies of the industrial revolution, such as mills, ironworks, and transportation networks. A consortium of historical architects and historians of technology established the Historic American Engineering Record (HAER) in 1969 to document important industrial and engineering sites that were in danger of being destroyed. North American historical archaeology began to reorient the field in the 1980s and 1990s, enlarging it from technical recording of buildings, structures, and industrial processes to include the experiences of workers. The HAER process has ensured that the documentation of extant industrial complexes is still largely the province of architects and historians. In Europe, however, the field is being absorbed into a multidisciplinary historical archaeology that is broadly concerned with how industrialization has transformed society and culture worldwide (Casella 2005); in fact, the very term “industrial archaeology” may have “had its day” according to Marilyn Palmer (2005:11).

British industrial archaeologists (for want of a better name) are leading the way in developing explicit research frameworks for their field to counterbalance the fragmentation that has resulted from the boom in legally mandated, developer-funded studies (Palmer and Neaverson 2001). The culmination of this effort is “Understanding the Workplace: A Research Framework for Industrial Archaeology in Britain,” a series of conference papers organized by the Association for Industrial Archaeology and English Heritage (Palmer 2005). Regardless of industrial archaeology’s trajectory, much work in this field has concerned either (1) the analysis and reconstruction of specific industrial technologies or (2) the organization and working conditions of industrial workers.

The remains of blacksmith shops may be the most frequently encountered on industrial archaeological sites. A series of books and articles by John Light, a researcher with Parks Canada, cover this area thoroughly. His article, “The Archaeological Investigation of Blacksmith Shops,” is still the best introduction to the topic for archaeologists (Light 1984). The role of the historical metallurgist was further developed by example in Light’s collaboration with Henry Unglik (1984) in their study of clinker and metal wastes from an early-19th-century forge. Their depiction of this simple and relatively stable technology is applicable to the later era. Light (1986) also tackled larger-scale blacksmithing of the early-20th century in his investigation of the shop of the Yukon Consolidated Gold Corporation. Among the issues he investigated in these studies were the structure and layout of the shop, the efficiency and skill of the blacksmith, what was made or repaired, the quality of the products, the rate of technological innovation, and the conditions under which the work was performed.

Iron foundries have been investigated by Seely (1981) and Honerkamp (1987), among others; Michigan Technological University holds an annual field school at the site of the West Point Foundry under the leadership of Tim Scarlett (West Point Foundry Archaeology Project 2006). These investigations tend to emphasize technological change, such as the process by which coke-fired cupolas replaced earlier furnaces. The analysis of by-products, such as slag, can address questions regarding the nature of the material being cast (ore, scrap, or pig iron); the efficiency of the ore reduction process; many technological details; and the quality of the final product. Industrial innovation is frequently accompanied by growing pains in the form of failed experiments. Honerkamp (1987) showed how unresolved problems led to a foundry’s demise shortly after its conversion to a more sophisticated but less-understood technology. Information such as this is also of interest to contemporary business theorists for it reveals the outcomes of historical experiments and other unrecorded aspects of production, as well as management strategies (Heite 1992; Crandall et al. 2003).

When disgruntled miners left the goldfields of the Mother Lode, they discovered an ideal environment for raising wheat. By the mid-1850s, the state’s wheat crop exceeded local consumption, and California’s grain operations began to evolve into a form of agriculture that saw wheat grown on large bonanza wheat farms and shipped to European markets. Not all wheat was exported; there was a home market for flour. The flour industry was highly decentralized until the end of the 19th century. During this period, most flour mills were located in small towns and operated by small independent businessmen. Members of the inner circle of political and social leaders in these small towns usually owned the local flour mill—men like George Perkins in Oroville and John Bidwell in Chico. The only broad study of the flour milling industry during its decentralized era was written nearly seven decades ago by Paul N. Woolf (1939), entitled “A Historical Appraisal of the Flour Milling Industry of California.”

Development of an agricultural hinterland led to the founding of hundreds of small towns in California, yet few historical studies have focused on how major industries in these small towns grew up in direct support of agriculture. A dry Mediterranean climate, the development of specialty crops, and isolation from midwestern manufacturers, all contributed to the rapid mechanization of California agriculture in the last half of the 19th century, but so did inventive local merchants and the establishment of local systems of manufacturing and distribution (Olmstead and Rhode 1988). Reynold M. Wik (1975) emphasized the ingenuity of local California manufacturers of farm equipment and their intimate knowledge of local conditions in adapting their machines to use in a wide variety of different environments.

While the manufacturers of large agricultural equipment like reapers, headers, and harvesters were centered in the cities like San Francisco, San Leandro, and Stockton, large cities did not have a monopoly on agricultural industries. Virtually every rural town with an agricultural hinterland contained local businesses, like blacksmith and harness shops, tanneries, wheelwrights, and iron foundries, to fix the cumbersome steam tractors and giant combines, repair engines and boilers, and manufacture or mend header and grain wagons, jerk lines, and harnesses used in grain farming. Mechanization set in motion strong economic and cultural forces that encouraged further mechanization of other activities. On-farm mechanization was closely tied to inventive efforts of local merchants. Specialized crops and growing conditions created demands for new types of equipment. A local farm-implement industry flourished by providing farmers with equipment especially suited to their requirements. Many innovations emerged from tinkering in local California shops that served as testing grounds for prototypes (Wik 1974).

Historians of technology have long used material remains to complement and correct historical accounts of the rate of acceptance of manufacturing technologies (Battison 1966; Landon and Tumberg 1996). Archaeologist Symonds (2002) reported on standardization in the English cutlery industry. Mike Nassaney and Marjorie Abel (1993) studied waste from a cutlery factory in Connecticut to try to understand worker accommodation and resistance to de-skilling. Armories have an important place in North American archaeology as the sites where former craftwork became mechanized and the products standardized (Hounshell 1984). The research issues that are relevant to these properties have been well developed and can be applied to other manufacturing sites. Gordon (1988:33–34), for example, investigated this theme by examining a specific proposition: “the extent to which machining to the final dimensions replaced handwork” in the production of rifle locks. His conclusion—that the precision of the craftsman initially won out over that of the machine—led historian of technology Carolyn Cooper (1988:54) to conclude that boosterish correspondents frequently overstated the rate of acceptance of change.

Barnwell et al. (2005) pointed out that not all manufacturing occurred on a large scale in purposefully built factories. Recent attention has focused on the complex relationship between the practice of domestic industry (production in or adjacent to the workers’ residences) and the rise of industrial-scale manufacturing (Palmer and Neaverson 1998). Although weavers and lace makers are the classic examples of the latter (Timmins 2005), other urban crafts included boot makers, furniture makers, and japanners. Individuals and small groups created workshops, rented spaces, and formed cooperatives (Symonds 2002; Barnwell et al. 2005); San Francisco’s Miner’s Foundry is a well-known example of an institution that resisted the trend of mass production and the changes in the social relations of production that accompanied it.

Towns whose economies were based largely upon agriculture were frequently located along railroad lines to facilitate export of agricultural products. These towns often included warehouses and other agricultural support structures, such as holding corrals, along the tracks. Once horticulture became more popular in the 1880s, towns contained drying facilities for fruits and nuts, packing houses, and storage sheds. Because most agricultural areas of the state were not in forested areas, there were no local timber resources to be exploited. Lumber was shipped in by wagon or railroad, and most rural-farm communities had at least one large lumberyard located in the core of town. Stables and feed stores were also essential industries in any agricultural community because of the large number of draught horses needed. No historian of California has systematically studied these town-based agricultural-support industries in rural communities.

Between 1890 and 1914, the California farm economy shifted from large-scale grain-growing operations to smaller-scale orchard and row crops. By 1910, the value of intensive crops equaled that of extensive crops, as California emerged as one of the world's principal producers of grapes, citrus, and various deciduous fruits. Tied to this dramatic transformation was an explosion in the growth of small towns in these rural farm districts and a corresponding growth of allied industries, including canning, packing, food machinery, and transportation services. David Vaught (2002), the author of *Cultivating California: Growers, Specialty Crops, and Labor, 1875–1920*, offered some insightful information on these types of businesses in several fruit- and nut-growing communities in the state. The development of Newcastle's "fruit house row" shipping and warehouse district was described by Leonard M. Davis (1993) in *Newcastle, Gem of the Foothills: A Pictorial History of Newcastle, Placer County, California from its Formative Days to the Present*.

In summary, the above literature review identifies several principal research issues under the Industry theme where archaeological research can be instructive:

- Reconstructing specific industrial and manufacturing processes
- Assessing the relationship between the availability of a technology and its acceptance
- Documenting working conditions and industrial pollution
- Documenting workers' use of space
- Assessing the relationship between changing societal relation of production and workers experiences of the workplace

The following bulleted questions on the Industry theme have been derived from the historical literature and are offered here to aid construction of site-specific research questions. The following are unlikely to be addressed solely through archaeological research; however, the archaeological findings should be interpreted back to a higher level that might help inform on other avenues of inquiry.

- How is the transition from the artisan workplace to corporate, industrial structures reflected in the social structure of small towns? What is the effect on persistence or geographic mobility? To what extent is it possible to discern the relationship between changing social relation of production and workers' experience of the workplace? How does workers' use of space change over time?
- Recent histories of the West seem to paint a picture of two Wests—one of farms and middle-class small towns that emphasize family, children, kinship, and community, and the other of extractive industry, labor unrest, raising cattle, military posts, and cities. Can social studies of small agricultural and mining communities help reconcile these two divergent views by providing a new synthesis?

- Mining has shaped the history of California communities, to the extent that nowhere else in the mining West was there such a great opportunity for small-scale entrepreneurial mining as in California. It is likely that local artisans and practical engineers played some role in the fabrication of items that are associated with important local events and advances that have broader meaning to industrial history. Gold mining also stimulated advances in peripheral technology—in dam and bridge design, water conveyance systems, dredging and excavating, and hydroelectric generation. To what degree are advances regional adaptations? To what degree are they truly unique innovations? How can industrial sites related to mining in small towns assist us in answering these questions? Can they help us understand the relationship between the availability of a technology and its acceptance?
- Artisans, such as blacksmiths, are listed as residents in U. S. Bureau of Census returns (1850–1910) for virtually all settlements large enough to be classified as towns. Did they specialize in certain types of work, or were the shops places of general repair and manufacturing? If they specialized, did their operations and equipment differ? Was there a hierarchy among blacksmiths with different specialties? Artisans were among the most stable (in terms of geographical persistence) occupational groups in California mining towns during the gold rush decade. Was it true also in other types of towns and places in California? Did it continue beyond the gold rush? What accounts for their persistence?
- It is understood that industrialization often proceeds at a rapid pace, quickly replacing obsolete technologies; however, small towns that have not experienced this phenomenon may still retain vestiges of earlier processes. Is it possible to reconstruct specific industrial and manufacturing processes? What can those reconstructions tell us about the human and natural environment associated with those industries?

Table 8 presents a series of questions pertinent to features relating to the Industry theme, and they are keyed to the principal research issues. These questions are distinct from the research questions

Table 8. Research Questions for Townsite Industry.

Property Type Features	Research Themes	Archaeological Research Questions
THEME: Industry – Buildings and Structures		
Structural remains (e.g., building foundation, forge, casting floor, mill foundations, boiler mounts)	Reconstructing specific industrial and manufacturing processes.	What evidence does this feature contain of undocumented or poorly understood industrial or manufacturing processes?
	Assessing the relationship between the availability of a technology and its acceptance.	How would the technologies used at this location have compared with those available elsewhere at the time? Would the industrial processes used here have been considered up-to-date or archaic in their context? To what degree did small-town industrial artisans (such as blacksmiths) fill niche markets in order to distinguish themselves from the shops of larger urban centers, like San Francisco? Is there evidence for a high degree of local repair or fabrication that might indicate this adaptation? Is there evidence of local innovation in industrial products or processes? Did blacksmiths become nascent machinists through specialization in new technologies such as bicycles and automobiles?

Property Type Features	Research Themes	Archaeological Research Questions
	Documenting working conditions and industrial pollution.	What evidence is there of industrial pollution or other hazards that may explain the working conditions of industrial workers?
	Documenting workers' use of space.	What evidence is there of spatially discrete areas that inform us about division of labor, industrial work practices, or the incorporation (or otherwise) of mass production? What activities occurred in those areas and how might they refine our understanding of this industry? Is there evidence of gendered use of space? How does workers' use of space change over time?
	Assessing the relationship between changing social relation of production and workers' experience of the workplace.	What evidence is there of spatial differentiation in layout of the site, such as a break or resting area separate from the working area, that may relate to the transition from craft to industrial mass production? Is there evidence of status differentiation within the workforce and how is it expressed? Is there evidence of paternalism, surveillance, or social control in the design of the workplace and how is it related to changes in the relations of production? How were women accommodated in the workplace?
THEME: Industry – Processes		
Raw material, waste, by-products, or waster accumulation	Reconstructing specific industrial and manufacturing processes.	Does the material evidence indicate a concern with the health implications of this industrial process, by either management or labor? What technological innovations were carried out at the site that makes it distinctive? What evidence is there of undocumented or poorly understood industrial or manufacturing process?
	Assessing the relationship between the availability of a technology and its acceptance.	What evidence is there of local innovation or the use of "appropriate technology" as opposed to the adoption of standardized tools and materials? How effective were these innovations?
	Documenting working conditions and industrial pollution.	What environmental pollution was created by this property? Would its deleterious effects have been immediate (e.g., lead contamination of soil) or more widely spread (e.g., chemical contamination of groundwater)?
THEME: Industry – Social Spaces		
Rest break area	Documenting working conditions and industrial pollution.	What evidence is there of industrial pollution or other hazards to which workers were exposed during non-working periods?
	Documenting workers' use of space.	Were workers provided with a discrete rest break area? To what extent does this feature reflect individual worker behavior and what is the nature of that behavior? Is there evidence of leisure activities? Is there evidence of illicit activities restricted by management through corporate policies?

theme continued on next page

Property Type Features	Research Themes	Archaeological Research Questions
	Assessing the relationship between changing social relations of production and workers' experience of the workplace.	What evidence is there of paternalism, surveillance, or social control in the design of the workplace? What evidence is there of resistance to these controls (such as drinking on the job, pilfering, etc.)?

above in that they are at least partially addressable through archaeological means. Appendix A contains all research questions in an easily accessible table format.

COMMERCIAL BEHAVIOR: SERVICE INDUSTRIES AND MERCANTILISM

SERVICE INDUSTRIES

This section concerns the study of commercial establishments in which personal services are acquired or dispensed, such as brothels, saloons, restaurants, theaters, laundries, and tailors/seamstress' shops, to name only a few. An uneven amount of historical and archaeological scholarship exists on these subjects. At least in California, historians have focused on brothels and laundries (typically through an examination of prostitutes and East Asian laundry workers) while paying comparatively little attention to the development of boardinghouses, hotels, and restaurants. Archaeologists have examined the brothel/saloon connection through the lens of gender studies. Not all services can be contained within this section, and although the direction and questions provided below may prove a good starting point, researchers will need to expand these to cover other service industries encountered.

Short- and long-term housing such as boardinghouses and hotels were enterprises that provided housing for people from various occupations and economic and ethnic backgrounds. Although these were businesses endeavors, the archaeological remains typically represent the residential aspect of the owners, operators, and tenants. Therefore, these and other housing issues are discussed below in the section on Domestic Behavior: Townsite Residents.

The study of prostitution has become something of a subfield of urban, social, and cultural history. Perhaps the most important urban history of prostitution published in the past 20 years is Timothy Gilfoyle's (1994) *City of Eros: New York City, Prostitution, and the Commercialization of Sex, 1790–1920*. Gilfoyle exhaustively mapped out New York's many sex districts, the operations of the brothel, and the rise of both the madam and the pimp—all in the process of demonstrating the centrality of prostitution to the development of New York. Such a work, while important as a model, reflects the continuing emphasis that urbanists have placed on large metropolises. Studies of prostitution in small towns in the late-19th and early-20th centuries offer an opportunity for studying how and why sexual behavior between consenting adults became unacceptable to a society and how the criminalization of the oldest profession changed the behavior of the practitioners and their clients. Social scientists have explained society's reaction to prostitution from the perspective of sociological theories, social control, deviance, conflict theory, and the role of economic conditions in causing and/or perpetuating prostitution (Pillors 1982).

The gold rush brought to California every type of speculating entrepreneur imaginable, including enterprising prostitutes who took advantage of the low supply and high demand of their particular profession. During the gold rush, women's opportunities in prostitution paralleled men's

opportunities in other frontier occupations. Some women gave up prostitution to go into business as madams or bought and operated gambling saloons and barrooms. Jacqueline Bake Barnhart (1986), in her study of prostitution in San Francisco, analyzed the prostitutes of that city from 1849 to 1870 not as deviants or victims, but as a group of professional sex workers, within the tradition of gold rush entrepreneurship.

The ranks of prostitution were swollen with newcomers from nearly every country in the world. Some had been in the profession before coming to California; others became destitute and drifted into the profession out of necessity. Susan Lee Johnson (2000) conjectured that the many French women in gold rush towns who worked in the saloons, brothels, and dance halls of the southern mining districts were formerly prostitutes in France. These women felt harassed by the rigorous registration procedures required by the government in Paris and by the constant scrutiny of public officials and madams. In addition, the mid-century economic depression in France in the wake of the 1848 revolution made it difficult for these women to find enough work. The freewheeling, homosocial world of the gold rush provided an alluring opportunity to prosper through sexual commerce. For Chinese women, on the other hand, the decision to emigrate as prostitutes to the New World was not a voluntary one. Chinese women were frequently purchased in China to remedy a serious social problem in China of an overabundance of nonproductive women in society. They were brought to California as concubines, slaves, and prostitutes in a corrupt trade network that lasted until about 1925. Although Tong members frequently owned the brothels, Chinese women working as prostitutes often earned enough money to quit the prostitution trade (Hirata 1979; Tong 1994; Taniguchi 2000).

During the gold rush, prostitution was not generally viewed as a “social problem,” and private morality issues remained outside the jurisdiction of criminal law. In the latter decades of the 19th century, prostitution in brothels was tolerated, rather than being formally regulated or criminalized, and arrests of prostitutes were made under various civil and criminal offenses related to prostitution. In San Diego, for example, numerous saloons and dance halls in the 1880s in the city’s Stingaree district catered to single men and the many navy personnel who took leave in the harbor city. City ordinances were passed and police conducted raids to control the red-light district, but it was not the objective of city officials to stamp out prostitution, but only to confine it to one district within the city (McKanna 1984). When the city finally decided to clean up San Diego’s waterfront slums and the red-light district, it was the city’s health inspector who led the charge (MacPhail 1975). In Los Angeles, the city’s red-light district thrived from the 1870s until a reform government launched an anti-vice crusade in 1909 (Meyer et al. 2005). In other towns, prostitution continued under weakly enforced legislation until 20th-century pressures dispersed the trade into an unorganized, larger area of town. The red-light district of San Bernardino, for example, thrived until the 1940s when the federal government threatened to relocate a planned Army Air Corps Field unless the city put an end to the brothel district (Swope 2006:126–127).

Western brothels ranged from rented cribs and rooms above a saloon, to high-priced parlor houses run by madams. All were places where sex was provided for cash, and alcohol was often part of the transaction (Goldman 1981). Although there is no direct archaeological evidence of the primary service provided there, brothel collections have been found to contain relatively more grooming items, distinct alcohol-consumption patterns, and unique health-related items such as douching supplies and high frequencies of pharmaceuticals (Ketz et al. 2005; Meyer et al. 2005; Seifert and Balicki 2005; Spude 2005). Archaeologists have recovered material evidence that higher-class brothels paid attention to fashion trends and provided food, drink, and other entertainment

to encourage return customers. The variation in houses can be reconstructed from their material culture, for although “brothel assemblages are different from working-class households, brothels of different periods and statuses are different from each other. There is no simple brothel pattern, no clear artifact signature that reveals a brothel in the archaeological record” (Seifert and Balicki 2005:65).

Excavations near Union Station in Los Angeles afforded an opportunity to compare a high-class brothel with neighboring cribs (Meyer et al. 2005). Cribs were small rooms rented by individual prostitutes for their “shifts”; the women often lived in nearby lodging houses. As expected, the privy associated with the cribs contained very few artifacts. Observing that many crib prostitutes operated behind sham business fronts, the authors cautioned that “the crib deposit speaks more to the difficulty of finding and recognizing this type of deposit rather than contributing to our knowledge of life in the crib” (Meyer et al. 2005:121).

Prostitution was slowly criminalized in California urban centers and towns over a 60-year interval following the gold rush, which culminated in California’s fight to end “red-light districts” through the Red Light Abatement Act. The negative influence of World War I governmental programs against venereal disease is often cited as a major factor in ending brothel prostitution and the “toleration era” in the United States. Historians and sociologists have analyzed anti-prostitution crusades of the late-19th and early-20th centuries as a “moral panic,” an irrational response to an imaginary threat. In contrast to this interpretation, Brian L. Donovan (2006), in a recent study of anti-vice crusades and prostitution in the United States from 1887 to 1917, argued that moral reformers used white slavery narratives and ideas of racial difference, built upon claims about sexual innocence and danger, to engage in political projects targeting sexual practices that posed a threat to white hegemony.

In a city like San Francisco, prostitution was a wide-open industry in the 1850s and not until the second decade of the 20th century were the red-light districts eliminated and the city’s and state’s criminal laws against prostitutes actively enforced. The area south of Market Street, which attracted single men employed in seafaring jobs, longshoremen, and day laborers, contained a variety of cheap hotels, restaurants, clothing stores, pool halls, and saloons, and was long recognized as an area with a high concentration of houses of prostitution (Averbach 1973). In towns and cities across California and the American West, prostitution as an industry developed as the towns and cities themselves grew from frontier status to maturity (Goldman 1978; Petrick 1981).

Because high frequencies of alcohol bottles are found at both brothels and saloons, and many saloons offered sex for sale, one might question the need to distinguish one from the other. Historical archaeologist Catherine Spude (2005:91) answered:

The principal difference between the [two] was not so much what occurred behind the swinging doors but, rather, who selected the material culture: men or women. . . . By comparing saloons and brothels, which served very similar functions in a community but did so with different genders choosing the material culture, it may be possible to increase our understanding of the manifestation of gender as a whole in the archaeological record.

The murky saloon/brothel, saloon/hotel, saloon/restaurant distinction is reflected in archaeological studies. Archaeologists have frequently studied saloons (bars, cantinas, pubs, taverns, beer gardens) and found that the artifact collections from these sites represent the range of functions

carried out at these businesses—the retail sale of food and liquor, and residence. The pioneering study by Peter Schulz and Sheri Gust (1983) of the relative ranking of beef cuts was principally based on Sacramento saloon and hotel collections. Using materials from Hannan’s Saloon, Klebitz and Green’s Saloon, and the high-end Golden Eagle Hotel (as well as the city jail), the researchers showed that the institutions’ relative social level was reflected in the proportional representation of price-ranked beef cuts. The finest establishment in town, the Golden Eagle Hotel, was found to serve ground squirrel and songbirds as late as the mid-1860s (Praetzellis and Praetzellis 1980). Elliott West’s (1980) article “The Saloon: A Frontier Institution” provided a general analysis of saloon businesses in the western frontier and their role in small towns.

Although outside of California, the landscape of development for many of Nevada’s towns was similar to those of California, including breweries and saloons. Kelly Dixon’s (2005) *Boomtown Saloons: Archaeology and History in Virginia City* investigated several saloons in Virginia City, Nevada. Her heavily contextualized study, taking advantage of the fact that each business catered to a distinct population, investigated the intersection of ethnicity, class, and gender. William Brown’s Boston Saloon (1865–1876), for example, served primarily middle-class blacks. Similar too, was the development of Alaska as a frontier community with mining as a central impetus for settlement, and Catherine Holder Spude’s (2006) studies of the Mascot Saloon in Skagway provide a comparative study for a small, boomtown saloon. The gold rush–era Pantheon Saloon complex in Skagway, Alaska, was excavated to facilitate reconstruction. Commercial refuse deposits were used to reconstruct foodways, trade patterns, gambling, and drug-taking. The architectural remains revealed vernacular construction techniques and opportunistic use of building materials (Kardatzke and Spude 2002).

Similarly, local breweries were another service industry commonly found within small towns, and a number of these have been studied by both historians and historical archaeologists. The Mountain Brewery in Placerville, one of at least four pre-1900 breweries in town and one of the earliest breweries in the state, operated as early as 1853. Excavations and research at the site documented amazing adaptability to new technologies, as well as daily life of a brewing family (Baxter and Allen 2008). Breweries and saloons sometimes operated in conjunction, with the saloon providing the public face of a brewery. Leisure time was an important aspect of saloon life and often had the added idea of a social club and activities, such as bowling or shooting galleries (Dixon 2005; Baxter 2009).

Although Sacramento would not technically qualify as a small town for the purposes of this research design, with a population already reaching 12,000 people in 1855, the brewing history of the community may offer some comparisons to breweries in smaller communities. Ed Carroll’s book on Sacramento breweries documents the history of the German families primarily responsible for brewing in the area: “German brewers working in all regions of the United States naturally retained ties to their brewing traditions just as they did to their social conventions, but like these conventions, the transition from the old brewing methods to the new often required amendments to long-held beliefs and traditions” (Carroll 2010:15–16). The same is seen in Santa Clara, California, where German families were the main brewers in the area. By the early-20th century, many of these breweries were closed because of anti-German sentiments associated with World War I. For many of these early-20th-century German communities, brewing, drinking, and social clubs went hand-in-hand (Baxter 2009; Carroll 2010).

Breweries were quickly established as a commercial industry in California following the gold rush, as some of the new arrivals recognized the potential for large profits in saloon and brewery trades. Some breweries were fleeting enterprises, but others lasted well into the 20th century. Until about 1855, the brewing process was crude, but after that time, breweries became established on a more permanent basis, like the towns they served. “Following these efforts in immediate years were larger and substantial plants that reflected the growth of the local industry as well as the local population” (Carroll 2010:12).

After 1855, most breweries in towns were built to facilitate the technical aspects of the brewing process rather than adapting the technology to fit an existing structure. Breweries built during the 19th century generally included a furnace or kiln, basement for fermentation, and a constant source of water, supplied by a well, piping or flumes, and on occasion, windmills (Baxter and Allen 2008:19; Carroll 2010:15).

Until the 20th century, the entire process, malting barley to bottling beer, was often carried out under one roof. For efficiency, early breweries were generally multi-storied structures. Barley would be loaded onto the upper stories in a large open room where it would be malted. A furnace or kiln was generally located below on a lower floor to dry the barley once it was germinated. The malted barley could then be dropped by gravity down to the floor below where the brew kettle was located, sometimes near the drying kiln. Once the wort was cooked it would be transferred to the fermenter, generally located in a basement where the fermenting beer could be kept cool. After the beer was done fermenting it would be transferred to kegs, also generally in a cooler basement. The kegging room was sometimes at a lower elevation than the fermenter, allowing gravity to once again do the work in transferring the beer (Baxter and Allen 2008:19).

Breweries could also include steam engines mounted on stone or brick, which became a common source of power for breweries after the 1840s; a cooperage; rooms for storing malt and grains; and even stables for horses. Often, the proprietor and employees occupied modest quarters above the brewery. As trade increased, so then did a brewery’s size, frequency of brewing, and overall production. In addition, breweries also needed to adapt traditions of English and German brewing to a warmer California climate, which included developing new beers, such as steam beer (Baxter and Allen 2008:20; Carroll 2010). Beer was often served at room temperature or moderately cooler from basement storage; refrigeration did not change this until the 1880s (Weiser 2006:7–8).

Prohibition imposed the closure of brewery operations, providing a terminus ante quem for archaeologists investigating these sites. While many smaller communities supported local, or at least regional, breweries, large commercial breweries could only find the support necessary to operate in larger, urban centers. It was at this scale of operation that most breweries continued after Prohibition (Yenne 2003:74–75). Prohibition also brings up other aspects related to alcohol, such as the establishment of illegal bars, called speakeasies, often on the outskirts of towns. Oftentimes too, bars continued to operate during Prohibition but were called something else in name. This phenomenon can be seen on Sanborn maps dating to the period Prohibition was enforced, from 1920 to 1933 (Wooten and Baxter 2008:90).

With saloons and breweries crossing social and economic issues at such a variety of levels, archaeological sites related to these services have potential to answer a variety of questions on ethnicity, gender, social customs, leisure time, etc. Research themes suggested by Baxter and Allen

(2008) for data recovery of Placerville's gold rush-era Mountain Brewery include a focus on early beer-making in the United States, ethnic studies of German communities, and studies of saloons. German breweries in Placerville, Sacramento, and Santa Clara, and the African American-owned Boston Saloon in Virginia City, Nevada, all provide examples of direct ties to ethnic communities. Concerning the Mountain Brewery saloon in particular, "studies related to this work sought to investigate not only the drinking habits of the patrons, but also issues of ethnicity, entertainment, consumer patterns, domestic life, status, and economic patterns" (Baxter and Allen 2008:32). In a very real sense too, archaeological studies such as Dixon's (2005) have the chance to correct or confirm many of the Wild West myths centering on the patrons, employees, and owners of saloons.

While there may have been some overlap in the services provided between saloons and restaurants, academic historians have recently begun to explore more deeply the restaurant's role as a property or business in small towns. One of the most notable studies on food preparation comes from a non-American scholar, Simone Cinotto (2004). In "Leonard Covello, the Covello Papers, and the History of Eating Habits among Italian Immigrants in New York," Cinotto used the early-20th-century collected papers of Leonard Covello to examine how diet and food consumption patterns were woven into a unique New York Italian-American identity.

As for laundries, and Chinese laundries in particular, although historians have often referenced or examined these enterprises in larger studies, the most important work on the subject is that of a sociologist, Paul C. P. Siu. In *The Chinese Laundryman: A Study of Social Isolation*, Siu (1987) examined the history and evolution of Chinese laundries and painted a vivid picture of accommodation and social ostracism. The archaeology of laundries has focused on Chinese-run establishments, a business that provided one of the few entrepreneurial opportunities for urban Chinese immigrants in the 19th and early-20th centuries. Joan Wang (2004) wrote an excellent overview of the important issues raised by historians and sociologists concerning life in laundry households. As Barbara Voss (2005) pointed out, many early archaeological studies of Chinese laundry sites emphasized the distinctive imported ceramics and characteristic foodways of Overseas Chinese sites in general to emphasize the group's cultural conservatism. This approach is typified by work in Lovelock, Nevada, by Gene Hattori et al. (1979) and at the 1870s-era Second Street Laundry in Woodland, California (Felton et al. 1984), which provided exhaustive analyses of artifacts, particularly the ceramics. In the latter case, these materials were described using Sando and Felton's (1993) emic categories. Excavations at the Hing Lung laundry site in Santa Barbara conducted by Roberta Greenwood (1999) also focused on artifacts of Chinese origin as indicators of subsistence, class, and the place of the residents in the international trade network that allowed the continuation of an essentially Chinese way of life in southern California. Much of the recent archaeological work on Chinese laundry sites is unpublished, however (Swope and Padon 1997). Manuscripts that report on excavations in Oakland, Stockton, and Sacramento, among other locations, play down the use of artifacts to create social boundaries. Instead, they focus on deconstructing the essentialized image of the faceless, uneducated, and opium-clouded Chinese laundryman through highly contextualized studies incorporating autobiographical fiction and oral history.

The work of the seamstress and tailor—the needle trades—were examined early in the development of historical archaeology partly because of the ubiquity of the trade and the distinctiveness of their material culture. Stanley South (1977) identified tailoring in his 1960 excavation of a South Carolina inn. South used the proportional representation of various artifact classes at the site to define what he referred to as the Brunswick Pattern. According to South, tailoring was carried out

in a particular room of the former inn as indicated by the presence of large quantities of beads, straight pins, buttons, and thimbles. More-recent work has gone beyond documenting a previously unknown activity by archaeological artifacts. Heather Griggs's (2001) work focused on the needle trades as the venue of dissimilar ethnic and gender strategies among home-based workers. Reuse of textile scraps to create hooked rugs to supplement the income of some groups contrasts with the evidence of sewing for pleasure in the artifacts from others. Jews and Irish were found to have different patterns of scrap reuse and dissimilar uses of disposable income generated by their trade. Mary Beaudry (2006) also emphasized the social and cultural significance of sewing and needlework. She used cases studies from across the globe to show how sewing accessories and tools functioned in the historical construction of gender, class, and identity.

Archaeologists have investigated theaters principally for the purpose of architectural reconstruction. Bill Pritchard (1972) examined the site of the canvas-walled, gold rush-era Eagle Theatre, a replica of which now stands in Old Sacramento State Historic Park. The 1884 Woodland Opera House burned in 1895 and was archaeologically examined prior to being rebuilt (Felton et al. 1984). Both investigations provided certain construction details not contained in historical documents as well as information about the buildings' tertiary functions—the Woodland Opera House site, for example, also contained an oyster bar.

In summary, the above literature review identifies several principal research issues under the Commercial Behavior: Service Industries theme where archaeological research can be instructive:

- Reconstructing undocumented architectural features of specialized buildings and structures
- Assessing the relationship between the availability of technologies and their local acceptance
- Aiding middle-range theory by defining the archaeological correlates of well-documented contexts
- Reconstructing context-specific historic-era foodways and dietary patterns, as well as the local expression of national and international trade
- Problematizing historically constructed identities such as “whore” and “Chinese laundryman” by documenting poorly understood ways of life

The following bulleted questions on the Commercial Behavior: Service Industries theme have been derived from the historical literature and are offered here to aid construction of site-specific research questions. The following are unlikely to be addressed solely through archaeological research; however, the archaeological findings should be interpreted back to a higher level that might help inform on other avenues of inquiry.

- What social purposes were served by saloons or restaurants? Did they help define the town? Did they serve as a community for disenfranchised individuals such as transients or single seasonal workers?
- In what ways did food preparation and consumption serve to structure social and cultural identities or restructure such identities?
- Where small-business owners lived at their place of business, is it possible to distinguish commercial behaviors and activities from the household's domestic activities? What can be learned from such distinctions?
- What was the place of the Chinese laundry in the economic and social life of Chinese communities?

- In what ways, if any, did prostitution shape the economy or social structure of small towns? Were San Francisco's, San Bernardino's, and San Diego's tolerance for prostitution shared by other communities in California, specifically smaller towns, or did small towns have different moral and political standards? How are those standards expressed in the archaeological and historical record?

Table 9 presents a series of questions pertinent to features relating to the Commercial Behavior: Service Industries theme, and they are keyed to the principal research issues. These questions are distinct from the research questions above in that they are at least partially addressable through archaeological means. Appendix A contains all research questions in an easily accessible table format.

Table 9. Research Questions for Townsite Commercial Behavior: Service Industries.

Property Type Features	Research Issues	Archaeological Research Questions
THEME: Commercial Behavior, Service Industries – Buildings and Structures		
Structural remains (e.g., laundry boiler base, brothel crib)	Reconstructing undocumented architectural features of specialized buildings and structures.	What undocumented buildings or structures were at this location, how were they built, and how did they function?
	Assessing the relationship between the availability of technologies and their local acceptance.	Would the materials, techniques, and designs used to create this property have been considered up-to-date, archaic, or somewhere in between? Does the property contain evidence of local innovation, improvisation, or “appropriate technology” as opposed to the adoption of standardized design and materials?
THEME: Commercial Behavior, Service Industries – Processes		
Refuse accumulation (e.g., sheet refuse, low refuse-filled features)	Aiding middle-range theory by defining the archaeological correlates of well-documented contexts.	What are the archaeological expressions of the trade carried out at this location?
	Reconstructing context-specific historic foodways and dietary patterns, as well as the local expression of national and international trade.	To what degree did this business's waste disposal practices conform to contemporary standards and understandings of disease? How did these practices affect public health? What foodways did customers and/or employees practice at this business? How did the class, ethnicity, or gender of its clients affect this business's practices? What range of durable goods was available for sale? Which goods originated locally and which from further afield? How integrated was this business into national and international trade networks? To what degree did living conditions in lodging houses reflect the level of poverty claimed by late-19 th -century social reformers?

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Property Type Features	Research Issues	Archaeological Research Questions
	Problematizing historically constructed identities such as “whore” and “Chinese laundry-man” by documenting poorly understood ways of life.	What were residents’ lives like (e.g., did employees/owners live on the premises)? What strategies did they use to supplement their income? How separate were their business and private lives? How do the remains of personal accoutrements broaden our understanding of this household or population? What was the effect of a tightly integrated live/work situation on expressions of ethnic or class identity? Were the lives of Chinese laundry workers significantly different from Chinese immigrants engaged in other professions? How?

MERCANTILISM

This section concerns the archaeology of mercantilism which subsumes a broad range of industries providing goods and nonpersonal services to the general public or wholesale to the trade. For historical archeologists, the mercantile research theme includes those institutions (such as stores and mail-order companies); practices (such as marketing, advertising, barter, and trade); and ideologies (namely, consumption and consumerism) that relate to the buying and selling of material goods. Historians—particularly since the 1980s—have largely comprehended these as elements of consumer culture or the culture of consumption. Peter Samson (1981), in his study of the department store, lamented the paucity of historical scholarship on retailing as social and economic history. Over the past 20 years, although historians have begun to examine retailing, most historical literature has focused on the myriad of ways in which consumerism has reshaped American social life. In her treatise on the American department store, Whitaker (2006) analyzed the history of the downtown mercantile establishment, revealing the social aspects of the institution in addition to its importance as a trade establishment. Themes examined by historical archaeologists using data from mercantile sites include the reconstruction of trade networks and commodity flows, artifact availability and reuse, promotion of a culture of disposability and product obsolescence, conspicuous consumption, and architectural features of stores and warehouses.

Alice Kessler-Harris (1982) argued in her survey of women in the workplace in America that changes in work emerged alongside the culture of consumerism, and together they had a transformational effect on women, in particular. Nineteenth-century working-class Americans tended to view women as dependent, emotional, deeply religious, and sexually chaste persons who tended toward domestic chores, made household commodities, and bore and raised children. In contrast, men were producers, providers, and rational beings who lived a public life and found personal fulfillment in the ownership of property. Although these stereotypes are overdrawn, Kessler-Harris maintained that relatively few women dared to claim the role reserved to males until the early decades of the 20th century when these traditional gender roles were deeply weakened by the transformation of work. Many women entered the workforce, a significant number finding jobs in the new consumer-oriented industries. The consumer culture had an emancipating effect on working-class and middle-class women and undermined the older mentality of repression, practical utilitarianism, scarcity, and self-denial (Douglas 1977; Lears 1981; Halttunen 1982; Waller 1982).

The spread of credit and the abundance of commodities have been viewed as threatening to the relative stability of 19th-century life. Allis Rosenberg Wolfe (1976) found that the National Consumers’ League arose because of a rising consciousness about women’s role as consumers.

The organization advocated for ethical control of consumption and protective legislation for women. Citing the enhanced pressures of consumer life on women, Elaine Tyler May (1980) found a relationship between class, consumerism, and rising marital and family conflict between 1880 and 1920. She argued that divorce rates skyrocketed over this 40-year period because of tension arising over discrepancies between material aspirations and income, and disagreements over spending. At about the same time, in a study on the “paradoxes of American life,” Howard Gadlin (1978) cited consumerism as a transformative agent in family life in the early-20th century, which altered women’s role in the family, increased female autonomy, and carved out new definitions of gender with space for individual expression similar to men’s.

Richard Wightman Fox and T. J. Jackson Lears (1983) linked the emergence of consumer culture to the formation of the professional-managerial class beginning around 1880. They also noted the impact of widespread secularization of values, a change from belief in salvation in the afterlife to earthly gratification. David Horowitz’s (1985) influential intellectual history on ideas about consumerism in American life was primarily concerned with the response of moralists to the acceleration of working-class consumerism between about 1880 and 1920; however, he noted that the first signs of consumer culture were present in the Revolutionary War era when a significant number of Americans equated consumption with social status and personal success. He attributed increased consumerism in the late-19th century to a shift from a conservative moralism about consumption to a greater acceptance of its comforts. During this time, argued Horowitz, the nation underwent a transformation from a producer ethic to a consumer ethic, with a shorter work-week, increased advertising, and the advent of department stores as contributing factors. Horowitz also suggested that the relationship between buyer and seller was reciprocal and not simply one of manipulation on the part of the latter.

Historian Lawrence B. Glickman (1997) explored the relationship between class and consumption in the late-19th and early-20th centuries in an article on the rise of a consumer-oriented working-class ideology. He asserted that as workers lost their status as independent producers and became wage laborers, they began to demand higher wages based on their needs as consumers. They eventually received pay increases, which permitted a high standard of living and compensated for the loss of independence experienced when they became “wage slaves.” Over the course of several decades in the late-19th century, the perception of wage labor changed for some from an association with servitude to one of economic freedom. With this shift in worker’s identity from producers to consumers, Glickman (1997:7) wrote, “class consciousness moved from the shop floor to the store front.”

As new values of consumption reshaped American life, many workers acquired enough income or wealth to take advantage of opportunities afforded them through leisure, recreation, and new forms of consumption. Installment credit was an important instrument in effecting that transformation. Conventional histories have typically viewed consumer credit as an antagonist to traditional American work and financial values. However, Lendol Calder (1999), in *Financing the American Dream: A Cultural History of Consumer Credit*, challenges this traditional view. His book considers the history of consumer credit in cultural terms and is both a social history of consumers and a cultural history of debt. He argues that changes in the credit industry altered the borrowing habits of Americans and facilitated the rise of consumerism in the early-20th century. As Americans sought happiness and the American Dream in consumer goods, the credit industry greatly expanded and small consumer loans to be repaid on installment plans became widely available. Coupled with this, hundreds, if not thousands of savings and loan banks opened their

doors throughout the nation, many offering lucrative home loans and credit for a wide variety of goods and service. Nineteenth-century morals differentiated between productive debt used to fuel businesses and acquire homes, and self-indulgent consumer debt. However, both ultimately received moral sanction. Calder argues the strict repayment schedules of this new type of loan did not create a culture of hedonism but instilled financial discipline in the borrowers. Indeed, his examination of credit relations during the Great Depression revealed a low rate of loan delinquency and default. Calder believes the rise of consumer credit actually helped to stabilize the transition from a producer to a consumer society by instilling borrower discipline, thereby limiting the possibilities of self-indulgent hedonism.

More-recent literature has discussed class and its association with consumption and the influence of science, professionalism, and efficiency during the Progressive Era. Marina Moskowitz (2004) argued that the popularization of the concept of an accepted, middle-class standard of living contributed to an increase in consumerism in the late-19th and early-20th centuries. Consumers spent in an attempt to achieve this elusive standard. Moskowitz more fully explored a topic only broached by Horowitz in 1985 and contended that consumer culture was not a unidirectional process with the consumer a helpless victim of advertising and marketing, but was a dialectic between producers and consumers. The former were able to sell their products only because consumers actively sought out information on the best way to live. Of course many, if not most consumers, were duped by unscrupulous nostrums being sold on the streets, stores, or in catalogs. By the 1920s, middle-class standards were solidly in place—the result of a proliferation of mail-order catalogs, promotional literature, radio, and movies. Home ownership, together with the nationally distributed products associated with this standard of living, defined one's membership in the middle-class community. Products sold included town-planning services that promoted zoning restrictions that benefited more clearly defined urban space and privileged the middle-class, single-family home.

Following the lead of Samson (1981) and Horowitz (1985), other recent scholarship has focused on the mechanisms of retailing—namely the department store, advertising, and salesmen. William Leach (1994) broke new ground in *Land of Desire: Merchants, Power and the Rise of New American Culture*, which convincingly argued that the large industrial cities of the East and Midwest, through the creation of department stores, birthed the “culture of consumption” itself. On the other hand, Henry Klassen (1992) presented something of a corrective to this approach by focusing on the transition of a general store in a small Montana town in the 1870s to a small department store. This study demonstrated how the firm tailored its service to the specific economic and social needs of rural settlers and town dwellers on the western frontier, helping to create a consumer society in the West. Whitaker (2006) held that the local department store of the late-19th and 20th centuries functioned as an important meeting place, hosting events and activities that defined the community.

Visual advertising has also received its due consideration. Such works as T. J. Lears's (1985) *Fables of Abundance: A Cultural History of Advertising in America* and Roland Marchand's (1986) *Advertising the American Dream: Making Way for Modernity, 1920–1940* exposed the ways in which advertising reshaped American perceptions of the “good life.” Dawn M. Schmitz's (2004) recent doctoral dissertation on the relationship between advertising and consumerism suggested that chromolithographic (color) advertising had a significant influence on the development of consumer culture during the end of the 19th century. Schmitz pointed out that mass production and distribution of consumer advertising, facilitated by new technologies and advances in industrial

technologies, transportation, and communication, occurred in the late 1870s and 1880s. She noted that this was an era in which consumer capitalism accelerated, having emerged at a much earlier date. Schmitz disagreed with Horowitz's (1985) description of these changes as a shift from a producer to consumer society. While acknowledging a change to a consumer ethic, the producer economy remained to produce consumer goods. Thus, in many cases, the consumers and the producers were one and the same.

As for salesmen and the practices of salesmanship, Walter A. Friedman's (2004) *Birth of a Salesman: The Transformation of Selling in America* was an important starting point. His history began with a discussion of the role of hawkers and peddlers in the mid-19th century who, with only the goods upon the backs of their horses or wagons, reached beyond the areas served by stores to the farthest frontiers. Friedman pointed to a major transition in selling after the Civil War with the emergence of the traveling salesman, a symbol of growing mercantile specialization. In the early-20th century, the salesmen gave way to sales professionals, who applied scientific data to their craft to determine more-effective means of selling and became intrigued by psychology as a means to create desire in consumers.

While these broad studies of the origins of consumer culture in the 1880s have widespread implications for historical archaeology in both urban and rural settings, several studies of Jewish merchants in California help us understand retailing in small towns during the 19th century. Numerous Jews came west during the gold rush, but few became miners and more often they pursued careers as peddlers and merchants. Peddling was difficult and dangerous work, but many advanced from peddling to owning general stores. A sufficient number also turned to freighting to the extent that this business was largely in the control of Jews until the arrival of the transcontinental railroad. Their success, in part, was because of their connections with Jewish merchants in large urban centers, such as San Francisco in the West, and New York in the East. Many Jewish merchants who extended credit to their customers eventually went into banking and also transformed their small retail shops into department stores (Joseph 1987:193–207; Weissberg 1988:291–310; Pilling and Pilling 1989:122–131; Cerf 1992:22–32).

Small business was an integral part of small-town life in America in the 19th century. Mansel G. Blackford's (2003) *A History of Small Business in America* focused on the period from 1830 to about 1940 and studied the role of the small businessman in the nation's economic, political, and cultural development. His survey went further than any other historical work to show the importance of small business in the manufacturing, merchandizing, service, and farming sectors of the economy—especially the importance of small businesses in an economic and non-economic sense to small towns, women, and minorities. Blackford's study was broad and covered a myriad of forms, but it focused on merchants (country storekeepers) located in small towns who supplied the countryside with goods and credit. He did not, however, exclude important groups such as artisans (skilled workers), who possessed their own tools and shops, and whom he correctly treated as small businessmen.

Among the new approaches in 1950s transportation geography was Edward Ullman's (1957) work focusing on regional variations in trade and transportation patterns by mapping commodity flows. This method was taken up by William Adams (1975, 1976) in his pioneering ethnoarchaeological study of Silcott, Washington. Adams excavated the site of Bill Wilson's Store, which had operated from 1910 to 1928, and he interviewed former customers. Using the 15% of artifacts that bore makers' marks, Adams was able to reconstruct the local availability of goods produced in the region, in

other portions of the United States, and internationally. According to Adams (1976:110), the residents of Silcott were engaged in “a hierarchy of economic and social networks” that tied them to the nation and world. Working with Timothy Riordan, Adams (Riordan and Adams 1985:16) went on to compare the relative market access between Silcott and sites in Mississippi and New York, revealing a unique pattern of distribution imposed by variables in Washington State. The well-controlled data that Adams extracted from the Wilson Store also allowed him to make an important contribution to archaeological dating by refining the concept of ceramic time lag—the observation that ceramic artifacts tend to have a longer shelf life than other material goods, such as glass bottles (Adams 1977).

Historical archaeologists study consumer behavior and consumerism from a variety of perspectives (Spencer-Wood 1987; LeeDecker 1991; Cook et al. 1996). It is axiomatic, however, that without a basic understanding of what people could have purchased one cannot assess the significance of what they did buy. Important studies of documentary sources, such as business records and price catalogs, have allowed archaeologists to gauge the relative cost of ceramics to their prospective purchasers. These include George Miller’s (1991) work with British potters’ price-fixing lists and Ruth Sando and Larry Felton’s (1993) analysis of invoices from the Kwong Tai Wo store. The range of actual materials that were available at a particular time and place, however, is poorly understood. Thus, creating an index of locally available goods is arguably one of the most important contributions of mercantile site archaeology and certainly the most widespread. The market for secondhand goods, an important consumer source for many durable items through the 19th century, was examined by Mary Praetzelis and Adrian Praetzelis (1990) in their study of Sacramento’s Pioneer Junk Store. Miller (1991) contended that country stores often sold obsolete goods when compared with city department stores, in part because their turnover rate was much lower.

In her study of wealthy 18th-century-Quaker John Bates, Patricia Samford (1990) identified a cache of broken ceramics as stock from his store by the lack of use-wear marks and its uniformity. The investigation provided much detailed information not available from contemporary inventories. Differences in the proportions of various vessel types between inventories and archaeological specimens were seen as resulting from the use of metal items. Fires have contributed toward the archaeological record of stores by creating time capsules that are invaluable records of time and place. Among the archaeological studies of these retail sites that contained extensive remains of stock are the Chee Kee Store (Costello 1989), the early-19th-century Darrach Store (De Cunzo et al. 1992), the Stranahan Store that burned in 1906 (Beiter and Parry 2000), and Anthony Winan’s Store (Cantwell and Wall 2001). In San Francisco, the stock of William Hoff’s ship’s chandlery, which was razed by fire in 1851, has been exhaustively documented by Allan Pastron and Gene Hattori (1990). In addition to the kinds of consumer items that one might expect in any retail store, the collection included maritime instruments and foodstuffs such as packed pork.

Among the best California examples is W. S. Cothrin’s general merchandise emporium documented by Brenda Butler (1979). Destroyed by fire in 1852, the store contained an enormous range of goods from blacksmith’s tools and English ceramics to seed. The work at the Cothrin store was initially carried out for the purpose of historical reconstruction. Butler (1979:7) was able to identify many construction details—including that the wooden superstructure appeared to have been thrown together with whatever lumber was available. Much archaeological work with similar goals was carried out at warehouses of the Hudson’s Bay Company at Fort Vancouver, and this work has produced both architectural data and an extensive collection of artifacts that has formed the basis of comparisons with sites of the era throughout the west and northwest

of North America (Langford n.d.). Archaeologists working on the Florida island of Indian Keys investigated the warehouse and store of John Housman. The ceramics from his store were examined by Lisa Lamb (2003). Kelly Driscoll (2003) concerned herself with the architectural remains, noting the use of local materials and vernacular forms. Other archaeological excavations focusing on stores and warehouses as buildings include James Deetz's work in 1964 at California's La Purisima (Farris 1997) and Grace Karskens (1997) report on investigations of Cobb's butcher shop in Sydney, Australia, that revealed a substantial stone building. Although he did not use excavated data to derive his typology of warehouses, Michael Nevell's (2003) work indicated the potential of archaeology to reveal innovative design features that eased loading and unloading cargo in waterfront buildings.

In summary, the above literature review identifies several principal research issues under the Commercial Behavior: Mercantilism theme where archaeological research can be instructive:

- Documenting store and warehouse construction for reconstruction as well as to assess vernacular influences and innovative design elements
- Reconstructing trade networks across time and space to assess both commodity flow and its implications for the relative participation of communities in markets on a variety of scales
- Documenting the availability of specific types of artifacts at particular times and places as prerequisite for studies of consumerism

The following bulleted questions on the Commercial Behavior: Mercantilism theme have been derived from the historical literature and are offered here to aid construction of site-specific research questions. The following are unlikely to be addressed solely through archaeological research; however, the archaeological findings should be interpreted back to a higher level that might help inform on other avenues of inquiry.

- With respect to consumerism, what important information can be gleaned from the historical and archaeological records on life in small towns regarding the changing relationship between class and consumption, consumerism and gender, and working-class consumerism over time? How do we document the availability of specific types of artifacts at a particular time and place as prerequisites for studies of consumerism? How did the type and range of retail establishments dictate consumerism and consumer behavior?
- To what degree were small businesses operating in small towns in California in the 19th century autonomous? What was the nature of the business relationship between these firms and the sedentary merchants operating in larger cities? Who imported and exported goods and sold them at wholesale to smaller shopkeepers? Did small town stores tend to carry more "obsolete" wares than their city counterparts? Is there a lag between availability of new wares in city centers and towns?
- Are there discernable patterns in the types of businesses established such as an industry dominated by a specific ethnic, racial, or gender group? Where variations occur, what do they indicate about the community and opportunities for trade?
- What types of mercantile establishments were in these small communities—specialty stores or general supply? Were there regional variations in the types of establishments and what might those variations be attributed to? At what point in the development of a small town do we begin to see a transition from general supply stores with a broad assortment of goods to specialized shops, like drugstores, hardware stores, clothing stores, groceries, etc.? What factors explain the transition?

- The archetypal small-town stores during the period under study (1850–1920) varied markedly depending upon the size of the community and the products that were being sold. The main function of the stores was to be economically viable and produce a profit through the exchange of goods. As small towns matured and profitability increased for local merchants, stores were expanded and the range of goods and services became more diverse. What factors explain the types of physical changes to the architecture and organization of mercantile properties, and was the change associated with local, regional, national, or international events? Is it possible to document store and warehouse construction or reconstruction as well as to assess vernacular influences and innovative design elements? How did separate marketing to men and women influence the transition from general stores to specialized retail shops?
- Interpreting trade networks is necessary to assess both commodity exchange and its implications for the relative participation of communities in markets on a variety of scales. What trade networks did individual communities participate in, and how did transportation networks play into local trade? How did the ranges and types of goods differ and what was that based upon?
- How were concepts of fashion and product obsolescence manipulated to increase consumption and undermine artifact reuse? What implications did this have for disposal practices and artifact use lives? What role did conspicuous consumption play in the rise of consumer culture?
- What roles did material culture and consumerism play in the transition to industrial capitalism?

Table 10 presents a series of questions pertinent to features relating to the Commercial Behavior: Mercantilism theme, and they are keyed to the principal research issues. These questions are distinct from the research questions above in that they are at least partially addressable through archaeological means. Appendix A contains all research questions in an easily accessible table format.

Table 10. Research Questions for Townsite Commercial Behavior: Mercantilism.

Property Type Features	Research Themes	Archaeological Research Questions
THEME: Commercial Behavior, Mercantile – Buildings		
Structural remains (e.g., store/warehouse foundation, cellar)	Documenting store and warehouse construction for reconstruction as well as to assess vernacular influences and innovative design elements.	How did the physical structure of small-town stores change from crude wood and canvas shacks to permanent buildings? What factors contributed to this change? Do the remains indicate the level of investment in the success of this place at this time (transitory vs. permanent)? What evidence is there of expedient construction using whatever was at hand? To what extent would this feature have been considered up-to-date with regard to commercial space design and marketing? Does the property reflect innovation in design or construction? Does the property reflect popular/conventional design and/ or construction techniques or regional, ethnic, or vernacular tradition?

Property Type Features	Research Themes	Archaeological Research Questions
THEME: Commercial Behavior, Mercantile – Stock		
Artifact accumulation (sheet refuse, hollow refuse-filled feature)	Reconstructing trade networks across time and space to assess both commodity flow and its implications or the relative participation of communities in markets on a variety of scales.	How wide and what were the characteristics of the trade networks evidenced at this time and place? What is the relationship between the intensity of the local community's participation in trade networks and its participation in larger cultural trends? At what point in the development of a small town do we see a transition from general supply stores to specialized drug, hardware, and grocery stores?
	Documenting the availability of specific types of artifacts at particular times and places as prerequisite for studies of consumerism.	What range of artifacts was available at this time and place? Was the stock oriented toward the preferences of a particular (class or ethnic) population? To what extent do items stocked in the store reflect local consumer preferences vs. product availability in the West? To what degree are changes in transportation infrastructure (arrival of the railroad) attributable to changes in consumer preferences? What was the relationship between the small-scale businesses of small towns and the sedentary merchants of the urban centers? How did the range and types of goods available in these venues differ?

DOMESTIC BEHAVIOR: TOWNSITE RESIDENTS

This section discusses the behavior of townsite residents as seen in the archaeological remains they left behind. Of all the property types within a townsite, residential sites encompass the greatest range of possibilities for scholarship, research, and archaeological investigation. Studying patterns and remains of residences in American towns and cities inevitably raises issues of ethnicity, race, gender, occupation, class orientation, family status, household structure, and economics, as well as a host of other fundamental concerns about American society and culture. These are issues that have preoccupied urbanists and Westernists, historians and historical archaeologists alike, for decades. More recently, archaeologists have turned their attention to households that are poorly documented, both through the historical and archaeological records. These households range from immigrant families, female-headed households, to the working poor. Indeed, through the material culture remains, historical archaeology often provides the only remaining link for accessing an individual or family's history.

California at the mid-19th century provided a wide-open landscape for rapidly growing towns and cities. The state's towns differed from many long-established European and American cities in that the gold rush brought in American-born and foreign-born people to settle here at roughly the same time. As migrants, they quickly overshadowed the native-born population of Native Americans and Californios. The newcomers spread seemingly instantaneously over a wide geographical area and needed to forge economic and communication linkages with the outside world. Many towns were founded and settled with almost no established infrastructure, neighborhoods, or stock of older housing for newcomers. Within the time frame of mere months, these newly established communities moved from a preindustrial state to robust towns. Thus, the development

of California's post-gold rush towns presents an opportunity for testing some of the conventional economic, sociological, and ecological assumptions about the spatial framework within which cities and towns evolved, both within the state, as well as several western states that were founded on resource rushes (Alaska, Nevada, etc.).

Throughout the 19th century, there was considerable geographic and social mobility within the population—an important point to be considered when evaluating residences. For instance, Stephan Thernstrom's and Peter R. Knights's (1970) pioneering work on persistence of residence in U.S. cities, suggested very high rates of mobility in urban populations in 19th-century America. In major studies of eastern cities such as Boston, New York, and Atlanta, Thernstrom and Knights demonstrated that less than one-half of the heads of households in 1870 remained in the same town one decade later and less than one-quarter by the end of the following decade. Ralph Mann (1982) set persistence rates in the California mining towns of Grass Valley and Nevada City between 1850 and 1860 at less than 10% for miners and only 20% for professionals and business proprietors. In terms of residential movements within a city, individuals at the top of the economic ladder who owned property, homes, and businesses did not shift dwellings or move from town to town as often as those on the lower rungs of society.

Further complicating an investigation of residences and households was the great ethnic and cultural diversity that marked many communities. Indeed, many studies have focused on the myriad of urban social identities. The transition between pre-gold rush Hispanic towns and newly settled, rapidly growing post-gold rush communities was investigated through issues of gender, family life, and ethnicity in the work of R. Griswold del Castillo (1975). He examined the reaction of Mexican American families in the town of Los Angeles during the period from 1850 to 1880 under the impact of urbanization and industrialization, concepts that follow under the subject of modernization.

Social historians concerned with race, class, and gender have become closely linked with multiculturalism, and its impact on western historians has been particularly pronounced. The construction of identity and culture, rather than their mere preservation, has become more and more at the forefront of scholarship on ethnic groups in American towns and cities. Multiculturalism's emphasis on persisting differences of ethnic identity in the face of dominant cultural traditions resonates with a western past filled with Native Americans, Californios, and immigrants from around the world. John Modell's (1977) study of Japanese, William Toll's (1982) study of Jews in Portland, Dino Cinel's (1982) investigation of Italians in San Francisco, and George Sanchez's (1993) review of Mexicans in Los Angeles all demonstrate that ethnic cultures in these western cities responded to American conditions and made claims to an American identity, rather than replicating older identities and cultures. Quintard Taylor's (1994) study of African Americans in Seattle showed how blacks resolved deep divisions within their own community and negotiated relations with other non-white groups in the community, like Asian Americans and Mexican Americans. These multicultural urban studies historicized Americanism by emphasizing and trying to understand how competing groups tried to control and define what was labeled "American." Neither the new social history nor multiculturalism stands on its own but must be viewed within the expanding capitalist economy of the 19th century. The interlinked themes of multiculturalism, capitalist expansion, and environmental change came together most compellingly in the works of William Robbins (1982) and William Cronon (1991).

Several urban histories have analyzed strategies and motivations for reconstructing ethnic identities through the social construction of space. Arijit H. Sen (2002) explored a relatively unexplored

urban geography of ethnic spaces. Construction of an ethnic identity as reflected in architectural and cultural landscapes in ethnic neighborhoods was the focus of Jerome Krase's (1997) study of vernacular spaces in Brooklyn's Polish and Italian ethnic enclaves from 1880 to 1990. Multi-household collections associated with working-class immigrant groups—Irish, Poles, Jews, and Germans—were examined by Rebecca Yamin and her colleagues (2001). Although the tenement buildings where these people lived had group refuse-disposal facilities, stratigraphic analysis and lab research allowed the archaeologists to delineate the contributions of the various populations. Yamin examined several issues concerning how these people coped with the process of immigration, the construction of cultural identities, and neighborhood change over time. The romanticized Spanish ethnic heritage in urban San Antonio, Texas, a construct largely conceived by non-Hispanic patrons of the community, was the subject of Daniel Arreola's (1995) study of idealized urban landscapes. Eric Larsen explored the spatial signs of segregation in the cultural landscapes of African American neighborhoods in three towns at the turn of the century. Using St. Louis, Missouri, as a test case, Eric Sandweiss (1997) studied how new modes of economic production in the 19th century fostered geographic clustering of manufacturing and commerce and separation of urban people by socioeconomic status.

Still other scholars, most notably Lisbeth Haas, have examined the sociogeographic and economic transformation of rural Mexican society in the late-19th century and the creation of barrios (ethnically and socially segregated Hispanic communities) in California coastal towns. The barrios had their origin in the social class and ethnic relationships that developed in the last half of the 19th century. The internal urban, social, and cultural organizations defined community life in the barrio over time; the workplace and urban politics structured the Chicano experience and relationship between Chicanos and the dominant society; and social conflict, including strikes and civil rights activities, were organized and sustained by these barrio communities (Haas 1985). In a more recent social history of two Orange County communities, Haas (1996) made prejudice rather than difference the object of study in coming to terms with how "Indian" and "Mexican" identities were constructed and contested in opposition to the master categories of "white" and "American."

On the community scale, historical archaeologists have used domestic sites to examine both rural settlements (Hardesty 1988; Lawrence 2000) and urban neighborhoods (Yamin 2001; Praetzellis and Praetzellis 2007). Archaeologists have also tackled the myth of the "slum," an issue proposed by urban historian Mayne (1993). James Cusick (1995:61) summarized some of these research issues: "What gives people their sense of community? What is an urban community as opposed to a rural community? How is social structure, kinship, or ethnicity expressed in a specific locale?"

Cathy Spude (2006) studied bachelors from several Klondike gold rush sites in Alaska. Her investigations led her to develop a broader view of a community as the bachelor's household. She found the miners slept in their boarding or lodging accommodations but were reluctant to take on the roll of women for regular household chores. Thus, they hired the services of others and used the barber, brothel, saloon, dining hall, and seamstress for other tasks that would typically be conducted at home.

In the 19th century, neighborhood networks, street gangs, and saloons defined male working-class identities: see, for example, Roy Rosenzweig (1983), *Eight Hours for What We Will: Workers and Leisure in an Industrial City, 1870–1920*; Francis G. Couvares (1984), *The Remaking of Pittsburgh: Class and Culture in an Industrializing City, 1877–1919*; Elliott J. Gorn (1987a), *The Manly Art:*

Bare-knuckle Prize Fighting in America, and “‘Good-Bye Boys, I Die a True American’: Homicide, Nativism, and Working-Class Culture in Antebellum New York City”(1987b); Richard B. Stott (1989) *Workers in Metropolis: Class, Ethnicity, and Youth in Antebellum New York City*; Madelon Powers (1991) “Decay from Within: The Inevitable Doom of the American Saloon,” in Susanna Barrows and Robin Rooms, eds., *Drinking: Behavior and Belief in Modern History*; M. Powers (1994) “The ‘Poor Man’s Friend’: Saloonkeepers, Workers, and the Code of Reciprocity in U.S. Barrooms, 1870–1920”; and M. Powers (1997) *Faces Along the Bar: Lore and Order in the Workingman’s Saloon, 1870–1920*.

Jules Tygiel (1979) was one of the first historians to develop research techniques to understand the history of housing. His conclusions with respect to home ownership and working-class neighborhoods challenged the conventional wisdom of existing historical scholarship. On the East Coast, Tygiel noted that small investors built America’s housing in the last half of the 19th century with limited amounts of capital at their command. At mid-century, it was rare for land speculators to follow the modern practice of purchasing land, setting out streets, and building houses in order to sell a finished housing unit to the ultimate customer. By the 1880s and 1890s, the housing industry was in transition, and professional builders adapted construction techniques for the mass market, expanding the scope of their business enterprise to include speculative building. Construction for a mass market and the speculative nature of the building industry brought protests from carpenters and craftsmen about the inferior quality of new housing. Complaints of inferior materials, poor workmanship, and shoddy construction also appeared in journals serving the housing industry. Although widespread, these types of complaints are not conclusive evidence of misconduct. The complaints may be rooted in the negative effect of mass construction techniques on work and wages, reactions of disapproval in response to a period of rapid change in building technologies, or standardization of building materials. With hindsight, many of the residential structures built during this era in California and elsewhere in the nation have proven remarkably durable.

Adding to the complexity of analyzing residential behaviors was the primarily 19th-century phenomena of taking in boarders (Groth 1994:1). Although some people had taken in boarders as early as the mid-1760s in Boston, “the sudden explosion of the boardinghouse to the stature of a solution to a common domestic problem, on the one hand, and a social menace on the other, was characteristically nineteenth century” (Lynes 1963:41). Lynes speculated that the main reason the boardinghouse phenomenon became so important was the basic economies of living in a growing industrial city: other living accommodations were simply beyond the financial reach of most city-dwellers. There were other reasons, such as loneliness, that drew people to boardinghouses (Lynes 1963:50). They were also a place for those who wanted the flexibility of short-term housing. In contrast to a lodging house that offered only a place to stay, the family boardinghouse also provided meals to this single, mostly male population. Paul Groth’s studies (1983, 1994) of single-room housing in San Francisco developed a four-tier classification based on architecture and social stratification. Palace hotels and mid-priced hotels catered to the upper- and middle-class clientele, while rooming houses catered to people in skilled trades, and cheap lodging houses catered to the indigent and day laborers (Groth 1994:20–23).

Albert Wolfe’s study of short-term lodging in Boston from 1880 to 1905 revealed that boardinghouses were popular for a relatively short period (Wolfe 1906). Wolfe explained that boardinghouses were the first type of short-term housing established in developing towns. Residents were provided with a bed, and meals were at scheduled times and paid for regardless of whether they were eaten.

Wolfe found that boardinghouses in Boston provided a home life where boarders became familiars over their shared two or three meals a day. Proprietors also often took a personal interest in their boarders. "There was a certain personal element in the relations between individuals; no one could be isolated and entirely shut up within himself" (Wolfe 1906:47). John Modell and Tamara K. Hareven (1973) conducted one of the most academic studies of boarding in a family household setting. They examined the widespread nature of boarding within a family household, its demographics, its effect upon family life in the late-19th century, and the reactions of middle-class social workers and urban reformers to the practice.

Distinguishing between the archaeological contribution of boarders and the families of boardinghouse operators, Elizabeth Peña and Jacqueline Denmon (2000) examined questions of consumer preference, ethnic identity, and cultural change on the part of Irish immigrants to late-19th-century Buffalo, New York. Larger-scale commercial boardinghouses have been investigated by Shackel (ed. 1993) and Mrozowski et al. (1996), among others. The boardinghouses of Lowell, Massachusetts, have received exhaustive archaeological analysis under the direction of Mary Beaudry and Stephen Mrozowski who have emphasized, among many other issues, the active role of artifacts in the creation of identity as well as patterns of dominance and resistance on the part of boardinghouse residents vis-à-vis management (Beaudry and Mrozowski 1987).

A number of studies have examined boardinghouses in a variety of settings, including the Michigan iron region (Stofer 1994), a Colorado mining camp (Chay 1968), in Hudson Valley towns (Blumin 1975), in developing Tucson, Arizona (Kimmelman 1994), and urban New York City (Bernstine 1984). Company towns often housed their single employees in boardinghouses as shown by the studies of the Michigan lumber town (Bourke 1982); the Boott Cotton Mills in Lowell, Massachusetts (Horowitz 1973); and the armory in Harpers Ferry, West Virginia (Shackel, ed. 1993). Elsewhere, boardinghouses were established for skilled laborers such as sailor houses in New York City and Milwaukee (Campbell 1977; Reinelt 1989). Boardinghouses provided young women a safe and respectable place to live while venturing into urban centers to look for employment in places like Chicago (Fine 1986) and Salt Lake City (Murphy 1978).

One other example demonstrates the scale of some boardinghouses. Wells, Michigan, a company town owned by the Stephenson Lumber Company, had a hotel for the single workers, which functioned as a boardinghouse, housing 300 men who were all fed three meals a day (Bourke 1982). The company hired managers, usually a married couple, to "keep the single men satisfied by offering comfortable quarters and good tasting, large volumes of food" (Bourke 1982:10). The boarders came from a wide variety of places, including Scandinavia and Croatia.

Some boardinghouses catered to specific ethnic groups such as Basques in Idaho and California (Bieter 1993; Echeverria 1999); Italians in Toronto (Harney 1978); Hungarians in Chicago (Vázsonyi 1978); Jews in Nevada (Stern 1978, 1982); and Armenians in Ontario, Canada (Kaprielian 1983). These studies identify the boardinghouse as an institution of acculturation. Bieter (1993:2) discussed the Letemendi's Basque boardinghouse in Boise, Idaho, as a place where "Basque men and women were inducted into American society." Patrons learned English, met future spouses, got jobs, and sent money back home with the assistance of the boardinghouse staff (Bieter 1993:6). Additionally, there was much singing and dancing on weekends so the Basque could maintain all the customs of their homeland. Boardinghouses ranged from inexpensive housing for the working poor, to expensive and sophisticated residences for the social elite. A boarder's social

status was determined, in part, by the boardinghouse where one lived, and the best houses had a long waiting list (Howard 1982:25).

Boardinghouse studies by archaeologists in California include several from Oakland: the Railroad Exchange Hotel (Huddleson 2002), the Bushen Hotel (Stewart and Praetzellis 2001) and the Pullman Hotel (Stewart and Praetzellis 2001). Others include the Golden Eagle Hotel (Praetzellis et al. 1980) and the Eagle/Pioneer Hotel (Meyer 2002) from Sacramento, the Fallon Hotel (Reionehl 1998) from Columbia, and the Aliso Street boardinghouse (Costello 1989a and 1989b) from Los Angeles.

In contrast to the family boardinghouse, lodging houses were another form of residence that became more common in urban America in the latter decades of the 19th and early-20th centuries. As boarding declined, rooming grew. Most scholars assume that the shift to rooming was associated with a shift from boarding in private homes to larger lodging establishments concentrated in rooming-house districts. However, other scholars say that reduction in boardinghouses and increase in lodging houses resulted from consumers desiring more choice in their meals and less control of their housing (Groth 1994). Dedicated rooming houses and inexpensive hotels providing only rooms replaced institutions that offered room and board and loosened the social, moral, and economic ties that formerly bound landlady to lodger. Joanne Meyerowitz (1988) in her study of Chicago found that the proportion of working women who lived with families dropped by 10% from 1880 to 1910. A majority of single-women lodgers, however, still lived with families, and in smaller towns the percentage may have been more striking.

Both Richard Harris (1992) and Mark Peel (1986) addressed the end of boarding and the advent of lodging and the social composition of lodgers and their hosts. Harris suggests the practice of boarding began to die out as both hosts and lodgers sought more privacy. Rising incomes allowed host families to close their private homes to boarders and, in turn, boarders moved to a lodging house or an apartment to be out from under the watchful eye of housekeepers. "As lodging went into decline it eventually became a mark of poverty," wrote Harris (1992:331). In the 19th century, both lodger and their hosts came from all walks of life, but shifting attitudes and the "stigmatization of lodging by reformers" (Harris 1992:331), placed lodging in the hands of hosts who eked out meager incomes, often families at some critical point in the family life-cycle. Harris noted that, in Toronto, rooming houses typically contained at least six lodgers that provided a living income to the keeper of the house. Lodging houses were usually created from large single-family homes in once-fashionable, but declining, neighborhoods. Where lodging houses were concentrated, they supported typical commercial adjuncts of the lodging subculture—laundries, bars, and inexpensive caf  s (Harris 1992).

Peel (1986) suggested that lodging houses became a target of moral reformers who believed that they exacerbated the social evils boardinghouses had been accused of encouraging. Lodgers paid only for a room and had to find their meals at caf  s and bars. Consequently, they spent much of their time away from the stabilizing influences of family. The reality, explained Peel, was that few residents of lodging houses led the sinful lives they were accused of by social workers and moral reformers. Peel (1986:834) determined that the lodging house was more than a place for immigrants to live while first experiencing the American city, it was a place "where newcomers and families adjusted to demographic and economic transition in the malleable urban household, or where new cultural styles found their audience."

Hotels—particularly those located in the West—have received a bit more systematic attention. Both in growth and improvements, the period between the 1850s and 1870s was a period of vital changes in the development of western hotels. In the 1850s, there were a number of crude public houses. Rural and small town accommodations for travelers along main lines of travel were dirty, poorly kept stops called “road ranches” that were a combination of hotel, restaurant, bar, and store. Richard A. Van Orman (1968) provided a glimpse of this type of public lodging in the 1850s: public houses were crude, unkempt buildings, housing shared beds and ringing with discussions of politics and religion. Road ranches, sprinkled along the trail, were a filthy overpriced combination of saloon, restaurant, and store with cramped sleeping quarters. A lucky traveler might pass the night in a private home and pay the youngest child for the privilege to avoid offending his host. Whatever the condition, travelers were grateful for these resting places, which provided the valuable services of shelter from the elements, protection from Native Americans, and the opportunity to purchase supplies.

Van Orman (1968) stated that hotel development in the West between the 1850s and 1870s was important for two reasons: they brought tourist dollars to western towns and, as an institution, they reflected the emerging economic prosperity and stability of the West. Hotel lodgings reflected this change with the development of luxury accommodations in the late 1800s. Stockton’s Yosemite Hotel and the historic Cary House Hotel in Placerville are prime examples of the development of travelers’ accommodations with a distinct architecture of brick and stone and luxurious rooms designed for the weary traveler (Rayman 1977; Hoover et al. 1990:78). Another excellent example of this western prosperity was the emergence of railroad station-hotels. Railroad companies saw the establishment of hotels at rail stops as a natural progression of their service. These hotels were built to meet the needs of passengers needing a meal or lodging for the night. These hotels were lavish, featuring landscaped lawns, large dining areas, and other amenities to comfort weary travelers.

Historical archaeologists examine residential sites on a variety of scales. On a practical level, however, these property types are approached in the context of specific types of domestic units, including the single family (nuclear or extended family) or multifamily (related and/or unrelated families and individuals). These multifamily domestic units are often reflected by multi-household spaces (up/down, duplex, apartments), hotels and boardinghouses, and live/work arrangements (shared work-domestic space). Archaeologists tend to focus on themes to which the remains contribute in their particular historic contexts, such as gender, class, race, ethnicity, consumerism and consumer choice, and health, as well as the intersections between them.

From the field’s emergence in the 1960s and 1970s, historical archaeologists strove to integrate the insights of the new social history with anthropologists’ studies of household development (Goody 1971; Laslett and Wall 1972). The result has been a number of highly contextualized studies that emphasize families and households as basic units of social reproduction and change, and that have their counterparts in social historians’ “micro-histories” (Levi 2001). In their study, historian Alan Mayne and archaeologist Susan Lawrence (1999) suggested a research agenda that advocated the complementary use of documentary and archaeological data to create close reconstructions of times and places—what they call “ethnographies of place.” Anne Yentsch (1994) provided a masterful example of this approach at the small scale. Mary Beaudry (2004:256) identified several promising themes for household-level analysis: “Intimacy and Separation; Patriarchy, Spatial Ordering, and Power Relations; and the Subversive Poetics of Housework.” Following James Deetz’s emphasis on multiple geographic scales of analysis (Winer and Deetz 1990),

Tim Murray and colleagues advocated the use of non-household specific domestic artifact collections for neighborhood, city-level, and global comparisons. Furthermore, their general scheme for urban archaeology proposes three types of archaeological research questions, each of which corresponds to a different scale of analysis:

Questions answered by excavation. . . . Specific questions answered by a combination of excavation, the analysis of assemblages, and the integration of written documentary data, all with respect to specific locations. . . . General questions answered by a combination of the analysis of assemblages and the integration of written documentary data, both specific and generalized (Murray et al. 2003:126).

America's 19th-century economic transformation led to the separation of workers' residences from their places of work. Archaeologists in particular have been concerned with the "reorganization of the work process and the transformation of the social relations of production" (Wall 2001:133). Most archaeological studies of this issue look to extreme examples—the largest cities where the process occurred early (Cantwell and Wall 2001:201). Diana Wall (1994), for example, examined the geographic migration of middle-class families from central New York. Wall explored both the timing of this phenomenon as well as its implications for changes in family life and gender relations. Archaeology at the home of Daniel Van Voohis by Bert Hoover and Terry Klein documented the silversmith's workshop, and Arnold Pickman and Bert Salwen examined the 19th-century home/office of physician Ben Robson (Cantwell and Wall 2001:197–198). Working-class women who labored at home in the sewing trades and the sexual services industry have been studied by Heather Griggs (2001) and Donna Seifert (1991), respectively. In a rural example, Deborah Rotman and John Staicer (2002) examined the relationships between the resident owners and employees of a saddle tree factory during an era of industrial specialization.

Paradoxically, both the existence of a complementary written record or its absence may increase the research value of domestic archaeological remains. Some intensely contextualized approaches—such as the study of factory workers by Mrozowski et al. (1996)—require a rich documentary context. Others contribute by revealing information concerning people and places about which historical sources are largely mute, such as Deetz's (1996) study of African American family life.

Other studies—linking the mercantile to the residential—have focused on consumption and display in the construction of social identities: see, for example, Karen Halttunen's (1982) *Confidence Men and Painted Women: A Study in Middle-Class Culture in America, 1830–1860*; Stuart M. Blumin's (1989) *The Emergence of the Middle Class, Social Experience in the American City, 1760–1900*; John F. Kasson's (1990) *Rudeness and Civility: Manners in 19th-Century Urban America*; and Richard Bushman's (1992) *Refinement of America: Persons, Houses, Cities*.

Collections associated with single families are studied from perspectives that include political economy, consumerism, ethnicity, class, and gender. In his work on the evolution of capitalism, Paul Shackel (1993, 1998) examined a series of household collections to show how artifacts reinforced the regimentation of everyday life that was essential for the development of industrial time discipline and how consumerism contributed to the maintenance of social class boundaries. Collections from individual households are often used to exemplify the experiences of ethnic and gender populations. Adrian and Mary Praetzellis (2001), for example, used materials associated with a railroad porter's family to show how this group's way of life was dramatically different from conventional notions of how working-class blacks were supposed to subsist.

Feminist archaeologists, such as Donna Seifert and her colleagues (ed. 1991), problematized historical gender roles, examining their assumptions and emphasizing women's lived experiences in the past. Anne Yentsch (1991:150), for example, sought to "delineate how the activities of [men and women] meshed together by looking at where the boundaries between domestic life and public life occurred. How did men penetrate and move between them? How did women?" The multifamily compound examined by Yentsch was populated by whites and blacks, masters and servants, who were engaged in a constant negotiation over identity and power, in which artifacts provided the idiom.

Contemporary Americans tend to associate home ownership with the achievement of middle-class status and as an important stepping-stone toward achieving the "American Dream." Until recently, scholars have also made the assumption that owner-occupied, single-family dwellings were an important historical marker of middle-class status. In contrast to this conventional wisdom, historian Margaret Garb (2005), in her recent study of single-family house ownership in Chicago between 1880 and 1920 contended, "urban professionals and salaried businessmen in industrializing cities saw little economic or social benefit in owning residential property." Aspiration for home ownership in the final decades of the 19th century was more characteristic of immigrant wage-laboring classes, she argues. Garb focused on changes to the form and function of the family home in an industrial and urban setting and concluded that the family home, far from being a separate sphere for a "cult of domesticity," or simply an adjunct to industrialization, was "central to the processes transforming race, class, and gender relations in industrializing cities." She contended that changing material conditions in cities intersected with changes in ideology concerning family, health, and social order to generate a dramatic and enduring transformation in the meaning of the American home by 1920.

A number of social histories of urban areas have challenged the long-standing association of home ownership with middle-class status. In his study of Irish immigrants, Stephen Thernstrom (1964), one of the first generation of new social and urban historians of the 1960s, concluded that even the lowliest immigrant laborers were able to acquire homes, but home ownership did not equate with social mobility. Some more recent scholarship suggests that home ownership was not a middle-class phenomenon in the 19th century. It was more likely, wrote historian Oliver Zunz (1982), for immigrant wage earners to own their own dwellings than native-born workers and lower middle-class urban residents. The greater variety of residential arrangements that accompanied the industrial age meant that the housing experience in America would become more diverse. The reality of social divisions would be more evident in the comparative living conditions of different peoples. Which segments of society shared in the resulting improvements, and how did these improvements affect class relationships in American society? Home ownership was often cited as a conservative influence on workingmen; the positive relationship between home ownership and social control was a familiar argument for property ownership that gave workers an interest in both capital and labor and reduced their geographic mobility.

With the increasing emphasis on individual family home ownership in the 1880s and 1890s, the landscapes around homes became an important resource for study by both historians and historical archaeologists. Children often had the run of the yard and left evidence in their toys of the process of socialization and its variation over time and between cultural contexts (Baxter 2005). The by-products of illicit or clandestine activities, such as smoking and drinking, are sometimes secreted in the yard. In their study of industrial workers, Beaudry and Mrozowski (2001:121) interpreted the "small scale evidence of everyday resistance" as well as the expression of identity on the part of ordinary people. Pollen, postholes, tree holes, and similar features were used to reconstruct

informal landscaping, as well as the changes over time in desired plants versus weeds (Mrozowski et al. 1996:47). Located away from public view, these remains may have had symbolic as well as aesthetic significance to their originators. Gender-specific activities have been reconstructed within the house lot by Gibb and King (1991), who related observed changes in gender roles to changes in the larger economy. For the more recent past, memory maps are used to identify uses and interpret remains found in house yards (Allison 2003). Even disturbed contexts have been found to reveal changes in the use of domestic “yardscapes” (King 1994: 284). Archaeologists have studied the uses of the residential yard by cultural groups, social classes, and genders. Some African American populations, for example, have been found to use their yards for purposes that have African origins, such as burying human remains, as well as cooking, kitchen gardening, and socializing (Armstrong and Kelly 2000; Armstrong and Fleishman 2003).

Landscape historians and archaeologists emphasize that the garden—an area set aside for the cultivation and display of plants—is an important element in its own right and not merely a backdrop to the house. Kathryn Gleason (1994) stressed the “bounded” quality of gardens as the first step in identifying gardens archaeologically. Planting beds, paths, irrigation channels, fences, hedges, paths, terracing, and water features are all used to define garden space. Gardens are especially sensitive expressions of local idiom and traditional culture, as exemplified in work by Lydia Pulsipher (1994), Graham Connah (1988), and Jeffery Fee (1993) on Afro-Caribbean, Australian, and Overseas Chinese gardens, respectively. Archaeological studies frequently employ palynology to document the transition from the pre-garden environment to a cultivated landscape (Kelso 1994) as well as the reconstruction of the hard landscaping of formal gardens (Yentsch and Kratzer 1994).

Other gardens were not so aesthetic or social in their function and took on a much more pragmatic function. Truck gardens were an important feature associated with groups as varied as Italians in the foothills to Chinese and Japanese in the Delta. These gardens often originated on the outskirts of a community where the required open land was more accessible and affordable; these gardens would later be absorbed by a growing townsite, often succumbing to urban infill.

In summary, the above literature review identifies several principal research issues under the Domestic Behavior: Townsite Residents theme where archaeological research can be instructive:

- Reconstructing undocumented garden and yard structure and use to assess vernacular influences, regional variation, and innovation
- Documenting the lived reality of poorly understood populations
- Investigating the role of material culture and consumerism in the transition to industrial capitalism
- Analyzing the dynamics of class, ethnic, and gender interaction
- Problematizing historical constructs such as gender, race, and the “slum” by emphasizing theoretical approaches including agency, feminist theory, and critical materialism

The following bulleted questions on the Domestic Behavior: Townsite Residents theme have been derived from the historical literature and are offered here to aid in constructing site-specific research questions. The following are unlikely to be addressed solely through archaeological research; however, the archaeological findings should be interpreted back to a higher level that might help inform on other avenues of inquiry.

- How did people in small towns view the changing housing universe? Were aspirations for home ownership impeded or advanced within certain sectors of the population by the

expansion of single-family housing in the 1880s and 1890s? How does home ownership relate to socioeconomic status and residential stability?

- At what point did residences become separate, generally, from places of work? Was there a relationship between specific industries and occupation, and did this change during specific stages of town growth? Did California towns conform to typical patterns or was the resulting residential structure, for example, more variegated in terms of socioeconomic class than modern or commercial and industrial stereotypes would suggest?
- Is there a relationship between the decline of boarding and the rise of home ownership? If it exists, is this relationship consistent between large urban centers and small towns?
- In some large American cities, whole districts of lodging houses created distinct lodging sub-cultures with lodgers socially marginalized. Is there evidence that rooming and lodging in smaller towns was different, and did lodgers remain more in the cultural mainstream working in a wide range of jobs, living in private homes, and in a wide range of neighborhoods?
- What was the nature of the relationship between lodger/boarder and host and how did it change in home versus commercial boardinghouse settings? Were there significant changes in these relationships over time? To what extent is it possible to understand the transition from boarding to lodging? What are the social constructs of those participating in these economic relationships? Is it possible to discern between behaviors of the landlord and boarders?
- What social purposes were served by hotels, boardinghouses, or lodging houses? Did they help define the town? Did they serve as a community for disenfranchised individuals such as transients or single seasonal workers?
- Boardinghouses, like houses of prostitution, were oftentimes seen by moral reformers in the 19th century as being anti-family and havens for immoral behavior. Reformers decried the mixing of lodgers and boarding with families in middle-class neighborhoods. Was this concern reflected in the physical distribution of boardinghouses in small towns, and if so, when did this segregation began to appear and why? Was it paralleled by other refinements that resulted in a small-scale physically and socially mixed town becoming specialized by districts, differentiated building types, and a spatial culture that encouraged social as well as physical sorting?
- How do house, garden, and yard structure and use inform on vernacular influences, regional variation, and innovations? Does the social construction of space permit reconstruction of cultural identities such as ethnicity or socioeconomic status?
- How do residential properties inform our understanding of the construction of cultural identities such as gender, social status and class, or ethnicity? What defines these constructs, and how are they expressed through material culture?
- What implications did the placement of structures and the use of space within residential lots have for privacy and public display? How did those arrangements evolve over time? How were front yards used for social display? How are differences in lot arrangements (house placed in front, middle, or back) linked to traditional ethnic aesthetics or the creation of new identities?

Advancing our understanding of the housing experiences of Americans in the late-19th century invariably leads to a better understanding of the both larger, urban centers and smaller towns and communities. Table 11 presents a series of questions pertinent to features relating to the Domestic Behavior: Townsite Residents theme, and they are keyed to the principal research issues. These questions are distinct from the research questions above in that they are at least partially addressable through archaeological means. Appendix A contains all research questions in an easily accessible table format.

Table 11. Research Questions for Domestic Behavior: Townsite Residents.

Property Type Features	Research Themes	Research Questions
THEME: Domestic Behavior – Buildings		
Structural remains (e.g., house foundation, cellar, outbuilding)	Reconstructing undocumented house structure and use to assess vernacular influences, regional variation, and innovation.	What was the layout of this property and how was it built? In what ways does this property reflect a recognized architectural, ethnic, or vernacular building tradition or is it innovative in design or construction? Is this property an example of the expedient construction associated with an event such as a citywide fire or the gold rush? At what point did residences become separate from places of work? Did certain occupational groups generally live and work in the same building in the stages of town growth?
THEME: Domestic Behavior – Yards		
Activity area, garden	Reconstructing undocumented garden and yard structure and use to assess vernacular influences, regional variation, and innovation.	What was the layout of this property and how was it built? In what ways does this property reflect a recognized architectural, ethnic, or vernacular tradition?
	Documenting the lived reality of poorly understood populations.	How was the garden or yard used (e.g., are activity areas evident)? What evidence is there of illicit or clandestine activities that may represent worker resistance? How was the property used to express ethnic or class identity?
THEME: Domestic Behavior – Refuse Disposal		
Sheet refuse, artifact cache (hollow/refuse-filled feature)	Documenting the lived reality of poorly understood populations.	What was life like at this place? What activities were carried out here? Is there evidence of patterned use of specific areas? What can be discerned about the traditional cultural practices, coping strategies, diet, and the health and health care of residents? How do these data compare with contemporary literature and public perceptions of this population?
Sheet refuse, artifact cache (hollow/refuse-filled feature)	Investigating the role of material culture and consumerism in the transition to industrial capitalism.	To what degree did residents participate in popular vs. traditional culture? What was the relationship between consumer practices and factors such as class and ethnicity? What was the role of material culture in childhood socialization and how did it vary by class or ethnicity? Did owners or residents attempt to separate workspace from private space? Conversely, is there evidence of combined work and private spaces? To what degree did local households depend on outside markets as opposed to domestic production, and did that relationship change in periods of economic recession?

Property Type Features	Research Themes	Research Questions
	Analyzing the dynamics of class, ethnic, and gender interaction.	What was the role of material culture in the maintenance of power relations and the negotiation of identity? Is there evidence of resistance to the power structure? Was division of labor based on gender, ethnicity, or class? How did the changing ethnic, gender, and age composition of the household influence the behavioral patterns observed in material remains, and what factors may account for those trends? How did food preparation and consumption serve to structure or restructure social and cultural identities? How did the relationship between consumerism, class, and gender change over time in small towns? How did working-class consumption patterns change over time? What was the relationship between home ownership and material well-being as measured by the possession of consumer products?
	Problematizing historical constructs such as gender, race, and the “slum” by emphasizing theoretical approaches including agency, feminist theory, and critical materialism	Can this property contribute to a new understanding of a concept whose applicability is generally taken for granted? Can the concept be usefully problematized through data derived from this property? What, for example, was a slum? In what context was the term applied and how do the remains of slum dwellers’ possessions help us redefine the label in particular historic contexts?

DATA REQUIREMENTS FOR TOWNSITE RESEARCH THEMES

Data requirements, often referred to as data sets or data needs, are classes of data used to inform upon the questions posed under the broad research issues presented in the research design. A combination of both the physical remains and material culture provided by the excavation of an archaeological site and the documentary sources available concerning that resource make up a researcher’s data sets. As discussed earlier in the chapter, the themes for townsites consist of Infrastructure, Public Health and Sanitation; Infrastructure, Municipal Spaces and Buildings; Industrial; Service Industries; Mercantile; and Residential. The specific questions elicited by these research themes, as well as the themes themselves, change over time as scholarly and public interest in a topic evolve. 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, which is where the site’s interpretive value lies, archaeologists can ultimately evaluate a resource’s eligibility to the NRHP under Criterion D.

Historical archaeologists rely on a number of complementary data requirements to address the gap between theoretical research questions and archaeology. In the simplest terms, these data sets fall into two basic categories: archaeological data and documentary data. Archaeological data include the information available from the archaeological site being investigated, ranging from physical features, such as foundations or landscapes features, to artifact-filled deposits, such as privies or refuse pits. In the case of the latter, information can be provided by both the features and the artifacts or other materials, such as sterile soils, with which it may be filled. The information contained in both individual classes of artifacts, such as ceramics, as well as entire assemblages

can be used in a relevant discussion of questions. In addition, although not all artifacts or features contain information that is applicable to each research issue, often archaeological data can inform upon more than one question. For example, a community dump on the edge of a townsite has the potential to inform upon questions under the theme of *Townsite Creation*, as well as those under the category of *Sanitation Infrastructure* and even *Mercantilism*.

Documentary, or archival, data requirements comprise a wide variety of primary and secondary resources and can include any document that complements and informs upon an archaeological site's history, material culture, or its place in a broader context. This includes federal and regional governmental records, such as census and probate information, local and regional histories, a variety of maps, newspapers, etc., as well as published and gray literature on comparative archaeological sites. Oral histories, diaries, photographs, and personal letters also constitute a critical resource for researchers. Contextual histories, such as the one provided in Chapter 2, provide a generalized discussion allowing researchers to place their site within the broader context of California's history and beyond. A practical application of data requirements can be found in Chapter 5, under How to Assess Data Requirements. The following paragraphs focus on the potential categories of data requirements used to interpret a site's material culture in a way that is meaningful in addressing important 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, or sheet refuse reflecting an individual's, a family's, or multiple families' use of a property, as well as community dumps. These features should ideally have depositional integrity, known function, and identifiable associations. Although a tightly dated assemblage is ideal and may have a higher interpretive value towards the thematic discussions, a feature or deposit doesn't have to be tightly dated in order to contain information. Archaeological data sets may be applicable to more than one research theme or question, and discussions on data requirements often include but aren't limited to the following broad terms: 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 distributions of features such as foundations indicating spatial organization or sheet refuse indicative of specific activities; trash pits associated with individual or group disposal patterns; landscape features; specialized-activity areas such as outdoor ovens, kitchen gardens, cellars/cold-storage areas, recreational areas, etc.; and the layout of features and deposits indicating different residential and/or commercial activity areas. For features and assemblages specific to townsites, please refer to the property types found in Chapter 3; Table 5 provides a quick reference to property type features.

An archaeological site's artifact assemblage also constitutes the primary materials that an historical archaeologist uses to inform upon research themes. Interpreted in combination with documentary data, these materials reflect aspects of personal economics, such as self-sufficiency, commercial product use, or ethnic affiliation or cultural traditions. The following comprise data requirements related to individual artifacts, artifact classes, and larger assemblages: artifacts in identifiable features; sufficient variety of distinctive materials; materials associated with specific activities; minimum number of items (MNI); frequency/proportion to support interpretation; materials reflective of self-sufficiency, including canning jars and homemade items; proportion

of materials demonstrating repair or refurbishment in comparison to items showing little use; proportion of decorative versus functional items; proportion of items indicative of home manufacture versus commercially manufactured; 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; hidden items indicative of surreptitious behavior; artifacts attributable to specific gender or age groups; materials associated with specific activities; and abundance, type, and manufacture dates of different artifact classes, e.g., ceramics.

Ecofacts, a subcategory of artifacts, include both faunal and floral remains. Most often these remains inform upon diet but not always in expected ways. Parasite studies, one form of specialized studies, can inform upon the health of the residents of a community. Other ecofacts can provide information on such topics as commercial versus home-butcher practices, ethnic dietary preferences and the retention of traditional dietary practices, as well as aid in documenting the spatial organization of kitchen gardens and truck gardens. Ecofacts include the remains of both wild and domestic plants and animals; butchered bones; and processed and whole botanical remains (seeds, pits, pollen, kernels, etc.) that are indicative of diet.

DOCUMENTARY DATA SETS

The information a site provides through its material culture is most significant when interpreted in concert with a variety of documentary sources. Primary, or archival, documentary sources include written documentation from a wide variety of sources. These can include, but are not limited to, the federal census; property or tax assessments; probate records; various forms of mapping; blueprints; local newspapers; personal papers, including letters and journals; school records; fraternal organization membership lists and records; genealogies; church records (marriage, baptismal, and death records); vital statistics; oral histories; and photographs. Data from comparable archaeological sites, both gray literature and published reports, can be used to align the information contained within a site into a broader history, and the resource can become more important as a research tool. Oral histories provide a rich link to the past, but it is important to note that oral history covers a broad spectrum; a formal oral history and notes taken during a casual conversation are very different things. The formal recordation of an individual's spoken history should be documented by a trained professional.

The purpose of documentary data is to provide both specific and contextual background information on a site, thus helping to inform upon the associations of a feature, deposit, or assemblage. Contextual sources may include secondary literature on California's townsites development, including histories and economic trends as they relate to California or the nation. Again, Chapter 2 is intended as a tool to help researchers place a townsites in a broader context of history. Secondary literature on specific issues, such as on the evolution of technology trends as they relate to California industry, gender-based studies, or labor history studies, can provide valuable contextual information. Relevant archaeological and anthropological literature should be consulted, and gray literature studies on similar property types are also a critical resource when addressing research questions.

It is important to keep in mind that the above resources are not intended as an exhaustive list, but provide a solid starting point for studies. In addition, it should be emphasized that both historical and archaeological research should be conducted by a trained professional and at a level of effort appropriate to its 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 kind of essential context that is impractical for most archaeological investigations to develop. This chapter offers guidance on how to apply the preceding chapters to evaluate a particular property under NRHP Criterion D. It provides a five-step process for assessing research potential. This process requires the archaeologist to determine whether a property contains the quality and quantity of data necessary to address important research issues. Discussion on data requirements provides guidance for this assessment. Examples are provided to illustrate the various steps. Recommended methods of historical research, archaeological fieldwork, and laboratory analysis are presented to encourage consistency.

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. Because eligibility under Criterion D requires the potential to yield "information important in . . . history" (36 CFR 60.4[d]), the evaluator must identify the kinds of important information that are sought and demonstrate that the property is likely to contain that information. In National Register Bulletin 36 *Guidelines for Evaluating and Registering Archaeological Properties*, Little and Seibert (2000:29) present a five-step process for determining the research potential of an archaeological site:

1. Determine the property's structure, content, and classes of data 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. Considering the property's integrity, structure, and content, assess 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 remember that these five steps do not necessarily represent a linear process. Often a researcher learns information about integrity while researching land-use history in order to determine the appropriate context for evaluation. Steps 1, 2, and 3 collectively are the process of identifying data requirements; that is, what will it take to address the research questions that have been identified as important. Steps 4 and 5 discuss 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 appropriate data to address important research issues is crucial to assessing National Register eligibility; therefore, it is important to define this concept prior to explaining how the five steps are applied.

DATA REQUIREMENTS

WHAT ARE DATA SETS AND DATA REQUIREMENTS?

Data sets are categories of information that inform archaeological research questions. Depending on the questions, relevant data sets might consist of types of artifacts (such as pottery or butchered food bones), features (such as discrete artifact caches or building remains), or the relationship between these and other site elements. Data sets are not merely facts about archaeological site

content or structure but information applied to research questions. The observation that a site from the gold rush era contains 746 sherds of Chinese brown glazed stoneware becomes a data set when that information is applied to a research question about the nature of trade between China and California during the early years of statehood. Examples of the range of archaeological and documentary data sets can be found at the conclusion of Chapter 4.

Data requirements are the categories of data that are necessary to address a given research question. To archaeologically determine the construction dates of a series of buildings, for example, requires time-sensitive artifacts and/or stratigraphic relationships; to address questions about subsistence requires food remains. The general data requirements of many research questions may be the same. This is particularly true of issues that require tightly controlled data sets rather than simply the presence or absence of a particular artifact or feature type. To avoid redundancy, research designs may present some data requirements in a table or matrix. While the quality and quantity of specific classes of data will depend on context and research issues, general thresholds are offered later in this chapter.

As archaeological data sets are the sources of the important information required for eligibility to the NRHP under Criterion D, an evaluation must make the case that a site contains or is likely to contain these data sets.

AIMS-R MODEL

The archaeological literature contains many evaluative schemes that seek to put the concept of integrity to work through set principles designed to assess the archaeological research potential of a specific property or feature. The mnemonic AIMS-R model, adapted from McIlroy and Praetzelis (1997:277), is one of these tools:

Association. All else being equal, the research potential of an archaeological deposit that has reliable sociocultural, historical, and chronological associations will be greater than one whose associations are less certain.

Integrity. All else being equal, an archaeological feature that is relatively intact will have more research potential than one whose physical condition has been compromised.

Materials. All else being equal, the research potential of an artifact cache from a deposit will increase with the number and variety of items represented.

Stratigraphy. All else being equal, a feature or site that has discrete vertical or horizontal depositional units will have 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.

Rarity. All else being equal, remains that represent uncommon household types or activities will have more research potential, because of their rarity, than remains of well-represented entities. Their scarcity may give these remains significance even in cases where they fail to meet other thresholds of importance.

AIMS-R was designed to help assess the potential of a particular type of resource: the domestic artifact cache discussed in Chapter 4 under the Domestic Behavior theme, in particular those

found at larger, urban centers. Other property types will require subtly different principles that capture the kinds of research values for which they are important. The AIMS-R tool may be used on a feature-by-feature basis to determine contributing or noncontributing elements or may be used to determine eligibility of a site as a whole.

APPLYING THE FIVE-STEP PROCESS

STEP 1: DETERMINE THE PROPERTY'S STRUCTURE, CONTENT, AND CLASSES OF DATA

The initial assessment of an archaeological site may involve several steps, depending on the complexity, condition, and the expected research potential of the property, as well as the investigation's legal context (36 CFR 800, Programmatic Agreement, CEQA, etc.). In all cases, the first steps involve (1) conducting initial historical research to define the site's associations and context and (2) recording the site to assess whether there is potential for buried information-bearing deposits. In many cases, further research or site documentation will be necessary. In this context, documentation refers to efforts to identify baseline information about the property. Depending on the nature of the site, it may require detailed mapping and surface cataloging of artifacts or test excavation. As archaeological excavation is both costly and an impact to the resource, the latter should be limited to what is necessary for the evaluation or to adequately prepare a data recovery plan. Where appropriate, nondestructive remote-sensing techniques may be used to identify artifact-filled pits, foundations, and other subsurface features during the initial phase of work. Specific approaches and methods are discussed below under the section on methodological consistency.

The goal of this first step is to establish some hard facts about the fundamental traits of the site and the discrete deposits and features it contains. Establishing the essential groundwork for later analyses, the researcher must ascertain the "what, who, when, and where." At this stage, the site is described through basic questions such as

- What are the site's physical features?
- Who created it?
- How old is it?
- What activities are represented?

A combination of archaeological observation and documentary research is necessary to answer these questions and to determine the property category to which the site and its associated deposits and features belong. Although they provide crucial data, in most cases the answers to these simple questions do not constitute the *important* information required by NRHP Criterion D. They are best conceived of as "building block" questions whose purpose is to help assess whether the site has archaeological focus and integrity of association.

James Deetz (1996:128) uses the concept of archaeological "focus" to assess the research potential of archaeological sites. By focus, Deetz refers 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.

Data requirements for this step are archaeological features with identifiable functions as well as artifacts with identifiable functions and dates. Without these categories of data, the site or feature cannot be said to have archaeological focus. Historical data from primary and/or secondary sources—such as tax assessments, census schedules, official maps, and oral histories—are usually necessary in order to link the remains to historic events, processes, and individuals.

It may be possible to determine that some sites are ineligible for listing in the NRHP after the initial phase of research if (1) there are convincing reasons to believe that no potentially eligible archaeological remains were created at the site (e.g., occupation was very ephemeral or recent, septic tanks rather than earth privies were used, refuse was disposed of off-site, etc.), and (2) the integrity of observed and anticipated remains is documented to have been thoroughly compromised by postdepositional disturbance as evidenced by a lack of stratigraphic integrity, mixing of deposits from different periods, etc.

This step must conclude with a statement, supported by analysis, to the effect that the property has or has not retained these vital characteristics. Before beginning the next step, the researcher should be confident that the site is an identifiable historical entity and is worthy of continued attention. Properties that clearly lack archaeological focus and integrity of association should not be studied further as they will not meet the NRHP criteria (see Step 3: Identify Important Research Themes and Questions).

The following examples help demonstrate the NRHP process:

The Old-ish Stone Fence

- *The Archaeology:* Carefully peeling back a layer of asphalt with a backhoe, archaeologists uncover a dry-laid stone wall. Because it has no wall returns, they conclude that it was freestanding. It probably functioned as some kind of fence, although it may have been the side of a lean-to. The foundation trench contains 25 unbutchered cattle bones (representing from four to six individual animals) but no other remains.
- *The History:* Historical maps and other records show vacant land at this location with no structures or other improvements. The county surveyor's field notes for July 1956 mention that this previously open ground at the rear of a large residential parcel had recently been paved with asphalt for a surface parking lot.
- *The Analysis:* There is no way to determine when this feature was built except to say that it predates 1956 and that it was probably a fence (if it wasn't something else). The feature lacks archaeological focus as well as integrity of association. Unless additional information is found, the AIMS-R criteria are not met, and it is unlikely that this feature could be determined eligible to the NRHP under Criterion D.

A Hole in Need of Filling, Part 1

- *The Archaeology:* Peeling back the asphalt and gravel in the center of a small town, the archaeologists reveal a circle of unmortared bricks about 4 feet in diameter—clearly a hand-dug well. The surface of the feature's fill is a mixture of sandy sediments and clay lumps with some ash, animal bone fragments, and a large fragment of earthenware with a purple transfer print.
- *The History:* In such a small settlement, it is easy to find the address and residents—the Yankel family—on both the 1880 and 1900 census schedules. The 1888 Sanborn map indicates a wood-frame residence less than 10 feet from the well's location, and research

in the town's water records shows that the Yankel's home was connected to the mains on 3 December 1881.

- *The Analysis:* With water from the mains, the Yankel's old well was redundant by 1882 and was filled thereafter. Exactly how long after is not known. Purple transfer-printed ceramics were thoroughly out of fashion by the 1880s, and the fragment may have been discarded at that time by some trend-conscious resident. It is known that the well contains domestic artifacts, the objects were deposited after 1881, and it is likely that the materials are associated with the Yankel family. As the activities that led to the creation of this feature and its contents are reconstructed, as well as the social unit (in this case a family) that was responsible for its contents, it can be said that the feature appears to retain focus and integrity of association, likely meeting the AIMS-R criteria. Its research potential is worth pursuing to the next step.

STEP 2: IDENTIFY THE APPROPRIATE HISTORIC CONTEXT

The goal of this second step is to flesh out our understanding of the site by placing it within its historic context. This step builds upon previously collected historical documentation by adding essential site-specific details—both historical and archaeological—as well as expanding the scale of analysis to assess the site's place within its historic and geographic milieu. At this stage, the researcher seeks to answer questions such as

- What was the site's role in local and/or regional history?
- What activities are known or believed to have been carried out at the site?
- What is the site's horizontal and vertical extent?
- What features did the site contain historically and which have survived as archaeological remains?
- To what extent has the site been disturbed?
- Which of the site's components have archaeological focus?
- What classes and quantities of artifacts and ecofacts are contained in the various components of the site that might constitute data sets for future analysis?

The archaeologist's goal at this stage is to assess the quality and quantity of archaeological remains at the site. The answers to these simple questions do not constitute the *important* information required by NRHP Criterion D. Instead, they are the second tier of building blocks and an essential step toward determining whether the property or any of its components contain data that may be used to address important research questions. This stage generally requires test excavation and laboratory analysis to reveal the site's structure and content. The field strategy should 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. Where they will produce the required information, the least-intrusive and most cost-effective methods—such as simple probing or ground-penetrating radar—should be used rather than excavation.

The statewide historic context presented in Chapter 2 provides a broad foundation for understanding archaeological resources within California towns. To evaluate a particular property, however, additional archival research must be conducted to place a resource or site within its site-specific context. This more-focused historic context consists of a detailed narrative containing three elements: theme, place, and time. "Theme" implies the principal activity carried out at the site and can be derived from the categories in Chapter 4. "Place" means the geographical location where the

important activity was carried out and may be identified at either a local, state, or national scale, depending on the nature of the site. “Time” indicates the period of time during which the site made its contribution to California history. For example, the historic context for the remains of a mercantile establishment in Sonora might be “Merchants and Mercantilism in Sonora, 1860–1870.”

To create the site-specific context, archival research should focus on the period represented by the archaeological remains and address basic questions such as who, what, when, where, and how. Primary documents, secondary sources, and oral accounts may all contribute. Historical research should generally concentrate on the most cost-effective sources of the information. A complete title search, for example, may not be necessary if adequate data can be obtained more readily from maps. Secondary sources are often most useful for general background information while primary sources speak to specific times and places. It is important for the researcher to assess the accuracy and possible biases of their sources as part of this process.

One of the goals of historical research is to help establish the property’s period of significance, defined in National Register Bulletin 36 as “the time range during which the property was occupied or used and for which the property is likely to yield important information” (Little and Seibert 2000:34). Defining the period of significance gives temporal focus to the context in which the site will be evaluated. For example, an archaeologist determines that a cache of domestic artifacts—including heirloom pieces made in the 1830s—was deposited in the late 1850s. The project historian discovers that a particular family occupied the location for a decade after the gold rush. The property’s period of significance is 1849–1859. National Register Bulletin 15 contains an extensive discussion of this concept.

Primary documentary resources for towns in California are generally kept locally, but where they are located varies from county to county and town to town. Some counties have created county archives, such as the Center for Sacramento History in Sacramento County, the Carlo M. DeFerrari Archives for Tuolumne County, or the archives associated with the San Bernardino County Museum. Other counties, like Contra Costa County, have transferred their historical materials to the local historical society. Sonoma and San Francisco counties keep the bulk of their historical materials in the history room or annex of their main public library. Archival practices at the local level are idiosyncratic, and records may be scattered among a variety of institutions. The first step in tracking down the location of these records is the *Directory of Archival and Manuscript Repositories in California* published by the Society of California Archivists (1996). It is indexed five ways: by repository name, by county, by type of institution, by general subject, and by notable holdings. The county recorder’s office for each county potentially contains a wealth of historical material; however, the organization of historical records and their accessibility to the researcher vary widely. Some counties, such as Alameda, have no master list of their historical record holdings, but counties such as Sonoma have published inventories for their documents and maps (Sonoma County Recorder’s Office and Sonoma County Historical Records Commission 1987; Sonoma County Recorder’s Office 1995).

Many historical societies publish a journal or a bulletin that can be a rich source of local history. The larger societies have well-known journals such as *California History* (originally the *California Historical Society Quarterly* and then the *California Historical Quarterly*) published by the California Historical Society; *The Southern California Quarterly*, published by the Southern California Historical Society; and the *Journal of San Diego History*, published by the San Diego Historical Society. Publications with the unlikely names of *Diggins’* or the *Dogtown Territorial*

Quarterly (now the *California Territorial Quarterly*) published in small towns such as Oroville and Paradise should not be ignored. These publications contain articles by amateurs and local historians, and they are frequently a rich source of local material difficult to find elsewhere. Professional journals such as the *Pacific Historical Review*, the *Pacific Historian* (1950s–1987), the *Western Historical Quarterly*, and *Western States Jewish History* are good sources for California history. Relevant articles can also be found in scholarly journals not specifically focused on the West, such the *Journal of Urban History*, the *Journal of American History*, the *Journal of Historical Geography*, and *Historical Archaeology*.

Although their research focus is generally different from that of many historians and historical archaeologists, genealogical societies are a great source for research aids and compiling primary materials. CAGenWeb, part of the USGenWeb project has links to genealogy pages in each of California's 58 counties (<http://www.cagenweb.com/>). The type and quality of materials vary widely for each county; some have very little, but others have searchable databases, photographs, and downloadable county histories. One of the premiere genealogical sites—Cyndi's List of Genealogical Sites on the Internet (<http://www.cyndislist.com/>)—has links to over 264,800 sites on the Web and has a specific portal for California (<http://www.cyndislist.com/ca.htm>). The federal population census schedules, numerous city directories, historical newspapers, and a wide array of historical materials are now available through subscription services such Ancestry.com and Heritage Quest. Some public libraries have portals that provide free access to some, if not all, of these companies' holdings.

Government agencies, university libraries, genealogical and historical societies are uploading their holdings to the internet at ever increasing rates. Federal patent records can be searched at <http://www.glorerecords.blm.gov/>. The American Memory Site of the Library of Congress <http://memory.loc.gov/ammem/index.html>) has Panoramic Maps, 1847–1929, as well as “Additional Cities and Towns Cartographic Items,” and Panoramic Photographs, 1851–1991, which include some Californian cities and towns.

Sanborn Company fire insurance maps are among the most valuable sources for learning about the history, growth, and development of California's towns. They can be accessed digitally at <http://sanborn.umi.com>. These digital versions of the Library of Congress microfilm collection are part of a paid subscription service; however, the maps can be used at no cost via various universities and public libraries. These fire insurance maps are large-scale plans (many originally in color) containing the outline of each building, indicating the size, shape, and construction materials, heights, and function of structures. Using numerous symbols and some text, a wide range of information is provided, including the building's use (residential, store, saloon, stable, etc.) to, in some cases, the names of owners of factories and details on what was manufactured in them. Initially the Sanborn Company would periodically create and issue new maps to the subscribers depending on how quickly the town was changing. In later years, the company sent out annual corrections to the map owner to paste over the individual properties that had changed (<http://sanborn.umi.com/HelpFiles/about.html>). Sanborn maps, dating from 1884 to 1957, are available for 569 cities and towns in California. Generally, there are three to five maps for each town. If one does not have access to the digital versions, public libraries frequently have microfilm from the Library of Congress for their local area. Original hard-bound Sanborn maps, frequently paste-corrected to a year different from those maps contained in the Library of Congress, can sometimes be found in local archives, history rooms of public libraries, and historical society collections.

The California Digital Library (www.cdlib.org/) has a variety of services, including the Online Archive of California (OAC) (<http://www.oac.cdlib.org/>), which provides a single searchable database of finding aids to primary source materials held in Californian libraries, archives, and museums; Calisphere (<http://www.calisphere.universityofcalifornia.edu/>), which offers a free public gateway to more than 150,000 digitized images, documents, and other primary sources; Melvyl Catalog (<http://melvyl.cdlib.org/>), a searchable catalog of library materials from the 10 University of California campuses, the California State Library, the California Historical Society, and other institutions; and Counting California (<http://countingcalifornia.cdlib.org/>) which houses various government data and statistics about California. Internet books searches, such as <http://www.archive.org>, has thousands of out-of-copyright books, including California county histories published in the late-19th century and Bancroft's California series. These books can be searched online and the entire book downloaded at no cost as a portable document format (PDF). Google Book Search (<http://books.google.com/bkshp?tab=wp>) allows free downloads of books determined to be out of copyright and in the public domain. It also allows limited searching and viewing of books not in the public domain and provides information on where you can purchase or borrow them.

Theses and doctoral dissertations are frequently a valuable source of information. Researchers can see more than 2 million of these documents, ranging in date from 1861 to present, by utilizing the ProQuest database. Substantial numbers are available as full-text free downloads. If the document is not available electronically, many local libraries and historical societies have copies of these works if they pertain to their area. Unpublished reports and manuscripts, such as CRM studies produced by federal and state agencies as well as private consulting firms, generally known as gray literature, can also provide a wealth of information. These are available at the regional offices of the California Historical Resources Information System. In addition, genealogical Web sites, such as those hosted by <http://rwr.rootsweb.ancestry.com> or the free site, www.familysearch.org, hosted by The Church of Jesus Christ of Latter-day Saints, can be very helpful for place and family names.

Other useful Internet sites include

- <http://countingcalifornia.cdlib.org/>
- <http://melvyl.cdlib.org>
- <http://memory.loc.gov/ammem/index.html>
- <http://sanborn.umi.com>
- <http://sanborn.umi.com/HelpFiles/about.com>
- <http://search.live.com/results.aspx?q=&scope=books>
- <http://www.cagenweb.com/>
- <http://www.calisphere.universityofcalifornia.edu/>
- <http://www.cdlib.org/>
- <http://www.cyndislist.com/>
- <http://www.cyndislist.com/ca.htm>
- <http://www.glorerecords.blm.gov/>
- <http://www.oac.cdlib.org/>

As archaeological fieldwork continually adapts to field conditions and discoveries, the project historian should maintain close contact with the principal investigator during archaeological testing; feedback between the two often leads to changes in field strategy. It is essential that research and analysis be carried out by qualified professionals.

The following archaeological examples were designed to help demonstrate the NRHP process:

Fire!

- *The Archaeology:* Warren's General Merchandise Store burned to the ground in 1882. To work out the site's structure and content, archaeologists excavated several units down to the historic-era ground surface. They encountered a grid of massive brick piers placed in wide foundation trenches that extended 2 feet into the subsoil.
- *The History:* Research into the town's tax assessments and Sanborn fire insurance maps revealed that Warren's store had evolved from the owner's house. The year after the fire Warren used his insurance settlement to erect an impressive brick building on the site: Warren's Great American Emporium. This change is clearly noted on the 1890 Sanborn map of the town.
- *The Analysis:* Initially, the archaeologists were excited about the possibility of using artifacts from Warren's store to reconstruct the town's early trade networks. What better source than stock destroyed in a well-documented event? Unfortunately, later construction not only destroyed most of the deposits from the fire, but so disturbed the stratigraphic sequence that it was not possible to determine which materials were related to the commercial enterprise and which to Warren's domestic occupation. As a source of data about early trade networks, the site has problems both with integrity of association, as well as with the small data set available for study. In this case, the AIMS-R criteria have not been fully met; consequently, the archaeologists will have to think of a more applicable research issue to justify their work there.

A Defunct Ironworks, Part 1

- *The Archaeology:* Until recently, a massive concrete slab from the 1960s marked the site of the Miners' Cooperative Ironworks. Removing the concrete and its underlying sand fill, archaeologists uncovered portions of the casting floor and piles of wasters that had not been fed back into the furnace; excavations for a gasoline tank had destroyed most of the cupola furnace. A cross-sectional trench revealed layers of furnace waste that had accumulated in a nearby stream channel.
- *The History:* Documentary evidence of the Miners' Cooperative was sparse—two listings in the city directories and some real-estate records—but enough to establish that this was a short-lived venture that failed in the early 1870s, perhaps because of competition from San Francisco foundries.
- *The Analysis:* Protected by 8 inches of concrete, enough of the site had survived for researchers to determine the enterprise's working structure. Although the cupola was gone, other remains survived with their stratigraphic integrity intact. Researchers have the opportunity to reconstruct the industrial processes at the Cooperative: the type of fuel and raw material used could be evaluated by analyzing the furnace waste, and the rejected products speak to the overall efficiency of the technology. Enough of the site remains to suggest it will likely meet the AIMS-R criteria, and further work is justified.

A Hole in Need of Filling, Part 2

- *The Archaeology:* To find out the quantity and variety of artifacts in this well, archaeologists decide to excavate a cross section through the deposit. Large numbers of objects are retrieved, and after carefully examining the stratigraphy, archaeologists determine that the feature was filled in a series of discrete events. There is no evidence of disturbance.

- *The History:* With a deposition date of circa 1885 provided by the archaeologists, the project historian works to find out more about the social unit that occupied the lot at this time. Records of local taxes, naturalization, and voter registration show that Chaim and Rivka Yankel moved here directly from Chelm, Russia, in 1875. A shopkeeper with a store nearby, Yankel was a longtime member of the orthodox synagogue Congregation B’nai Israel in Jackson.
- *The Analysis:* Because the Yankels lived at this location before, during, and after the artifact collection was deposited in their well, it is reasonable to conclude that the family was the source of these objects. At this point, our archaeologists understand the content and structure of this site as well as its historic association: a large, diverse, and undisturbed collection of artifacts and ecofacts linked to the domestic life of an immigrant family. Research identified a strong historical association, and therefore the AIMS-R criteria are likely to be met and further work is justified.

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 their historical context. The next step is to determine the appropriate research themes and questions that the properties may be able to address. Chapter 4 contains reviews of scholarly research in history and archaeology by activity category. Each theme concludes with a bullet-point list of some of the important research issues currently being studied. Example sets of research questions are also provided that correspond to each theme and that 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 sources as sparks for the imagination and not as a fixed canon or received knowledge that makes additional research and innovative approaches unnecessary.

Research questions must be pertinent and important. To be pertinent, a question must articulate well with the research themes. A question is important if it has the potential to significantly inform the domain through the methods of historical archaeology. It is not necessary that new facts about the past 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]).

The key to determining a site’s research potential is in constructing questions that are neither context-bound (i.e., trivial, self-evident, or entirely context-specific) nor overly generalized (i.e., those to which the site can make no useful contribution). The characteristics of the site itself have been addressed in Steps 1 and 2. The questions that are developed under this step address substantive scholarly issues at various scales of analysis. The researcher must use their understanding of the structure and content of the site and relevant research themes to assess whether archaeological data can make a useful contribution to one of these issues:

- 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?

Continued historical research is important in order to develop an understanding of the site's historic context and to provide an assessment of the state of scholarly knowledge about relevant research issues. If the same information can be derived more directly and cost-effectively from another source—such as oral history, historical documents, or previous archaeological studies—it would be senseless to pursue it through archaeology. A research question that seeks this kind of information may be pertinent, but it cannot be considered *important*. As noted earlier in this chapter, Barbara Little and Erica Seibert (2000:29) have identified five ways in which documentary and archaeological sources are used together in historical archaeology. This method can also be the source of relevant research questions when they are applied to the site's historic context. The historic context helps assess gaps and biases in existing information as well as places where archaeological interpretation may complement or help reassess 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. As the importance of a site under Criterion D is measured by its ability to contribute important information, the archaeological data requirements of particular questions must be specified. Different research questions will require differing types and quantities of data. These thresholds should be specified so it is clear whether the site actually contains the necessary data sets. Some practical guidelines to help assess these thresholds are presented later in this chapter.

The following archaeological examples were designed to help demonstrate the NRHP process:

A Defunct Ironworks, Part 2

- *Background:* Until it went out of business in 1872, the Miners' Cooperative Ironworks made equipment for the hard rock miners of the Sierra Nevada. Archaeological test excavations revealed evidence of the iron foundry and machine shop in the form of the casting floor, piles of wasters, and layers of furnace waste that had accumulated in a nearby stream channel. Although underground tanks had destroyed most of the cupola and an adjacent lean-to, the remains of a fuel bunker survived next to a railway spur.
- *Identifying a Research Theme:* The industrial buildings and structures section of Table 8 suggests a research theme for this site: "reconstructing specific industrial and manufacturing processes." Returning to the discussion of research themes in Chapter 4, the researcher can see that this theme emerged from scholarly interest in industrialization, its mechanisms, and outcomes. A successful industry needs both standardization and creativity. The mechanisms by which these complementary requirements are resolved can be investigated through case studies, such as at the site of the Miners' Cooperative Ironworks, and are important to an understanding of the creative process.
- *Identifying Research Questions:* The researcher may now convert this general scholarly (and humanistic) concern with the mechanics of industrialization into high-level questions such as, what are the sources of technological innovation? Research at this site can contribute to an understanding of the process if a question is structured to refer more closely to the context under study and it has archaeological implications: to what degree is technological innovation the result of the discoveries or inventions of specialists or those made on the shop floor? If innovation and adaptation to local conditions were the outcome of the creativity of the Miners' Cooperative Ironworks' staff—the molders, furnace men, ironmaster, and others—then archaeological remains should be variable, not homogeneous, as workers made incremental improvements to various processes. The

mechanics of firing and ways of protecting the inner wall of the cupola may vary; slag might show adaptation to variable fuels, mixes of raw materials, firing temperature, and use of different fluxes; the molding medium (green sand) may exhibit different composition; and wasters may represent failed experiments. As the basic technology of industrial cast-iron work is well documented in contemporary sources, specific research questions should emphasize local adaptations that contribute to these important issues.

- *Data Requirements—History:* Contemporary accounts of historical foundry operations. Historical formulas for foundry materials.
- *Data Requirements—Archaeology:* Sufficient archaeological focus to determine the foundry's structure and operation. Samples of raw materials, wasters, and by-products suitable for chemical analysis from contexts with appropriate historical associations. Stratigraphic sequence of by-products and other materials to allow analysis of change of over time. If the data prove to be present, the AIMS-R criteria will have been met.

A Chinese Garden

- *Background:* Yee Ah Tye immigrated to California from China's rural Guangdong province in 1852. After two decades of mining, he bought a house on a large urban lot in a small southern California community and, assisted by his three sons, turned to market gardening. With the decline of mining in the area, the town began to fall into decay and Ah Tye's eventually abandoned his garden. It is assumed that the AIMS-R criteria for this resource have been met.
- *Identifying a Research Theme:* One of the research themes listed under the Domestic Behavior: Townsite Residents (see Table 11) concerns documenting the lived reality of poorly understood populations. The significance of this theme is in documenting the diversity of American cultures for its own sake as well as for insights to be gained into contemporary California, whose growing immigrant population is alternatively seen as a cultural threat or a source of vitality. An appreciation of how immigrants selectively maintained, adapted, or discarded the cultural traditions of their homelands is critical to an understanding of the sociology of immigration. A garden is both a private space, where an owner like Yee Ah Tye may feel free to express himself, and a blank canvas where he may unconsciously reproduce a cultural template.
- *Identifying Research Questions:* To devise research questions that can inform this theme one must consider the degree to which the yard reflects a documented ethnic or vernacular tradition. This may require the help of a specialist in cultural landscapes. Low-level research questions must be constructed to tease out relevant issues concerning the garden's structure: What was its layout? What techniques were used to build it? What activity areas are present? Is there evidence that the space was used for domestic, religious, recreational, or subsistence activities? What garden structures are present, and what are their cultural origins? Can commercial planting areas be distinguished from decorative ones? What plants were used and what was their economic, cultural, or aesthetic significance? The answers to these and other research questions are combined to generate a picture of the garden and its significance to those who created and used it: Was Yee Ah Tye's garden a small slice of southern China, an amalgam of cultural influences, or somewhere in between?
- *Data Requirements—History:* Census schedules and immigration records concerning Yee Ah Tye and his family. Maps, tax assessments, and other documentary sources that record the garden's ownership, location, and uses. Photographs and oral accounts of the garden's structure and appearance.

- *Data Requirements—Archaeology:* Remains of paths, planting beds, and garden structures, such as walls and terraces, sufficient to envision the formal structure of this yard. Artifact concentrations of sufficient quality and intensity to reliably indicate use areas. Pollen samples from locations throughout the garden that represent plants from the period under study.

A Hole in Need of Filling, Part 3

- *Background:* Fleeing persecution and looking for a better life, the Yankel family was part of the great migration of Eastern European Jews to North America. From Sacramento, they traveled up into the Sierra foothills and eventually settled at a crossroads settlement 5 miles from Jackson. Tax records show that Yankel's American Store thrived as the hamlet became a small town. Their home was one of the first to be connected to the water mains.
- *Identifying a Research Theme:* The research themes and questions in Appendix A: identify a range of research issues for domestic property types that are relevant here. By "documenting the lived reality of poorly understood populations," archaeology can contribute to one of the most important themes in U.S. history: the process by which immigrants' modified their traditional cultures to fit into life in the new country. Of course, the Yankel family's ethnicity was only one element of their social identity. They were also consumers and storekeepers who had access to the range of material goods available at this time and place. This may allow the archaeologist to investigate the role of material culture in class relations under the research theme of "analyzing the dynamics of class, ethnic, and gender interaction."
- *Identifying Research Questions:* Now the archaeologist uses what is known of this family to derive research questions that will elucidate these and other general themes. For example, because a great deal is known about the expectations of Jewish orthodoxy toward family life, the relationship between this ideal and the Yankel family's actual behavior can be investigated. Were they strict in their conformity to *kashrus*, the prescribed dietary system? If not, how did they modify their observance? Did this change over time? Using comparative data, one could ask whether patterns of cultural maintenance and assimilation vary with geography—were rural people more or less likely to maintain their cultural traditions? Is there evidence that old-fashioned household goods were discarded en masse simply because they were no longer in style? Which other local families were also being connected to the water main at this time and were they socially prominent? What might all this imply about the family's status in the local community and how material culture contributed to their position?
- *Data Requirements—History:* Census, organizational membership rolls, and other records that flesh out the family's composition and trajectory. Local records that show their financial condition through time. Water hookup records. Synagogue and cemetery records, as well as newspaper accounts of the family's religious involvement. Store account books and/or other evidence of the cost and availability of durable artifacts.
- *Data Requirements—Archaeology:* A stratified archaeological deposit. It must be possible to isolate and exclude disturbed or archaeologically contaminated deposits, if any are present. An artifact cache containing remains such as food bones, glassware, and other artifacts in sufficient quantities for analysis. If the data prove to be present, the AIMS-R criteria will be met.

STEP 4: ASSESS QUALITY OF THE DATA

This is arguably the trickiest part of the evaluation process for it 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.

National Register Bulletin 15 defines integrity as the “ability of a property to convey its significance.” A site must have integrity to be eligible for listing on the NRHP (Table 12). Although many archaeologists take the concept at its face value to mean a site’s physical condition, this is only part of the story. 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 can meet this test if intact stratigraphy is not necessary to meet data requirements.

The NRHP Criteria for Evaluation identify seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association.

National Register Bulletins 15 and 36, as well as *Assessing Site Significance: A Guide for Archaeologists and Historians* by Hardesty and Little (2000), provide detailed, practical guidance on how each of these aspects of integrity should be applied. In general, archaeological properties should retain integrity of location, design, materials, and association to be important under Criterion D. There is usually no need to address setting and feeling as these characteristics rarely affect a site’s information value. Every evaluation of NRHP eligibility must discuss the aspects of integrity that are relevant to the important qualities of the site being assessed.

Table 12. 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 time in history.
Feeling	A property’s expression of the aesthetic or historic sense of a particular time.
Association	The direct link between an important historic event or person and a property.

STEP 5: IDENTIFY THE IMPORTANT INFORMATION 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 will likely involve demonstrating the relationship between the archaeological and documentary data that pertain to the property. Barbara Little, former National Register 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 (Little 1992). In James Deetz's (1988b) 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 anticipated results will "provide a more satisfactory explanation than would be forthcoming from either set of [archaeological or documentary] data alone" (Deetz 1988b:367).

The five steps delineated above, when appropriately applied, lead the archaeologist through the process of determining whether the site meets the AIMS-R criteria and thus contains important information and meets National Register Criterion D. An important aspect to determining whether a site meets data requirements is to compare it to similar types of sites. To facilitate such comparisons in the future, the following sections on methodological consistency are offered. Adhering to these currently accepted "best practices" will improve the profession's ability to bring important contributions to our collective understanding of the past.

METHODOLOGICAL CONSISTENCY

To make a successful argument for a site's eligibility to 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—is only as reliable as the quality and consistency of the data on which it is 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" (U.S. Department of the Interior 1983). This section provides guidelines for methodological consistency in the areas of historical research, archaeological excavation, and archaeological laboratory analysis.

ARCHIVAL/CONTEXTUAL RESEARCH

This section summarizes standard research techniques employed to gain sufficient information to evaluate historical archaeological properties. It is a modified version of the text that appears in Caltrans' thematic study for agricultural properties (Caltrans 2007).

The level and adequacy of the historical research are fundamental principles behind defensible eligibility determinations. Once an archaeological property is identified, the historic context included in this study should be reviewed. Chapter 2 of this volume provides a broad outline of the development and evolution of towns in California. While that chapter is very useful as a broad context, assisting in the development of an evaluation document's initial context, individual sites must be studied within their specific historic contexts. This involves examining primary and

secondary materials in order to establish a site-specific historic context that will assist in predicting the kinds of remains likely to be present, as well as disturbances to the property and potential for surviving archaeological deposits.

After reviewing the broader context provided in this document, primary and secondary source materials should be examined for a specific property's land-use history. This information allows for the identification of the occupation history and property types that may be present at a site. This in turn assists in the development of a site-specific context that identifies and interprets the nature, family or individual histories, activities, duration, and other characteristics of occupation that occurred on the property. Data sources for site-specific research range widely, from gray literature, such as previous cultural resource studies produced by agencies and consulting firms, to historical highway mapping and oral histories, and they are invaluable for developing site-specific land-use history and generating important research questions. A detailed list of primary and secondary source materials and repositories can be found under Step 2: Identify the Appropriate Historic Context. Additional information on sources is presented in the discussion on data requirements at the close of Chapter 4.

Next, researchers should correlate the research data and place the individual site within its larger historic and cultural context. Additional information should be collected about the occupants and land-use history to help determine whether the site has the potential to address important research questions. Depending on the potential for subsurface archaeological deposits, more information should be gathered relating to the activities that occurred at the site. For example, it might be useful to consult with a specialist to learn about the evolution of certain technologies that were employed on the site. Professional training, experience, and current practices should guide the researcher in determining the appropriate level of effort necessary to develop an adequate context to assist in the evaluation of the property.

Not every available archival source and repository need be examined. Researchers only need to obtain enough information to make an assessment of the property's information potential. If the ground surface is heavily disturbed and initial research indicates little or no potential for subsurface deposits, it is reasonable to conclude that the site is not eligible for listing in the NRHP and research should stop. Although it may be interesting to know every detail about the property under examination, such research is often unnecessary and economically costly. A reasonable level of effort should be considered, and inquiries that are unlikely to contribute to the decision about the site's eligibility should be discontinued.

ARCHAEOLOGICAL RESEARCH: FIELDWORK

The *Secretary of the Interior's Standards for Archeological Documentation* provides general guidance on the conduct of archaeological investigations (U.S. Department of the Interior 1983). Although field investigation methods will vary with site structure and the overall goals of the work, archaeologists should use generally accepted professional standards or "best practices" to evaluate the information potential of historic-era 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 may include geophysical survey methods (ground-penetrating radar [GPR], magnetometry, and/or resistivity). These methods provide a subsurface image of features at an

archaeological site. Ideally, this type of survey can be done prior to test excavations, allowing archaeologists to focus limited resources in the most efficient manner possible. Information gained through geophysical surveying may aid in the identification and National Register–eligibility and CEQA-significance evaluation of a site by gathering context-related data on subsurface components through noninvasive processes. This option can be especially helpful in the identification of historical structures and other features (privies, millraces, etc.) which are buried beneath parking lots, streets, and/or fill. Chapter 5 in the *Environmental Handbook*, Vol. 2: *Cultural* (Caltrans 2009) contains a discussion of the requirements and benefits for incorporating a geophysical survey into project schedules.

There is no hard-and-fast rule on how much excavation is necessary to determine eligibility. In some cases, subsurface investigation is not necessary to gather sufficient data for evaluation. Little and Seibert (2000:30) note 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, [thus] demonstrating the presence of intact subsurface artifact 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 NHPA should limit their excavations to portions of the site that will be impacted by the proposed undertaking.

Historical maps, memory maps, and other sources should be used to reconstruct the locations of buildings, structures, use areas, and lot lines when 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, artifact caches are often found in hollow-filled features located on the rear lot lines of domestic parcels. Marking surveyed lot boundaries early in the fieldwork will improve the likelihood that these resources will be found. Remote sensing should be used where it is likely that the method will reveal potentially important resources with less impact to the property and/or at less expense than conventional exposure techniques. While a range of tools and techniques can be used to remove modern overburden and expose archaeological features—from hand excavation, to auguring, to mechanical scraping and/or trenching with heavy equipment—the approach in the field should be taken with a concern to both efficiency in cost and time, as well as preservation. (A note of caution: although mechanical trenching has its place, it can also be very destructive to historic-era features, which are better located by surface stripping.) Finally, in addition to the dangerous nature of working around heavy equipment, some historic-era deposits have the potential for hazardous waste issues and this possibility should ideally be addressed prior to beginning fieldwork.

Where discernible layers and features are present, excavation must be undertaken stratigraphically—according to the physical layers of deposition. Arbitrary levels should only be used as a measure of control within unstratified deposits or excessively large deposits. Archaeologists should employ the Harris Matrix to record stratigraphy during the excavation and to interpret the stratigraphic sequence (Harris 1989). 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 cut-and-fill episodes, must be assigned a unique designation and recorded on a standard form. Feature and context sheets, while containing much of the same information, can be designed specifically to suit the data at a par-

ticular site. The Museum of London's Archaeological Site Manual (1994) provides feature and context forms that have been adapted as the standard by many U.S. historical archaeologists.

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 cross-sectioned and half excavated to extract an adequate sample, leaving the other half in place until a determination of eligibility can be made. Excavated soils should be passed 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 the resolution of research questions. Analysis of microbotanicals from either column samples or samples purposefully taken for flotation can yield important information about diet and health, the surrounding landscape, and a myriad of other details. The research potential of some classes of artifacts may be exhausted by recording them in the field or taking only a sample. Archaeologists may record and discard all but an appropriate sample of these items according to a record/discard plan contained in the project research design.

ARCHAEOLOGICAL RESEARCH: LABORATORY WORK

Historic-era artifacts are analyzed with two general goals in mind: to allow investigators to address questions identified in the research design, as well as issues identified after excavations have occurred; and to generate comparative data for other researchers to use. To these ends, it is critical that cataloging is 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. Laboratory and cataloging procedures need to be clearly detailed and explained so that other researchers can easily use the assembled data. This section presents a series of practical, field-tested techniques and approaches to mitigate problems resulting from a lack of consistency in the areas of artifact cleaning and labeling, cataloging, artifact categorization, calculating minimum numbers of items, dating, the use of databases, and presenting the data in a standardized format. One readily available cataloging system is SHARD, the Sonoma Historic Artifact Research Database. This Microsoft Access-based program was designed for California historic-era sites and can be downloaded from the Society for Historical Archaeology Web site (http://www.sha.org/research_resources/acs.cfm) or from Sonoma State University (<http://www.sonoma.edu/asc/shard/index.html>). In addition, Appendix B provides a comprehensive selection of references, ranging from guidance on ceramic makers' marks to soda water bottles, useful for historical archaeology laboratories.

CLEANING AND LABELING

From the moment artifacts arrive in the laboratory, care must be taken to preserve all information associated with and extracted from them. Typically arriving in bags, boxes, and buckets, artifacts need to be sorted and grouped by associated proveniences (e.g., all layers in a single well). Each provenience and the quantity of associated boxes/bags should be recorded on a master sheet. From this, a tracking sheet can be constructed to record laboratory processing and maintain provenience information. Artifacts from individual proveniences should be spread out one provenience at a time and sorted for cleaning.

Not all artifacts are treated in the same manner; each item should be inspected before it is washed or treated in some way that might damage it. Extra care should be taken to avoid washing away and destroying any diagnostic details or surface elements. For example, bottles often retain fragments of paper labels that will fall off when washed; painted or gilded ceramic decoration may be inadvertently scrubbed away; and some ceramics are so friable they will fall apart in water. Occasionally, bottle contents are still intact; if the contents do not pose a safety concern, these should be removed and preserved for later analysis. Shell and bone will disintegrate if left to soak in water. Bone should be dry-brushed to remove as much residual dirt as possible and, if not too fragile, then quickly washed. Shell should be simply dry-brushed. Textiles should be carefully inspected, unfolded, very gently hosed to remove as much dirt as possible, and laid flat to dry. Metal should be dry-brushed with a toothbrush or sometimes a wire brush to remove as much encrustation as possible without destroying useful information.

The goal is to make the artifacts as clean as possible without losing important information or contributing to their decay; too often data are inadvertently destroyed by carelessness at this stage. Once washed, the artifacts are placed in a drying tray(s) clearly labeled with all provenience information.

Next, each artifact should be labeled with a catalog number. A provenience-based numbering system—wherein each provenience has its own number—is the simplest, as it allows the cataloger/analyst to pick up each labeled specimen, read the number, and know the original provenience of that artifact. These numbers should never be duplicated, even between sites, regardless of the size or duration of the project. By assigning non-duplicating numbers in this manner, there is little chance of artifacts becoming accidentally mixed in the laboratory. A subcatalog number or lot number should be added after cataloging. This is a series of sequential numbers, beginning with 1, assigned to each artifact or lot (a group of like artifacts) within a single provenience.

Labels should be placed in an inconspicuous area and as small and legibly as possible; white or black ink should be used, depending on the color of the item to be marked. Do not label over diagnostic attributes. All ceramic and glass specimens should be labeled with this number along their edge (but not on the break itself); glass specimen labels should be coated with a clear coat of acrylic such as Acryloid B72, to prevent the numbers from rubbing off. Some metal can be labeled, most cannot. Paper tags can be attached with 100% cotton string or monofilament. Items that cannot be labeled or tagged need to be bagged with paper tags containing their catalog numbers. Every effort must be made to keep the provenience information with the artifact.

The decision on what materials to label is often an exercise in common sense, rather than one of set practice; the cost of labeling each individual artifact can be prohibitive. All diagnostic artifacts should be individually labeled, such as buttons and cartridges, as well as the diagnostic fragments of bottle glass. For ceramics, which are often crossmended, almost all the fragments are individually numbered in order to keep track of an artifact's context. In contrast, one catalog number may be given to a large collection of undiagnostic glass fragments, in which case only a sample of five or so larger fragments may be labeled within that lot so that provenience can be maintained if a paper tag is lost or damaged. In addition, when labeling artifacts, consideration might be given to whether items will be curated after cataloging or simply discarded.

CATALOGING

Once the materials are labeled, the cataloging process can begin. Working with one material class (ceramics, glass, metal, etc.) and one analysis unit (feature, grid unit, shovel test unit, etc.) at a time, labeled artifacts can be spread out and sorted. Ceramics should be sorted first by material (porcelain, white improved earthenware, Chinese brown-glazed stoneware, yellowware, etc.); form (plate, saucer, pitcher, etc.); and decoration (plain, molded, blue transfer print, gilded, etc.). Glass should be sorted by color (dark-olive, cobalt, aqua, colorless, etc.) then form (bottle, drinking vessel, lamp chimney, etc.), and metal should be sorted by material (ferrous, copper-alloy, zinc, etc.) and function (nail, button, canning jar lid, etc.). Other items (buttons, bone artifacts, clay pipes, etc.) should also be sorted by material and function.

Various classes of data may be analyzed differently depending upon the research questions being asked. For example, although nail sizes and quantity of window glass tend not to be particularly helpful to understanding urban sites (except in connection with remodeling), they can be important on rural sites. The presence of window glass in work camps might be a gauge of relative permanence, or the pennyweight sizes and clustering of nails may help delineate a building size and outline. It is important for the principal investigator to communicate these research questions to the laboratory staff prior to cataloging so that valuable time is not wasted.

A catalog is only as good as its creators. If workers are unfamiliar with some of the material types and artifacts, identification errors may occur and will quickly multiply, rendering the data tenuous at best. It is important that catalogers know the material culture with which they are working. For example, the presence of porcelain on a site is often an indicator of wealth; misidentifying it as white improved earthenware would skew the interpretation.

Faunal bone analysis should be conducted by a specialist and include at 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. If butchered bone is recovered and meat weight/price analysis undertaken, it is vital that the analytical methods employed are clearly explained so that other researchers may use the data for their comparisons.

FUNCTIONAL CATEGORIES

Artifacts can be cataloged using a general functional classification based on Stanley South's (1977) categories, which have been modified and expanded for use with mid-19th-to-early-20th-century California sites (Sprague 1981). Maintaining a classification system similar to others used in California is important as it allows comparisons between archaeological resources. The materials are separated into broad group divisions and then further split into class and subclass. For the purposes of analytical research and intersite comparison, the class division is the most versatile level, allowing a comprehensive range of functions while maintaining a manageable aggregate of categories. Another advantage to this classification system is that it can be added to as necessary to accommodate a variety of site types and research questions. It is important to note, classification of artifacts will form the basis of layer, feature, and site analysis, and great care should be taken when classifying artifacts. Table 13, on the following page, a sample of frequently applied classifications used to define functional types.

Table 13. Artifact Catalog Categories.

Group	Class	Subclass Examples
<i>Activities</i>		
	Advertising	pins, signs
	Collecting	coral, stalactites, petrified wood
	Commerce	banks, coins, scale pans
	Entertainment	music (e.g., harmonicas); games (e.g., checker pieces, dominos)
	Firearms	guns, ammunition
	Pets	bird feeders, dog collars
	Tools	axes, files, folding rulers
	Writing	pens, pencils, ink bottles
<i>Domestic</i>		
	Clothing and Footwear Maintenance	needles, bluing balls, shoe polish bottles
	Food	retail food containers (e.g., pickle bottles, Worcestershire sauce)
	Food Preparation and 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 And Lighting	lamps and chimneys, lightbulbs, candleholders
<i>Indefinite Use</i>		
		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
	Metal Items	hardware metal artifacts (e.g., wire, sheet metal); items with more than one potential original use
<i>Industrial</i>		
		machinery, spark plugs, gears
<i>Personal</i>		
	Accoutrements	purses, eyeglasses, jewelry
	Clothing	garments, buttons
	Footwear	shoes, eyelets, shoe buttons
	Grooming And 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, opium paraphernalia
	Toys	dolls, tea sets, marbles
<i>Structural</i>		
	Fixtures	sinks, toilets
	Hardware	hinges, brackets, nails
	Construction Materials	bricks, window glass
<i>Undefined Use</i>		
		unidentified items (e.g., melted glass, amorphous metal), slag, coal

MINIMUM NUMBER OF INDIVIDUALS (MNI)

Minimum number of individuals, or MNIs, are the number of items—not the number of fragments—represented in an archaeological deposit. For example, a bottle broken into 10 pieces represents only one bottle. Similarly, a stoneware bowl broken into five pieces will receive a MNI count of only one. In most cases, weight is not important: it does not matter that the fragments from one plate weigh 10 ounces and fragments from another weigh 8.2 ounces. What matters is that two plates are represented.

Once the artifacts have been sorted, they can be physically crossmended within the analytical unit. Crossmending is the act of fitting broken fragments of an artifact together. This process allows for more accurate MNI counts, and within contained features, such as wells and privies, it helps to delineate the stratigraphy. Crossmending can occur with artifacts from within a layer, as well as between layers (e.g., fragments of a plate recovered from Layers 2014, 2015, and 2018). Because the item's MNI should be accounted for only once, the assignment of the MNI in this case would be one for Layer 2014, which is the earliest layer within which the artifact was located. The count for that artifact would be zero in the other two layers. As a general rule, the MNI number should be assigned to the deepest stratigraphic layer in which an item is found, which allows the date of that particular artifact to be calculated into the overall date of the level or feature. Items should be reconstructed using something like low tack masking or painter's tape; they should not be glued together. Gluing artifacts takes too long, can cause damage, and inevitably, a missing piece is found after the item has been mended. It also increases curation costs substantially.

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 one is assigned. Items that crossmend and can be reconstructed with no missing pieces also receive an MNI of one. The remaining items are studied to ascertain whether pieces that could not be crossmended are from the same item. For example, a group of saucer rim fragments that do not physically mend but are of the same material, curvature, thickness, glaze type, and decoration may be assigned an MNI of one. Similarly, fragments representing unique forms or decorative patterns are assigned an MNI of one (e.g., a single fragment of blue transfer print that is unique within the analytical unit). When it is determined that different fragments may be from the same object an MNI of one is assigned to the group as a whole (e.g., three fragments of a cup mend and two appear to be from the same vessel; four non-mending rim fragments of a small plate with the same black transfer-printed design). All items with makers' marks that cannot be associated with other items in the analytical unit receive an MNI count of one. Unmarked/nondiagnostic fragments that may be associated with marked/diagnostic items do not receive a separate MNI. Artifact fragments that exhibit form, color, material, or function unique to an analysis unit are assigned an MNI of one (e.g., a single fragment of a cobalt-blue glass bottle where there is no other cobalt-blue glass).

Artifacts that would have originally been used together receive an MNI of one (e.g., a teapot and its lid or a soap dish with its drainer and lid). Using 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 one 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 not always purchased or used together, such as a cup and saucer or a washbasin and pitcher, each piece should 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, would receive an MNI count of two); shoe-related items, such as eyelets, are not given a separate MNI when located in deposits that contain shoes.

Individual buttons are often given MNIs, as it is usually impossible to assign button counts to separate items of clothing. Beads are another artifact type for which it is difficult to determine MNI; a single lamp whimsy may contain hundreds of beads of various styles and colors.

Items to be discarded should be clearly defined and tabulated by count, weight, and other appropriate documentation. Typically, these items include nondiagnostic fragments of sheet metal, wire, and amorphous ferrous metal or glass lumps. Depending on the deposit, other items may be discarded. For example, in late-19th-century urban deposits, window glass and ferrous nails are ubiquitous. Many archaeologists choose to simply count, weigh, and, in the case of nails, record size, and then give an MNI, following which these items are discarded. Reasons for discard should be fully explained, documented, and performed in accordance with the approved discard policy created as part of the research design.

Assigning MNIs is one of the most important aspects of cataloging. MNI overestimates are to be avoided. It is important to clearly explain how and why MNIs were determined in order 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 assessment is often made in the field at the time of survey or excavation. Some deposits whose research potential has been diminished (e.g., looted or partly destroyed contexts) may have retained enough information to warrant further study. Similarly, contained deposits (e.g., wells, privies) 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. This topic is developed further in the Thresholds and Redundancy section that follows.

DATING

Each artifact should be studied to determine if it is temporally diagnostic. Makers' marks are the first and most obvious tool to be used and should be combined with manufacturing techniques and decorative patterns, when appropriate, to assess manufacturing date. A single deposit may contain dozens of items with differing date ranges. The terminus post quem (TPQ), the "date after which," of a feature is typically determined by identifying the latest beginning date of manufacture of all datable items from the collection. This date becomes the earliest date that the context could have been deposited.

Ceramic makers' marks are typically printed or impressed on the base of the object and can give a manufacturing date range of the artifact. When present, molded and printed patterns can be researched to further tighten dates. Even without marks or decoration, some wares and vessel types can be characterized in broad temporal terms (e.g., pearlware is typically an indicator of early-to-mid-19th-century manufacture). The McKinley Tariff Act of 1891 required that all foreign-made items, including ceramics, bear the name of the country of origin. Marks without a country of origin usually date before this act. The presence of the country name does not, however, indicate a date after 1891 as many firms included this information earlier. British ceramic registry marks—assigned to ceramic patterns and shapes that were registered with the Patent Office in London—functioned as patent protection for 3 years from the date of issue.

Marks should be carefully documented and entered into the database exactly as they appear so that other researchers know the basis of the assigned dates. If letters are missing and can be extrapolated, include them in brackets IRONSTO[NE]; if they cannot be interpreted enter three

dots “...” in their place. A slash “/” indicates a new line of text, two slashes “//” indicates a new side of the bottle, three slashes “///” indicates the base. Symbols and mark direction (e.g., around shoulder, upper arch) should be placed in parentheses “()”. Manufacturing techniques used for date determinations also need to be clearly explained.

Glass containers with embossments (typically on bottle sides) and/or 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. Date ranges can be refined using both the bottle manufacturer and the bottle contents manufacturer (often not one and the same). For example, Lea and Perrins Worcestershire sauce bottles were manufactured between 1840 and 1920 by two companies: Aire and Calder Bottle Co. between 1840 and 1877 and, thereafter, by John Duncan and Sons. Temporally diagnostic manufacturing techniques are also used for dating. Catalogers must be familiar with these techniques and know what to look for prior to beginning their work. For example, 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 would be assigned to the object. Care should be taken to note all diagnostic bottle attributes such as mold seams, pontil marks, suction scars, etc. Other marked glass items include insulators and lid liners from canning jars. Glass illuminators and some food containers are occasionally embossed with patent dates. Tableware and serving vessels are often decorated with molded patterns; these designs should be identified where possible, as they can often be assigned to a manufacturer and dated.

Small finds, such as ammunition or coins, frequently retain marks or patent dates or can be easily identified in specialized literature. Hard-rubber buttons, for example, are often embossed with company information, and other buttons, such as Prosser buttons, provide a well-established beginning date for manufacture, circa 1840 (Sprague 2002:111). Clothing fasteners contain names and dates, and household hardware, such as lamp thumb wheels and cast-iron stoves, are often stamped with patent information. Doll parts and other children’s toys, such as tea sets, all frequently contain dates; it is important not to overlook these items as they help establish a deposit’s TPQ.

DATABASES AND DATA ENTRY

Once artifacts have been sorted, mended, assigned functional classifications and MNIs, dated, and cataloged, they should be entered in a database to generate tabulations and to facilitate statistical analysis. The more information included, the more useful the database will be for a variety of purposes. Table 14 lists the minimal information that should be included in the database.

As with the 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 being entered. Simple spelling errors (e.g., writing ‘palte’ instead of plate) create havoc for running statistics. Creating a series of pull-down menus from which to choose artifact descriptors will avoid these errors. An item that is cataloged one way for a deposit must be cataloged in exactly the same way for the next deposit (e.g., a canning jar is always entered under the class of food storage, not food). Depending on the deposit to be studied and the research questions to be addressed, new artifact descriptors may be added, or the placement of artifacts may be slightly changed. For example, the deposit may be associated with a laundry. A new artifact group—laundry—may be cre-

Table 14. Artifact Database Categories.

Field	Information
Catalog number	Individual provenience number.
Lot number	Number assigned during cataloging.
Site	Site trinomial.
Provenience	Feature number, layer, shovel test unit, survey area, etc. 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 prep/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 is. 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 items (e.g., East Liverpool, Ohio; Tunstall, England).
Beginning date	Earliest possible date manufactured.
End date	Latest possible date manufactured.
References	References as appropriate.
Whole count	Number of whole/intact items.
Fragment count	Number of fragments.
MNI	Minimum number of items.
Remarks	More thorough description of the item if necessary. Include fragment placement (e.g., base, rim, finish); shape (e.g., oval, circular); decoration (e.g., molded – Fig Pattern, painted); size (e.g., diameter, height, volume); and cross-mending information. This can be split into additional fields as needed.
Percent complete	Vessel completeness (e.g., <25%, 50–75%).

ated and buttons moved from the personal group to laundry group. These types of changes must be documented and carefully explained for the unwary future researcher.

GENERATING TABLES

When all pertinent information has been gleaned from the artifacts and entered into a database, tables can be generated. A great deal of thought must be given to which 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 references is an important part of any report. A simple list of artifact descriptions, with counts and MNIs, assembled by material and type within group and category, will provide a quick look at the deposit's content and is far easier to scan than the entire artifact catalog printed out in numerical order—although the full catalog also should be included. Additional summary tables by group and by category with counts, MNIs, and percentages are useful for rough comparisons with other analytical units. For some deposits (e.g., collections from 19th-century urban wells and privies), it is more useful to exclude structural, indefinite use, and unidentified use items from these groups and categories, as these tend to skew the data. Item counts and MNIs can be presented but not factored into the percentages, allowing the researcher to see what has been omitted. Often, the fabric, function, and decoration of food preparation/consumption vessels will

help address questions of the social status and wealth of their former owners or users. Presentation of these attributes in a series of tables can help resolve these research questions.

Other tables may be generated as necessary. A faunal remains table may include common name, scientific name, number of identifiable specimens, and MNI. For deposits that have 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, percent within type, and percent within price. Tables similar to those for faunal remains might be prepared for the remains of shellfish and fish.

Consistency and communication are of paramount importance to the laboratory process. First is consistency. Much thought should be given to the research questions asked and data needed to address them before laboratory work is begun. Laboratory work should not be a rote exercise but must respond to the project's research needs. It is essential that the principal investigator communicate the project's research goals to the laboratory staff early in the process. Making significant changes after starting increases the potential for human error and increases the cost of the work. Equally important is the need to document exactly what was done, how it was done, and why it was done. Data that are not comparable to other archaeological sites are good for only intra-site analysis, and then only if the data were collected and analyzed in the same manner across analytical units.

CURATION

Prior to excavation, an agreement should be in place with a reputable facility for the permanent curation of artifacts, field notes, photographs, and reports. Especially important in historical archaeology is a comprehensive discard policy. Serious consideration should be given to what materials will be subject to retention, discarded, or will not be collected during field excavation. It may be entirely appropriate to discard many materials with low research value (e.g., nails, nondiagnostic fragments of glass, etc.) once they have been thoroughly catalogued for purposes of data analysis. In such cases, the discard policies that will be employed during fieldwork should be explicit. A discussion of discard policies for California historic-era sites can be found in Praetzellis and Costello's (2002) "Don't Keep Everything: Artifact Discard Policy."

Guidelines for curation are found in *Curation of Federally-Owned and Administered Archeological Collections* (36 CFR Part 79, originally published in the Federal Register, Vol. 55, No. 177, September 12, 1990). California has also adopted state curation guidelines that should be consulted when the plan is being prepared (1993).

DISSEMINATION OF RESEARCH RESULTS

In a final note, it is important that the results of archaeological research are disseminated to the 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, allowing 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. Research results should be presented at professional conferences or in article form. Public outreach in some form is the ideal end result of archaeological research. Often archaeological reports have the potential to be expanded into documents that reach beyond the narrow borders of historical archaeology and into the realm and imagination of

the general public. Public outreach can take many forms, and many are economical, from tours to history pamphlets. Site tours for elementary school children, as well as other interested parties, have the potential to encourage a lifetime interest in history and archaeology. The development of permanent or traveling displays can also convey research results to wider audiences.

CONCLUSIONS

THRESHOLDS AND REDUNDANCY: HOW MUCH IS ENOUGH?

This section adds to the discussion of data requirements and offers 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. Most archaeological understandings are not amenable to the application of hard-and-fast rules or formulas. In the context of public-funded research, however, it is reasonable to expect archaeologists to articulate the bases of their interpretations. These are guidelines that must be applied thoughtfully by experienced professionals in relation to particular archaeological contexts.

QUALITATIVE AND QUANTITATIVE DATA

The section on data requirements elaborates upon the first three of the five-step process provided in National Register Bulletin 36 for assessing the kinds of information contained in an archaeological site. The questions asked at the first two steps address simple issues such as the age of the site, its basic structure and content, and level of physical integrity. Data requirements at this stage are primarily qualitative in nature: descriptions, presence/absence, and datable artifacts. While 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 not a matter for debate because they are founded on established archaeological principles: laws of stratigraphy, “dating by fossils,” etc.

The third step in this process asks the researcher to generate research questions that will prompt the kind of important information that is required by NRHP Criterion D or CRHR Criterion 4. In almost all cases, these questions will require more than merely a recitation of the site’s structure and content. Furthermore, there must be issues to which the site or feature can be expected to make a useful contribution. Many of these questions will seek to generalize about the past based on qualitative and quantitative archaeological data.

Qualitative approaches at this level may involve presence/absence, description, and symbolic interpretation; finding only small numbers of artifacts will not thwart these approaches to understanding.

Conversely, the success of a quantitative orientation will be heavily dependent on the available sample size, as a larger sample will represent the universe more accurately than a smaller one. At some point, a small sample is effectively an arbitrary grab; it is difficult to justify interpretations on such low-quality data. This argument presumes some threshold below which the data set is of questionable validity.

SAMPLING AND COMPARING ARTIFACT DEPOSITS

mes 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. And each scale will require a different level of sampling. For example, a residential site contains contemporary 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 should be evaluated separately. The importance of the artifact deposit—which is singled out because it would be most costly to treat—will depend on what it can contribute at two scales: the immediate context of its creation (the household that created it) and its contribution to an understanding of larger issues that will require comparison with other data sets. To the degree that the latter requires quantitative data, it is essential that these data be adequate for the task.

Certain classes of material, such as seeds and fish bone, sometimes are found in such large quantities that extracting a sample for analysis is both essential for practical purposes and acceptable for statistical ones. Similarly, archaeologists will 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 over 9,500 artifacts and food bones (Waghorn 2004).

Past a certain point, analysis and excavation may produce redundant data. Because this is true for individual sites, one may ask if archaeological collections that have certain historic associations—Irish, for example—may be redundant because, as has been said of historic 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 supposedly defining characteristic—in this case, the national/ethnic origin of its creators. But this is only partly true. If an archaeologist’s goal were to study the immigrant Irish population per se, then the case could be made that a sample would be sufficient. However, statistical studies of the archaeological correlates of nativity, ethnicity, wealth, etc., reveal patterns that cannot be explained by reference to conventional analytical categories (Praetzelis and Praetzelis 2004). Some of these patterns do indeed relate in an intuitively satisfying way to nativity/ethnicity; that they do so consistently within and between data sets is strong evidence that the statistically revealed patterns are behaviorally meaningful. But other patterns are not so easily understood. They do not appear to be mere statistical artifacts yet they have no immediately discernable, intuitively satisfactory meaning. Samples must be justified in relation to particular research issues. In this case, the most important goal may be to define 19th-century populations that were not captured by contemporary categories by using statistically valid samples that represent both individual sites and classes of sites.

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 in order to be useful for quantitative research. Small data sets may be unrepresentative while overly large ones are unnecessary; these principles are recognized in AIMS-R. It is important to note that 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 caution must be taken not to eliminate certain types of archaeological phenomena from analysis.

Two thresholds were developed during a series of large urban archaeological investigations that emphasized quantitative, intersite comparison (Praetzelis and Praetzelis 2010). They may be used as a practical guide to help assess the quantitative, intersite research potential of artifact caches that date between 1850 and 1910.

- Artifact caches must have an MNI of at least 35.
- Faunal assemblages must contain at least 100 bones or bone fragments.

Although these thresholds are not fixed standards, investigations that adhere to them will contribute to a growing comparative California database held at Sonoma State University that currently describes over 180 artifact caches consisting of nearly 1,000,000 individual entries.

These suggested minimum MNI counts were developed for urban sites and although these counts may provide an ideal baseline for analysis in urban centers, it is important to remember that features in rural communities and smaller townsites may have different statistical requirements. Similarly, for important or rare features, that minimum number may not be appropriate, although investigators who decide to use significantly lower baselines must carefully assess whether the data sets they propose to study contain sufficient materials for their research purposes.

FINAL THOUGHTS

The guidelines and research objectives suggested here are not the final word. Codification offers the twin benefits of guidance and standardization while simultaneously creating the danger that our work may become fossilized as a fixed methodological canon. To moderate this effect, this document should be thoroughly reviewed and revised every 5 to 10 years. At that time, its research orientations, methods, and entire epistemological basis should be brought into question. Individual researchers must modify and add to this work in order 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 small towns in various regions of California, but this 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 sections of it will not create an adequate research design.

BIBLIOGRAPHY

Adams, Frank

- 1946 The Historical Background of California Agriculture. In *California Agriculture*, Claude B. Hutchinson, editor, pp. 113–238. University of California, Berkeley, CA.

Adams, William H.

- 1975 Archaeology of the Recent Past: Silcott, Washington 1900–1930. *Northwest Anthropological Research Notes* 9:156–165.
1976 Trade Networks and Interaction Spheres. *Historical Archaeology* 10:99–112.
1977 A Model for Determining Time Lag of Ceramic Artifacts. *Northwest Anthropological Research Notes* 11(2):218–231.

Alameda County, Commission to the Lewis and Clark Centennial Exposition

- 1904 *Alameda County, Its Industries and Environs*. R. S. Kitchener Press, Alameda County, CA.

Alexander, Edward

- 1996 *Museums in Motion*. AltaMira Press, Latham, MA.

Allen, Rebecca, and Mark Hylkema

- 2002 *Life along the Guadalupe River: An Archaeological and Historical Journey*. Friends of Guadalupe River Park and Gardens, San Jose, CA.

Allen, Rebecca, and Kimberly Wooten

- 2009 Wakamatsu Tea and Silk Colony Farm. National Register nomination (draft), March 15, 2009. <<http://www.parks.ca.gov/pages/1067/files/wakamatsunationalregisterform3-16-09.pdf>>. Accessed September 2009.

Alley, B. F.

- 1882 *A History of Tuolumne County, California, Compiled from the Most Authentic Records*. B. F. Alley, San Francisco, CA. Reprinted 1960 by Tuolumne County Historical Society and the Tuolumne County Board of Supervisors, n.p.
1883 *History of San Mateo County, California*. B. F. Alley, San Francisco, CA.

Alley, Bowen & Co.

- 1880 *History of Marin County, California*. Alley, Bowen & Co., San Francisco, CA.

Allison, Penelope

- 2003 The Old Kinchega Homestead: Doing Household Archaeology in Outback New South Wales, Australia. *International Journal of Historical Archaeology* 7(3):161–194.

The American City

- 1928a The American City, 39(July). Buttenheim, Pittsfield, MA.
1928b The American City, 39(October). Buttenheim, Pittsfield, MA.
1928c The American City, 39(November). Buttenheim, Pittsfield, MA.

American River Conservancy

- 2008 Gold Hill - Wakamatsu Project, American River Conservancy, Coloma, CA. <<http://ar-conservancy.org/xoops/modules/smartsection/item.php?itemid=71&keywords=Wakamatsu+Project>>. Accessed 2008.

Armor, Samuel

- 1921 *History of Orange County, California*. Historic Record Company, Los Angeles, CA.

Armstrong, Douglas, and Mark Fleischman

- 2003 House-yard Burials of Enslaved Laborers in Eighteenth-Century Jamaica. *International Journal of Historical Archaeology* 7(1):33–66.

Armstrong, Douglas, and Kenneth Kelly

- 2000 Settlement Patterns and the Origins of African Jamaican Society. *Ethnohistory* 47(2): 369–397.

Arnold, J. Barto, and Sara Keyes

- 2000 Remembering the Queen City of the West. *International Journal of Historical Archaeology* 4(4):335–346.

Arreola, Daniel D.

- 1995 Urban Ethnic Landscape Identity. *Geographical Review* 85(4):518–525.

Athearn, Fred G., Esquire

- 1922 *The Separation of the Central Pacific and Southern Pacific Railroads*. n.p., San Francisco, CA.

Averbach, Alvin

- 1973 San Francisco's South of Market District, 1850–1950, the Emergence of Skid Row. *California Historical Quarterly* 52(3):196–223.

Azuma, Eiichiro

- 1998 Racial Struggle, Immigrant Nationalism, and Ethnic Identity: Japanese and Filipinos in the California Delta. *The Pacific Historical Review* 67(2):163–199.

Bailey, Lynn R.

- 1996 *Supplying the Mining World: The Mining Equipment Manufacturers of San Francisco, 1850–1900*. Westernlore Press, Tucson, AZ.

Bailey, Paul Dayton

- 1943 *Sam Brannan and the California Mormons*. Westernlore Press, Los Angeles, CA.

Bailey, Richard C.

- 1984 *Heart of the Golden Empire: An Illustrated History of Bakersfield*. Windsor Publications, Woodland Hills, CA.

- Baker, Joseph E. (editor)
1914 *Past and Present of Alameda County, California*, Vol. 1. S. J. Clarke Publishing Company, Chicago, IL.
- Balicki, Joseph
1998 Wharves, Privies, and the Pewterer. *Historical Archaeology* 32(2):99–120.
- Barnhart, Jacqueline Bake
1986 *The Fair but Frail: Prostitution in San Francisco, 1849–1870*. University of Nevada Press, Reno, NV.
- Barnwell, P. S., Marily Palmer, and Malcolm Airs (editors)
2005 *The Vernacular Workshop: From Craft to Industry, 1400–1900*. Council for British Archaeology, London, England.
- Barrows, Susanna, and Robin Rooms (editors)
1991 *Drinking: Behavior and Belief in Modern History*. University of California Press, Berkeley.
- Barth, Gunther P.
1988 *Instant Cities: Urbanization and the Rise of San Francisco and Denver*. University of New Mexico Press, Albuquerque.
- Barton, Bonnie
1978 The Creation of Centrality. *Annals of the Association of American Geographers* 68(1): 34–44.
- Battison, Edwin
1966 Eli Whitney and the Milling Machine. *Smithsonian Journal of History* 1(2):9–34.
- Baughner, Sherene, and Suzanne M. Spencer-Wood (compilers)
2001 The Archaeology of Institutions of Reform: Part II: Colonial Era Almshouses. *International Journal of Historical Archaeology* 5(2).
- Baur, John E.
1959 *The Health Seekers of Southern California, 1870–1900*. Huntington Library, San Marino, CA.
- Baxter, Eva Jane
2005 Making Space for Children in Archaeological Interpretations. *Archeological Papers of the American Anthropological Association* 15(1):77–88.
- Baxter, R. Scott
2008 *Santa Clara's German Neighborhood*. Society for California Archaeology Proceedings, 22(1–6) <<http://www.scahome.org/publications/proceedings/Proceedings.22Baxter.pdf>>. Accessed February 2010.

Baxter, R. Scott

- 2009 Santa Clara's German Neighborhood. *Society for California Archaeology Proceedings*, Volume 21, 2009. Online at: <http://www.scahome.org/publications/proceedings/Proceedings.22Baxter.pdf>.

Baxter, R. Scott, and Rebecca Allen

- 2008 Fausel House Professional Building Project: Recordation and Data Recovery, Placerville, California. Report to Anova Architects, Sacramento, CA, from Past Forward, Plymouth, CA.

Beaudry, Mary

- 1993 Public Aesthetics versus Private Experience: Worker Health and Well-Being in 19th-Century Lowell, Massachusetts. *Historical Archaeology* 27(2):90–105.
- 2004 New Approaches to the Study of Households. In *Household Chores and Household Choices: Theorizing the Domestic Sphere in Historical Archaeology*, Jaime Brandon and Kerri Barile, editors, pp. 254–262. University of Alabama Press, Tuscaloosa.
- 2006 *Findings: The Material Culture of Needlework and Sewing*. Yale University Press, New Haven, CT.

Beaudry, Mary, and Stephen Mrozowski (editors)

- 1987 *Interdisciplinary Investigations of the Boott Mills, Lowell, Massachusetts, Vol. 1, Life at the Boarding Houses: A Preliminary Report*. Cultural Resources Management Series 18. National Park Service, North Atlantic Regional Office, Boston, MA.
- 2001 Cultural Space and Worker Identity in the Company City: Nineteenth-century Lowell, Massachusetts. In *The Archaeology of Urban Landscapes: Explorations in Slumland*, Alan Mayne and Tim Murray, editors, pp. 118–131. Cambridge University Press, Cambridge, MA.

Beavon, Keith S. O.

- 1977 *Central Place Theory: A Reinterpretation*. Longman, London, England.

Beck, Warren, and Ynez Haase

- 1974 *Historical Atlas of California*. University of Oklahoma Press, Norman.

Beiter, Gary, and Katherine Parry

- 2000 Excavation at Stranahan's Second Store in Fort Lauderdale, Florida and a Cultural Comparison to Stranahan's First Store. *The Florida Anthropologist* 53(1):26–34.

Beito, David T., Peter Gordon, and Alexander Tabarrok, with foreword by Paul Johnson

- 2002 *The Voluntary City: Choice, Community, and Civil Society*. University of Michigan Press, Ann Arbor.

Bender, Thomas

- 1978 *Community and Social Change in America*. Johns Hopkins University Press, Baltimore, MD.

Berglund, Barbara

2007 *Making San Francisco American: Cultural Frontiers in the Urban West, 1846–1906*. University Press of Kansas, Lawrence.

Bernstein, Rachael A.

1984 *Boarding-House Keepers and Brothel Keepers in New York City 1880–1910*. Doctoral dissertation, History Department, Rutgers University, New Brunswick, NJ.

Bieter, J. Patrick

1993 Letemendi's Boarding house: A Basque Cultural Institution in Idaho. *Idaho Yesterdays* 37(1):2–10.

Blackford, Mansel G.

2003 *A History of Small Business in America*, expanded and revised from 1991 edition. University of North Carolina Press, Chapel Hill.

Blackmar, Elizabeth

1989 *Manhattan for Rent, 1785–1850*. Cornell University Press, Ithaca, NY.

Blake, Nelson Manfred

1956 *Water for the Cities: A History of the Urban Water Supply Problem in the United States*. Syracuse University Press, Syracuse, NY.

Bledsoe, A. J.

1881 *History of Del Norte County, California, with a Business Directory and Traveler's Guide*. Wyman & Co., Eureka, CA.

Blessing, Patrick Joseph

1977 *West among Strangers: Irish Migration to California, 1850 to 1880*. Master's dissertation, History Department, University of California, Los Angeles. University Microfilms International, Ann Arbor, MI.

Blow, Ben

1920 *California Highways: A Descriptive Record of Road Development by the State and by Such Counties as Have Paved Highways*. H. S. Crocker Co., San Francisco, CA.

Blumin, Stuart M.

1975 Rip Van Winkle's Grandchildren, Family and Household in the Hudson Valley, 1880–1860. *Journal of Urban History* 1(3):293–315.

1989 *The Emergence of the Middle Class, Social Experience in the American City, 1760–1900*. Cambridge University Press, New York, NY.

Boehle, Richard

2008 Rails West, Digital Network Express, Burbank, CA. <<http://www.railswest.com/index.html>>. Accessed April 2008.

Bohn, Dave

1969 *Delta West: The Land and People of the Sacramento-San Joaquin Delta*. Scrimshaw Press, Berkeley, CA.

Borthwick, John David

1917 *The Gold Hunters*. Outing, New York, NY.

Boudier, William Harry

1966 *The Paths of Humanity: A Chronicle of California Highway Development*. California Transportation Agency, Department of Public Works, Division of Highways, Sacramento.

Bourke, Frank

1982 Room and Board in Wells. *Chronicle* 18(3):10–13.

Bowen, Jerry

1999 150 Years of Solano County Life. *Solano Historian* (December):23–32.

Boyer, M. Christine

1986 *Dreaming the Rational City: The Myth of American City Planning*. MIT Press, Cambridge, MA.

Boyer, Paul

1978 *Urban Masses and Moral Order in America, 1820–1920*. Harvard University Press, Cambridge, MA.

Boylan, Anne M.

1988 *Sunday School: The Formation of an American Institution 1790–1880*. Yale University Press, New Haven, CT.

Brandon, Jaime, and Kerri Barile (editors)

2004 Introduction: Household Chores. In *Household Chores and Household Choices: Theorizing the Domestic Sphere in Historical Archaeology*, Jaime Brandon and Kerri Barile, editors, pp. 1–12. University of Alabama Press, Tuscaloosa.

Breschini, Gary S., Trudy Haversat, and Mona Gudgel

2000 *10,000 Years on the Salinas Plain: An Illustrated History of Salinas City, California*. Heritage Media Corporation, Carlsbad, CA.

Brienes, Marvin

1983 *China Camp and the San Francisco Bay Shrimp Fishery*. California Department of Parks and Recreation, Interpretive Planning Section, Office of Interpretive Services, Sacramento.

2006 Cleansing Sacramento of Miasmas and Filth. *Sacramento History: The Journal of the Sacramento County Historical Society* 6(1–4):247–280.

Brienes, Marvin, James West, and Peter Schulz

- 1981 Overview of Cultural Resources in the Central Business District, Sacramento, California. On file at Sacramento Archives Museum and Collection Center (SAMCC), Sacramento, CA.

Bromberg, Francine, and Steven S. Shepard

- 2006 The Quaker Burying Ground in Alexandria, Virginia: A Study of Burial Practices of the Religious Society of Friends. *Historical Archaeology* 40(1):57–88.

Brown, Richard D.

- 1976 Modernization: A Victorian Climax. In *Victorian America*, Daniel Howe, editor, pp. 29–46. University of Pennsylvania Press, Philadelphia.

Brown, Walter John

- 1944 *A Historical Study of the Portuguese in California*. Master's thesis, Department of History, University of Southern California. Reprinted 1972 by R&E Research Associates, San Francisco, CA.

Browne, John A.

- 1943 *Early Days Forty Years of the Old Town's Early History*. n.p., Vallejo, CA.

Burgess, Sherwood D.

- 1992 *The Water King: Anthony Chabot, His Life and Times*. Panorama West, Davis, CA.

Burmeister, Eugene

- 1969 *City Along the Kern—Bakersfield, California, 1869–1969*. Kern Publishing House, Bakersfield, CA.
1977 *The Golden Empire: Kern County, California*. Autograph Press, Beverly Hills, CA.

Bush, David R.

- 2000 Interpreting the Latrines of the Johnson's Island Civil War Military Prison. *Historical Archaeology* 34(1):62–78.

Bushman, Richard

- 1992 *The Refinement of America: Persons, Houses, Cities*. Knopf, New York, NY.

Butler, Brenda J.

- 1979 *Archaeology of the Cothrin Building, Old Sacramento, California*. California Department of Parks and Recreation, Sacramento, CA.

Buttenwieser, A. L.

- 1987 *Manhattan Water-Bound: Planning and Developing Manhattan's Waterfront from the Seventeenth Century to the Present*. New York University Press, New York.

Buzon, Michael, Phillip Walker, Francine Drayer Verhagen, and Susan Kerr

- 2005 Health and Disease in Nineteenth-Century San Francisco: Skeletal Evidence from a Forgotten Cemetery. *Historical Archaeology* 39(2):1–15.

Cabak, Melanie, Mark Grover, and Scott Wagers

1995 Health Care and the Wayman AME Church. *Historical Archaeology* 29(2):55–76.

Cain, Ella M.

1961 *The Story of Early Mono County*. Fearon Publishers, San Francisco, CA.

Calaveras County Illustrated

1885 *Calaveras County Illustrated and Described, Showing its Advantages for Homes*. W. W. Elliott & Co., Oakland, CA.

Calder, Lendol

1999 *Financing the American Dream: A Cultural History of Consumer Credit*. Princeton University Press, Princeton, NJ.

California Department of Industrial Relations (CDIR)

1930 *Special Bulletin No. 3: Facts About Filipino Immigration*. Reprinted 1972 by R&E Research Associates, San Francisco, CA.

California Department of Parks and Recreation (CDPR)

1988 *Five Views: An Ethnic Historic Site Survey for California*. California Department of Parks and Recreation, Office of Historic Preservation, Sacramento.

1996 *California Historical Landmarks*. California Department of Parks and Recreation, Office of Historic Preservation, Sacramento.

California Department of Transportation (Caltrans)

2007 *A Historical Context and Archaeological Research Design for Agricultural Properties in California*. California Department of Transportation, Sacramento.

2008 *A Historical Context and Archaeological Research Design for Mining Properties in California*. California Department of Transportation, Sacramento.

2007–2010 Environmental Handbook, Vol. 2 Cultural. Cultural Studies Office, Division of Environmental Analysis, California Department of Transportation, Sacramento.
<<http://www.dot.ca.gov/ser/vol2/vol2.htm>>. Accessed 6 April 2010.

California Earthquake History,

1769–Present USGS, http://earthquake.usgs.gov/regional/sca/ca_eqs.php accessed May 2010;
San Diego Historical Society, “Earthquakes: Facts About California Earthquakes,”
<https://www.sandiegohistory.org/links/earthquakes.htm>, accessed May 2010.

California Farmer

1854–1857 *California Farmer*. John F. Morse & Co. San Francisco, CA.

Campbell, George Duncan

1997 The Sailors’ Home. *American Neptune* 37(3):179–184.

Campbell, Helen, Thomas Wallace Knox, and Thomas Byrnes

1900 *Darkness and Daylight, or, Lights and Shadows of New York Life*. A. D. Worthington, New York, NY.

- Cantwell, Anne-Marie E., and Diana diZerega Wall
2001 *Unearthing Gotham: The Archaeology of New York City*. Yale University Press, New Haven, CT.
- Carlson, Vada F.
1959 *This is Our Valley*. Ethel-May Dorsey, editor. Compiled by the Santa Maria Valley Historical Society. Westernlore Press, Los Angeles, CA.
- Carroll, Bret E.
2000 *The Routledge Historical Atlas of Religion in America*. Routledge, New York, NY.
- Carroll, Ed
2008 History of Brewing in Sacramento, California: 1849–1919. Master's Thesis, Department of Public History, California State University, Sacramento.
2010 Sacramento's Breweries. *Golden Notes* 53(1).
- Carothers, Alice L.
1934 The History of the Southern Pacific Railroad in the San Joaquin Valley. Master's thesis, University of Southern California, Los Angeles.
- Carson, Cary, N. F. Barka, W. M. Kelso, G. W. Stone, and D. Upton
1981 Impermanent Architecture in the Southern American Colonies. *Winterthur Portfolio* 16(2/3):135–196.
- Casella, Eleanor Conlin
2000 'Doing Trade': A Sexual Economy of Nineteenth-Century Australian Female Convict Prisons. *World Archaeology* 32(2):209–221.
2001 To Watch or Restrain: Female Convict Prisons in Nineteenth-Century Tasmania. *International Journal of Historical Archaeology* 5(1):45–72.
2005 "Social Workers": New Directions in Industrial Archaeology. In *Industrial Archaeology: Future Directions*, Eleanor Conlin Casella and James Symonds, editors, pp. 3–32. Springer, London, England.
- Cerf, Dawn
1992 Aaron Cerf, Jewish Merchant of Northern California. *Western States Jewish History* 25(1):22–32.
- C. & G. Merriam Co.
2008 Definition of Town, Webster Dictionary, Interapple, Huntingdon Valley, PA. <<http://www.webster-dictionary.net/definition/Town>>. Accessed June 2008.
- Chacon, Ramon D.
1988 The Beginning of Racial Segregation: The Chinese in West Fresno and Chinatown's Role as Red Light District, 1870s–1920s. *Southern California Quarterly* 70(4):371–398.
- Chan, Sucheng
1984 Chinese Livelihood in Rural California: The Impact of Economic Change, 1860–1880. *The Pacific Historical Review* 53(3):273–307.

- 1986 *This Bittersweet Soil: The Chinese in California Agriculture, 1860–1910*. University of California Press, Berkeley.
- Chan, Sucheng (editor)
1991 *Entry Denied: Exclusion and the Chinese Community in America, 1882–1943*. Temple University Press, Philadelphia, PA.
- Chay, Marie
1968 Everything in Season. *Modern Age* 12(2):169–172.
- Chen, Yong
2000 *Chinese San Francisco, 1850–1943: A Trans-Pacific Community*. Stanford University Press, Stanford, CA.
- Christians, George
1973 *Don't Shoot in the Oilfields Carelessly*. Capra Press, Santa Barbara, CA.
- Chu, George
1970 Chinatowns in the Delta: The Chinese in the Sacramento–San Joaquin Delta, 1870–1960. *California Historical Society Quarterly* 49(1):21–38.
- Chudacoff, Howard P.
2005 *The Organization of American Urban Society*. Pearson/Prentice Hall, Upper Saddle River, NJ.
- Cinel, Dino
1982 *From Italy to San Francisco: The Immigrant Experience*. Stanford University Press, Stanford, CA.
- Cinotto, Simone
2004 Leonard Covello, the Covello Papers, and the History of Eating Habits among Italian Immigrants in New York. *The Journal of American History* 91(2):59.
- Clark, George W.
1955 History of Merced County. Office of County Superintendent of Schools, Merced, CA.
- Cleland, Robert Glass
1918 Transportation in California before the Railroads, with Especial Reference to Los Angeles. In *Annual Publications of the Historical Society of Southern California*, pp. 60–67. Historical Society of Southern California, Los Angeles.
1941 *The Cattle on a Thousand Hills: Southern California, 1850–1880*. Huntington Library, San Marino, CA.
- Clough, Charles W.
1983 *Madera: The Rich, Colorful and Exciting Historical Heritage of that Area Now Known as Madera County, California*, revised from 1968 edition. Panorama West Books, Fresno, CA.
1996 *San Juan Bautista: The Town, the Mission & the Park*. Word Dancer Press, Fresno, CA.

- Coggins, G. C., C. F. Wilkinson, and J. D. Leshy
1993 Federal Public Land and Resources Law, 3rd edition. The Foundation Press, Westbury, NY.
- Coke, Larry
1968 *Calico*. Larry Coke, Yermo, CA.
- Comny, Dr. Peter T.
1972 *Seventy Years of Service, 1902–1972: History of Knights of Columbus in California*. Josten's, Visalia, CA.
- Connah, Graham
1988 *'Of the Hut I Builded': The Archaeology of Australia's History*. Cambridge University Press, Cambridge, England.
- Conners, Pamela A.
1997 *The Sugar Pine Railway: History of a Sierran Logging Railroad*. USDA Forest Service, Stanislaus National Forest, CA.
- Conzen, Michael P. (editor)
1994 Ethnicity on the Land. In *The Making of the American Landscape*, Michael P. Conzen, editor, pp. 221–248. Routledge, New York, NY.
- Cook, Fred S.
1973 *History of Modoc County*. California Traveler, Volcano, CA.
- Cook, Lauren, Rebecca Yamin, and John McCarthy
1996 Shopping as Meaningful Action: Toward a Redefinition of Consumption. *Historical Archaeology* 30(4):50–65.
- Cooper, Carolyn
1988 'A Whole Battalion of Stockers': Thomas Blanchard's Production Line and Hand Labor at Springfield Armory. *Industrial Archaeology* 14(4):37–58.
- Cornford, Daniel
1995 Introduction. In *Working People of California*, Daniel Cornford, editor, pp. 1–26. University of California Press, Berkeley.
1999 'We all live more like brutes than humans': Labor and Capital in the Gold Rush. *California History* 77(4):78–104.
- Costello, Julia G.
1989 An Archive of Artifacts: The Chew Kee Store. *Pacific Discovery* 42(2):27.
- Costello, Julia G., Adrian Praetzellis, Mary Praetzellis, Judith Marvin, Michael D. Meyer, Erica S. Gibson, and Grace H. Ziesing
1998 *Historical Archaeology at the Headquarters Facility Project Site, The Metropolitan Water District of Southern California*. Volume 1 Data Report. Recovered Data, Stratigraphy, Artifacts, and Documents. Report to Union Station Partners, Altadena, CA, on behalf of

The Metropolitan Water District of Southern California, Los Angeles, CA, from Foothill Recourses, Ltd., Mokelumne Hill, CA; Applied Earthworks, Inc., Fresno, CA; and the Anthropological Studies Center, Sonoma State University, Rohnert Park, CA.

Costello, Julia G. (Editor) and contributions by Costello, Adrian Praetzellis, Mary Praetzellis, Erica S. Gibson, Judith Marvin, Michael D. Meyer, Grace H. Ziesing, Sherri M. Gust, Madeleine Hirn, William Marvin Mason, Elaine-Maryse Solari, Suzanne B. Stewart, and William Marvin Mason

1999 *Historical Archaeology at the Headquarters Facility Project Site, The Metropolitan Water District of Southern California*. Volume 2 Interpretive Report. Report to Union Station Partners, Altadena, CA, on behalf of The Metropolitan Water District of Southern California, Los Angeles, CA, from Foothill Recourses, Ltd., Mokelumne Hill, CA; Applied Earthworks, Inc., Fresno, CA; and the Anthropological Studies Center, Sonoma State University, Rohnert Park, CA.

Costello, Julia G., and Mary L. Maniery

1988 *Rice Bowls in the Delta: Artifacts Recovered from the 1915 Asian Community of Walnut Grove, California*. Los Angeles Institute of Archaeology, University of California, Los Angeles.

Couvares, Francis G.

1984 *The Remaking of Pittsburgh: Class and Culture in an Industrializing City, 1877–1919*. State University of New York (SUNY) Press, Albany.

Cox, Beatrice Reynolds

2007 *The Archaeology of the Allensworth Hotel: Negotiating the System in Jim Crow America*. Master's thesis, Department of Anthropology, Sonoma State University, Rohnert Park, CA.

Cox, Thomas

1974 *Mills and Markets: A History of the Pacific Coast Lumber Industry to 1900*. University of Washington Press, Seattle.

Coy, Owen

1923 *California County Boundaries: A Study of the Division of the State into Counties and the Subsequent Changes in their Boundaries*. California Historical Survey Commission, Berkeley, CA. Reprinted 1973 by Valley Publishers, Fresno, CA.

1929 *The Humboldt Bay Region, 1850–1875: A Study in the American Colonization of California*. California State Historical Association, Los Angeles.

Crandall, William, Alan Rowe, and John Parnell

2003 *New Frontiers in Management Research: The Case for Industrial Archaeology*. *The Coastal Business Journal* 2(1):45–60.

Crane, Brian

2000 Filth, Garbage, and Rubbish. *Historical Archaeology* 34(1):20–38.

- Cranz, Galen
1982 *The Politics of Park Design: A History of Urban Parks in America*. MIT Press, Cambridge, MA.
- Cressey, Pamela J., Belinda Blomberg, and Rebecca Bartlett (compilers)
1986 *Cities and Archaeology*. Committee for City Archaeology of the Society for Historical Archaeology. Alexandria Archaeology, City of Alexandria, VA.
- Cronon, William, George Miles, and Jay Gitlin (editors)
1991 *Under an Open Sky: Rethinking America's Western Past*. Norton, New York, NY.
- Cross, Ralph Herbert
1954 *The Early Inns of California, 1844–1869*. L. Kennedy, San Francisco, CA.
- Crouchett, Lorraine Jacobs
1982 *Filipinos in California: From the Days of the Galleon to the Present*. Downey Place Publishing House, El Cerrito, CA.
- Crump, Spencer
1998 *The California Western "Skunk" Railroad*. Zeta Publishers Company, Fort Bragg, CA.
- Cruz, Gilbert R.
1988 *Let There Be Towns: Spanish Municipal Origins in the American Southwest, 1610–1810*. Texas A&M Press, College Station.
- Cusick, James G.
1995 The Importance of the Community Study Approach in Historical Archaeology, with an Example from Late Colonial St. Augustine. *Historical Archaeology* 29(4):59–83.
- Cutter, Donald, and Iris Engstrand
1996 *Quest for Empire: Spanish Settlement in the Southwest*. Fulcrum Publishing, Golden, CO.
- Daily Alta*
1865 No title. *Daily Alta* 2 June. San Francisco, CA.
- Davis, Leonard M.
1993 *Newcastle, Gem of the Foothills: A Pictorial History of Newcastle, Placer County, California from its Formative Days to the Present*. Newcastle Community Association, Newcastle, CA.
- Davis, Susan G.
1986 *Parades and Power: Street Theater in 19th-Century Philadelphia*. Temple University Press, Philadelphia, PA.
- De Cunzo, Lu Ann
1995 Reform, Respite, Ritual: An Archaeology of Institutions; The Magdalene Society of Philadelphia 1800–1850. *Historical Archaeology* 29(3):1–164.

De Cunzo, Lu Ann, Angela Hoseth, Jay Hodny, JoAnn E. Jamison, Wade P. Catts, and David C. Bachman

- 1992 *Final Archaeological Investigations at the Darrach Store Site, Delaware Route 6 - Woodland Beach Road, Smyrna Section, Delaware Route 1 Corridor, Kent County, Delaware*. Delaware Department of Transportation Archaeology Series No. 93. Delaware Department of Transportation, Division of Highways, Dover, DE.

Deering, James H.

- 1909 *General Laws of California, As Amended up to the Session of 1900*. Bancroft-Whitney Company, San Francisco, CA.

Deetz, James

- 1977 *In Small Things Forgotten: The Archaeology of Early American Life*. Anchor Press/Doubleday, New York, NY.
- 1986 Scale in Historical Archaeology. Paper presented at the Society for Historical Archaeology Conference on Historical and Underwater Archaeology, Sacramento, CA.
- 1988a Introduction: Archaeological Evidence of Sixteenth- and Seventeenth-Century Encounters. In *Historical Archaeology in Global Perspective*, Lisa Falk, editor, pp. 1–9. Smithsonian Institution Press, Washington, DC.
- 1988b American Historical Archaeology: Methods and Results. *Science* 239:362–367.
- 1996 *In Small Things Forgotten: An Archaeology of Early American Life*. Anchor Books/Doubleday, New York, NY.
- 1996 *In Small Things Forgotten: An Archaeology of Early American Life*. Expanded and revised version of 1989 edition, originally published in 1977. Anchor Books, Doubleday, New York.

De Grout, Henry

- 1884 California: Information, General and Statistical, in Relation to the Agricultural, Commercial, Manufacturing, and other Resources, Interests, and Industries of the State. In *The 4th Annual Report of the State Mineralogist, California*, Henry G. Hanks editor. pp. 28-59? State Mining Bureau, Sacramento.

Delano Centennial Editorial Board

- 1974 *Where the Railroad Ended...A History of Delano, 1873–1973*. Josten's/American Yearbook Company, Visalia, CA.

del Castillo, R. Griswold

- 1975 La Familia Chicana: Social Change in the Chicano Family in Los Angeles, 1850–1889. *Journal of Ethnic Studies* 3(1):41–58.

Delgado, James P.

- 2009 *Gold Rush Port: The Maritime Archaeology of San Francisco's Waterfront*. University of California Press, Berkeley.

Demos, John

- 1970 *A Little Commonwealth: Family Life in Plymouth Colony*. Oxford University Press, Oxford, England.

Deverell, William

1994 *Railroad Crossing: Californians and the Railroad, 1850–1910*. University of California Press, Berkeley.

Devey, David E.

1978 *Coulterville Historical Narrative*. Valley Publishers, Fresno, CA.

Diamond, Adam

2006 What a Waste: Municipal Refuse Reform and a Century of Solid-Waste Management in Los Angeles. *Southern California Quarterly* 88 (Fall):339–365.

Dickens, Roy S., Jr., and William R. Bowen

1980 Problems and Promises in Urban Historical Archaeology: The MARTA Project. *Historical Archaeology* 14:42–57.

Dictionary.com

2008 Ethnicity, Dictionary.com, Lexico Publishing Group, LLC. <<http://dictionary.reference.com/browse/ethnicity>> Accessed Nov. 2008.

Diller, Joseph Silas

1916 *Guidebook of the Western United States, Part D: The Shasta Route and Coast Line, 1850–1928*. U.S. Geological Bulletin No. 614, Washington, DC.

Dillon, Richard

1982 *Delta Country*. Presidio Press, Novato, CA.

Dixon, Kelly

2005 *Boomtown Saloons: Archaeology and History in Virginia City*. University of Nevada Press, Reno.

Donovan, Brian L.

2006 *White Slave Crusades: Race, Gender, and Anti-vice Activism, 1887–1917*. University of Illinois Press, Urbana.

Douglas, Ann

1977 *The Feminization of American Culture*. Knopf, New York, NY.

Dressler, Albert

1927 *California Chinese Chatter*. Privately printed, San Francisco, CA.

Driscoll, Kelly A.

2003 An Archaeological Study of Architectural Form and Function at Indian Key, Florida. Master's thesis, Department of Anthropology, University of South Florida, Tampa.

DuFault, David V.

1959 The Chinese in the Mining Camps of California, 1848–1870. *Southern California Quarterly* 41(June):155–170.

Dumke, Glenn

- 1944 *The Boom of the Eighties in Southern California*. Huntington Library, San Marino, CA.
1994 The Boom of the Eighties in Southern California. *Southern California Quarterly* 76(Spring):99–114.

Durham, David L.

- 1998 *California's Geographic Names: A Gazetteer of Historic and Modern Names of the State*. Word Dancer Press, Clovis, CA.

Echeverria, Jeronima

- 1999 *Home Away from Home: A History of Basque Boardinghouses*. University of Nevada Press, Reno.

Eifler, Mark A.

- 2002 *Gold Rush Capitalists: Greed and Growth in Sacramento*. University of New Mexico Press, Albuquerque.

Eigenheer, Allen R.

- 1976 Early Perceptions of Agricultural Resources in the Central Valley of California. Doctoral dissertation, University of California, Davis.

Elias, Sol P.

- 1924 *Stories of Stanislaus: A Collection of Stories on the History and Achievements of Stanislaus County*. n.p., Modesto, CA. Reprinted 1980 by Unigraphic, Evansville, IN.

Elkind, Sarah S.

- 1998 *Bay Cities and Water Politics: The Battle for Resources in Boston & Oakland*. University Press of Kansas, Lawrence.

Eterovich, Adam S.

- 2000 *Croatians in California*. Ragusan Press, San Carlos, CA.

Ewen, Elizabeth

- 1985 *Immigrant Women in the Land of Dollars: Life and Culture on the Lower East Side, 1890–1925*. Monthly Review Press, New York, NY.

Faragher, John

- 1979 *Women and Men on the Oregon Trail*. Yale University Press, New Haven, CT.
2001 Bungalow and Ranch House: The Architectural Backwash of California. *The Western Historical Quarterly* 32 (2):149–173.

Farrell, James J.

- 1980 *Inventing the American Way of Death, 1830–1920*. Temple University Press, Philadelphia, PA.

Farris, Glenn

- 1997 Archaeological Excavation of the 'Old Warehouse' and Granary at La Purisima Mission State Historic Park. *Pacific Coast Archaeological Society Quarterly* 33(4):1–28.

Federal Writers' Project

- 1939 *The WPA Guide to California*. Pantheon Books, New York, NY. Reprinted 1984 by Pantheon Books, New York, NY.

Fee, Jeffrey

- 1993 Idaho's Chinese Mountain Gardens. In *Hidden Heritage: Historical Archaeology of the Overseas Chinese*, Priscilla Wegars, editor, pp. 65–96. Baywood Publishing Company, Amityville, NY.

Feister, Lois

- 1991 The Orphanage at Schuyler Mansion. *Northeast Historical Archaeology* 20:27–36.

Felton, David, Frank Lortie, and Peter Schulz

- 1984 *The Chinese Laundry on Second Street: Papers on Archaeology at the Woodland Opera House Site*. DPR Archaeology Reports No. 24, California Department of Parks and Recreation, Sacramento.

Fernandez, Trish

- 2001 Mexican Miners in the California Gold Rush: A Historical and Archaeological Study. Master's thesis, Department of Anthropology, California State University, Sacramento.

Feyerabend, Paul,

- 1988 *Against Method*. Versa Press, London, England.

Fields, Virginia M.

- 1986 *100 Years of Humboldt County Culture and Artistry, 1850 to 1950*. Humboldt Cultural Center, Eureka, CA.

Fine, Lisa M.

- 1986 Between Two Worlds: Business Women in a Chicago Boarding House, 1900–1930. *Journal of Social History* 19(3):511–519.

Fiorini-Jenner, Gail L., and Monica Jae Hall

- 2002 *Western Siskiyou County: Gold and Dreams*. Arcadia, Charleston, SC.

Fischer, Claude S.

- 1975 Toward a Subcultural Theory of Urbanism. *American Journal of Sociology* 80(6):1319–1341.
1994 Changes in Leisure Activities, 1890–1940. *Journal of Social History* 27(3):453–475.

Fogelson, Robert M.

- 1967 *The Fragmented Metropolis: Los Angeles, 1850–1930s*. Harvard University Press, Cambridge, MA.

Foglesong, Richard E.

- 1986 *Planning the Capitalist City: The Colonial Era to the 1920s*. Princeton University Press, Princeton, NJ.

Fong, Eric W.

- 2002 Anti-Chinese Politics in California in the 1870s: An Intercounty Analysis. *Sociological Perspectives* 45(2):183–210.

Foote, H. S. (editor)

- 1888 *Santa Clara County, California, Illustrated*. The Lewis Publishing Company, Chicago, IL.

Fox, Richard Wightman, and T. J. Jackson Lears

- 1983 *The Culture of Consumption: Critical Essays in American History, 1880–1980*. Pantheon Books, New York, NY.

Friedman, Walter A.

- 2004 *Birth of a Salesman: The Transformation of Selling in America*. Harvard University Press, Cambridge, MA.

Gadlin, Howard

- 1978 Scars and Emblems: Paradoxes of American Life. *Journal of Social History* 11(3): 305–327.

Galishoff, Stuart

- 1975 *Safeguarding the Public Health: Newark, 1895–1918*. Greenwood Press, Westport, CT.

Galloway, J. D.

- 1923 Design of a City Water System. *Journal of the American Water Works Association* 10(3): 405–410.

Gamber, Wendy

- 2002 Tarnished Labor: The Hope, The Market, and the Boardinghouse in Antebellum America. *Journal of the Early Republic* 22(Summer):177–204.

Garb, Margaret

- 2005 *City of American Dreams: A History of Home Ownership and Housing Reform in Chicago, 1871–1919*. University of Chicago Press, Chicago, IL.

Garaventa, Donna, and Allen Pastron

- 1983 Chinese Ceramics from a San Francisco Dump Site. In *Forgotten Places and Things: Archaeological Perspectives on American History*, Albert E. Ward, editor, pp. 295–320. Center for Anthropological Studies, Albuquerque, NM.

Gausted, Edwin Scott, Philip L. Barlow, with special assistance from Richard W. Dishno

- 2001 *New Historical Atlas of Religion in America*. Oxford University Press, New York, NY.

Geertz, Clifford

- 1973 *The Interpretation of Cultures*. Basic Books, New York, NY.

Geismar, Joan

- 1987 Landfill and Health, A Municipal Concern or Telling it Like it Was. *Northeast Historical Archaeology* 16:49–57.

Geismar, Joan, and Meta Janowitz

- 1993 Health, Sanitation, and Foodways in Historical Archaeology. *Historical Archaeology* 27(2):1.

Gibb, James, and April Beisaw

- 2000 Learning Cast Up from the Mire: Archaeological Investigations of Schoolhouses in the Northeastern United States. *Northeast Historical Archaeology* 29:107–129.

Gibb, James, and Julia King

- 1991 Gender, Activity Areas, and Homelots in the 17th-Century Chesapeake Region. *Historical Archaeology* 25(4):109–131.

Gibson, R. J.

- 1976 *Imperial Russia in Frontier America: The Changing Geography of Supply of Russian America, 1784–1867*. Oxford University Press, New York, NY.

Gilfoyle, Timothy

- 1994 *City of Eros: New York City, Prostitution, and the Commercialization of Sex, 1790–1920*. W. W. Norton, New York, NY.

Gleason, Kathryn

- 1994 To Bound and to Cultivate. In *The Archaeology of Garden and Field*, Naomi Miller and Kathryn Gleason, editors, pp. 1–24. University of Pennsylvania Press, Philadelphia.

Glickman, Lawrence B.

- 1997 *A Living Wage: American Workers and the Making of Consumer Society*. Cornell University Press, Ithaca, NY.

Goldman, Joanne Abel

- 1997 *Building New York's Sewers: Developing Mechanisms of Urban Management*. Purdue University Press, West Lafayette, IN.

Goldman, Marion S.

- 1978 Sexual Commerce on the Comstock Lode. *Nevada Historical Quarterly* 21:99–129.
1981 *Gold Diggers and Silver Miners: Prostitution and Social Life on the Comstock Lode*. University of Michigan Press, Ann Arbor.

Goody, Jack (editor)

- 1971 *The Development Cycle of the Domestic Group*. Cambridge University Press, Cambridge, England.

Gordon, Robert B.

- 1988 Material Evidence of the Manufacturing Methods Used in 'Armory Practice.' *Industrial Archaeology* 14(4):23–36.

Gorn, Elliott J.

- 1987a *The Manly Art: Bare-knuckle Prize Fighting in America*. Cornell University Press, Ithaca, NY.

- 1987b 'Good-Bye Boys, I Die a True American': Homicide, Nativism, and Working-Class Culture in Antebellum New York City. *Journal of American History* 74:388–410.
- Grant, H. Roger, and Charles W. Bohi
1988 *The Country Railroad Station in America*. The Center for Western Studies, Sioux Falls, SD.
- Graves, Alvin Ray
2004 *The Portuguese Californians: Immigrants in Agriculture*. Portuguese Heritage Publications of California, San Jose.
- Great Basin Foundation (editor)
1987 *Wong Ho Leun: An American Chinatown*. 2 volumes. Great Basin Foundation, San Diego, CA.
- Greenland, Powell
2001 *Hydraulic Mining in California: A Tarnished Legacy*. A. H. Clark, Spokane, WA.
- Greenwood, Roberta S.
1999 The Hing Lung Laundry in Santa Barbara. *Chinese America: History and Perspectives* 13:71–80.
- Greenwood, Roberta S., Vance G. Benté, Michael J. McIntyre, Leo R. Barker, Richard L. Wessel, and R. Paul Hampson
1980 *Historic Archaeological Sites Investigation, Phase I*. U.S. Army Corps of Engineers, San Francisco, CA.
- Griggs, Heather J.
2001 'By Virtue of Reason and Nature': Competition and Economic Strategy in the Needle-trades at New York's Five Points, 1855–1880. *Historical Archaeology* 35(3):76–88.
- Groover, Mark D.
2001 Linking Artifact Assemblages to Household Cycles: An Example from the Gibbs Site. *Historical Archaeology* 35(4):38–57.
- Groth, Paul Erling
1983 Forbidden Housing: The Evolution and Exclusion of Hotels, Boardinghouses, Rooming Houses, and Lodging Houses in American Cities, 1880–1930. Doctoral dissertation, University of California, Berkeley.
1994 *Living Downtown: The History of Residential Hotels in the United States*. University of California Press, Berkeley.
- Gudde, Erwin G.
1975 *California Gold Camps: Geographical and Historical Dictionary of Camps, Towns, and Localities Where Gold was Found and Mined; Wayside Stations and Trading Centers*, University of California Press, Berkeley.
1998 *California Place Names; The Origin and Etymology of Current Geographical Names*. University of California Press, Berkeley.

Gulliford, Andrew

1984 *America's Country Schools*. Preservation Press, Washington, DC.

Gumprecht, Blake

1999 *The Los Angeles River: Its Life, Death, and Possible Rebirth*. John Hopkins University Press, Baltimore, MD.

Gutman, Herbert G.

1976 *The Black Family in Slavery and Freedom, 1750–1925*. Pantheon Books, New York, NY.

1977 *Work, Culture, and Society in Industrializing America*. Vintage, New York, NY.

Haas, Lisbeth

1995 San Juan Capistrano: A Rural Society in Transition to Citrus. *California History* 74(1):47–57.

1996 *Conquests and Historical Identities in California, 1769–1936*. University of California Press, Berkeley.

Haas, Mary Elizabeth

1985 *The Barrios of Santa Ana: Community, Class, and Urbanization, 1850–1947*. Doctoral dissertation, University of California, Irvine.

Hackel, Steven W.

2005 *Children of Coyote, Missionaries of Saint Francis: Indian–Spanish Relations in Colonial California, 1769–1850*. University of North Carolina Press, Chapel Hill.

Haiman, Miecislaus

1940 *Polish Pioneers of California*. Polish Roman Catholic Union of America, Chicago, IL.
Reprinted 1969 by R&E Research Associates, San Francisco, CA.

Halttunen, Karen

1982 *Confidence Men and Painted Women: A Study in Middle-Class Culture in America, 1830–1860*. Yale University Press, New Haven, CT.

Halverson, Wilton L.

1949 History of Public Health in Sacramento. *Bulletin of the Medical Library Association* 37(1):59–61.

Hansen, Harvey J., and Jeanne Thurlow Miller

1962 *Wild Oats in Eden: Sonoma County in the 19th Century*. n.p., Santa Rosa, CA.

Hardesty, Donald

1988 *The Archaeology of Mining and Miners: A View from the Silver State*. The Society for Historical Archaeology, Special Publication Series, No. 6. Ann Arbor, MI.

Hardesty, Donald, and Barbara Little

2000 *Assessing Site Significance: A Guide for Archaeologists and Historians*. AltaMira Press, Walnut Creek, CA.

Hareven, Tamara K., and John Modell

- 1973 Urbanization and the Malleable Household: An Examination of Boarding and Lodging in American Families. *Journal of Marriage and the Family* 35(3):467–479.

Harman, Lila

- 1970 *A History of Rocklin*. Master's thesis, extracted by Howard Scribner for the Rocklin Historical Society. Rocklin Area Chamber of Commerce, Rocklin, CA.

Harney, Robert F.

- 1978 Boarding and Belonging. *Urban History Review* 78(2):8–37.

Harris, Dianne

- 1999 The Postmodernization of Landscape: A Critical Historiography. *Journal of the Society of Architectural Historians* 58(3):434–443.

Harris, E. Jeanne, Geoff Ginn, and Cosmos Coroneos

- 2004 How to Dig a Dump: Strategy and Research Design for Investigation of Brisbane's Nineteenth-Century Municipal Dump. *Australasian Historical Archaeology* 22:15–26.

Harris, Edward C.

- 1989 *Principles of Archaeological Stratigraphy*. Academic Press, New York, NY.

Harris, Richard

- 1992 The End Justified the Means: Boarding and Rooming in a City of Homes, 1891–1951. *Journal of Social History* 26(2):331–358.

Harrison, George B.

- 1915 Roads and Highways of California. *California's Magazine* 1(1):227–234.

Hart, George H.

- 1946 Wealth Pyramiding in the Production of Livestock. In *California Agriculture*, Claude B. Hutchinson, editor, pp. 51–112. University of California Press, Berkeley.

Hart, James D.

- 1987 *A Companion to California*. University of California Press, Berkeley.

Hattori, Eugene, Mary Rusco, and Donald H. Tuohy

- 1979 *Archaeological and Historical Studies at Ninth and Amherst, Lovelock, Nevada*. Nevada State Museum Archaeological Services Reports, Carson City.

Heath, Barbara J., and Amber Bennett

- 2000 'The little Spots allow'd them': The Study of African American Yards. *Historical Archaeology* 34(2):38–55.

Heig, Adair

- 1982 *History of Petaluma: A California River Town*. Scottwall Associates, Petaluma, CA.

Heilbron, Carl H. (editor)

1936 *History of San Diego County*. The San Diego Press Club, San Diego, CA.

Heite, Edward

1992 Unearthing Business History: Can Archaeology Provide Evidence for Interpreting Management Styles? *Industrial Archaeology* 18(1/2):123–128.

Hendrick, Irving G.

2000 From Indifference to Imperative Duty: Educating Children in Early California. *California History*: 79(2):226–249.

Hendryx, Michael, and James Rock (editors)

1990 *The Chinese in Siskiyou County, a Glimpse from Yreka*. Siskiyou County Historical Society, Yreka, CA.

Henry, Susan

1987 A Chicken in Every Pot: The Urban Subsistence Pattern in Turn-of-the-Century Phoenix, Arizona. In *Living in Cities: Current Research in Urban Archaeology*, Edward Staski, editor, pp. 19–28. The Society for Historical Archaeology, Special Publication Series, No. 5, California, PA.

Hewitt, Nancy A.

1984 *Women's Activism and Social Change: Rochester, New York, 1822–1872*. Cornell University Press, Ithaca, NY.

Hillman, Raymond W., and Leonard A. Covello

1985 *Cities & Towns of San Joaquin County since 1847*. Panorama West Books, Fresno, CA.

Hine, Robert V.

1953 *California's Utopian Colonies*. Huntington Library, San Marino, CA.

Hirata, Lucie Cheng

1979 Free, Indentured, Enslaved: Chinese Prostitutes in Nineteenth-Century America. *Signs* 5(1):3–29.

Hittel, John

1863 *The Resources of California Comprising Agriculture, Mining, Geography, Climate, Commerce, etc. and the Past and Future Development of the State*. A. Roman & Company, San Francisco, CA.

1879 *Resources of California, Comprising the Society, Climate, Salubrity, Scenery, Commerce and Industry of the State*. A. L. Bancroft & Company, San Francisco, CA.

Hodder, Ian

1986 *Reading the Past: Current Approaches to Interpretation in Archaeology*. Cambridge University Press, Cambridge, England.

Hoffman, Abraham

- 1981 *Vision or Villainy: Origins of the Owens Valley-Los Angeles Water Controversy*. Texas A&M Press, College Station.

Holliday, J. S.

- 1981 *The World Rushed In: The California Gold Rush Experience*. Simon & Schuster, New York, NY.

Hollingsworth, J. Rogers, and Ellen Jane Hollingsworth

- 1979 *Dimensions in Urban History: Historical and Social Science Perspectives on Middle-Size American Cities*. University of Wisconsin Press, Madison.

Honerkamp, Nicolas

- 1987 Innovation and Change in the Antebellum Southern Iron Industry. *Industrial Archaeology* 13(1):55–68.

Hoover, Mildred Brooke, Hero Eugene Rensch, Ethel Grace Rensch, and William N. Abeloe

- 1966 *Historic Spots in California*, 3rd edition. Stanford University Press, Stanford, CA.
1990 *Historic Spots in California*, 4th edition. Stanford University Press, Stanford, CA.

Horowitz, David

- 1985 *The Morality of Spending: Attitudes toward the Consumer Society in America, 1875–1940*. Johns Hopkins University Press, Baltimore, MD.

Horwitz, Richard P.

- 1973 Architecture and Culture: The Meaning of the Lowell Boarding House. *American Quarterly* 25(1):64–82.

Hounshell, David A.

- 1984 *From the American System to Mass Production, 1800–1932*. Johns Hopkins University Press, Baltimore, MD.

Howard, Brett

- 1982 The Boarding House Reach. *Mankind* 7(1):25–26, 50.

Howard, Thomas Frederick

- 1998 *Sierra Crossing: First Roads to California*. University of California Press, Berkeley.

Huddleson, Julia E.

- 2002 The Railroad Exchange Hotel: A Working Class Boardinghouse in West Oakland. Master's thesis, Department of Anthropology, Sonoma State University, Rohnert Park, CA.

Huey, Paul

- 1984 Old Slip and Cruger's Wharf at New York: An Archaeological Perspective of the Colonial American Waterfront. *Historical Archaeology* 18(1):15–37.

Hundley, Norris, Jr.

- 2001 *The Great Thirst: Californians and Water: A History*, revised from 1992 edition. University of California Press, Berkeley.

Hurtado, Albert

- 1988 *Indian Survival on the California Frontier*. Yale University Press, New Haven, CT.
1999 *Intimate Frontiers: Sex, Gender, and Culture in Old California*. University of New Mexico Press, Albuquerque.

Husband, Michael B.

- 1970 Morton M. McCarver: An Iowa Entrepreneur in the Far West. *Annals of Iowa* 40(Spring): 241–254.

Hyde, Charles Gilman, C. E.

- 1913 California State Board of Health: A Report Upon Sewerage and Sewage Disposal in the City of Placerville, El Dorado County, California. California State Archives, Sacramento, CA.

Hynding, Alan

- 1982 *From Frontier to Suburb: The Story of the San Mateo Peninsula*. Star Publishing Company, Belmont, CA.

Iggers, George

- 2005 *Historiography in the Twentieth Century*. Wesleyan University Press, Hanover, NH.

Igler, David

- 2001 *Industrial Cowboys: Miller & Lux and the Transformation of the Far West, 1850–1920*. University of California Press, Berkeley.

Interrante, Joseph

- 1979 You Can't Go to Town in a Bathtub: Automobile Movement and the Reorganization of Rural American Space, 1900–1930. *Radical History Review* (21):151–168.

Irvine, Leigh H.

- 1915 *History of Humboldt County California with Biographical Sketches*. Historic Record Company, Los Angeles, CA.

Jackson, John B.

- 1984 *Discovering the Vernacular Landscape*. Yale University Press, New Haven, CT.

Jagruti, Patel

- 2004 *Japanese Americans in Redwood City: A Local History*. Master's thesis, San Jose State University, San Jose, CA. Proquest, Cambridge Information Group, Bethesda, MD.

Jaher, Frederic Cople

- 1982 *The Urban Establishment: Upper Strata in Boston, New York, Charleston, Chicago, and Los Angeles*. University of Illinois Press, Urbana.

Jakle, John A., Douglas K. Meyer, and Robert W. Bastian

- 1981 *American Common Houses: A Selected Bibliography of Vernacular Architecture*. Vance Bibliographies, Monticello, IL.

Jelinek, Lawrence J.

- 1999 Property of Every Kind: Ranching and Farming during the Gold Rush Era. *California History* 77 (Winter):233–249.

Jenkins, Olaf P. (editor)

- 1948 *Geologic Guidebook along Highway 49, Sierran Gold Belt: The Mother Lode Country*. California Division of Mines and Geology, Bulletin 141, Sacramento, CA.

Johnson, G. A.

- 1913 *The Purification of Public Water Supplies*. U.S. Geological Survey Water-Supply Paper 315. U.S. Geological Survey, Washington, DC.

Johnson, Mareal

- 1995 *Why Stop?: A Guide to California Roadside Markers*. Gulf, Houston, TX.

Johnson, Matthew

- 1999 *Archaeological Theory: An Introduction*. Blackwell, Oxford, England.

Johnson, Susan Lee

- 2000 *Roaring Camp: The Social World of the California Gold Rush*. W. W. Norton & Company, New York, NY.

Johnston, R. J., Derek Gregory, and David M. Smith

- 1994 *The Dictionary of Human Geography*, 3rd edition. Blackwell Reference, Oxford, England.

Johnston, Warren E.

- 2003 Cross Sections of a Diverse Agriculture: Profiles of California's Agricultural Production Regions and Principal Commodities. In *California Agriculture: Dimensions and Issues*, Jerry Siebert, editor, pp. 29–56. Giannini Foundation of Agricultural Economics, Division of Agriculture and Natural Resources, University of California, Berkeley.

Jones, Siân

- 1997 *The Archaeology of Ethnicity: Constructing Identities in the Past and Present*. Routledge, New York, NY.

Joseph, Zetta

- 1987 Louis Joseph of Big Pine, California. *Western States Jewish History* 19(3):193–207.

JRP Historical Consulting

- 2001 Historical Census Populations of Counties, Places, Towns, and Cities in California, 1850–1990 [on-line data file]. Prepared by the California Digital Library, Oakland, CA. Generated by JRP Historical Consulting using Counting California. Accessed at <<http://countingcalifornia.cdlib.org:80>>. Accessed 2008.

- JRP Historical Consulting, and California Department of Transportation (Caltrans)
2000 Water Conveyance Systems in California: Historic Context Development and Evaluation Procedures. JRP Historical Consulting, Davis, and California Department of Transportation, Sacramento.
- Kahrl, William L.
1982 *Water and Power: The Conflict Over Los Angeles' Water Supply in the Owens Valley*. University of California Press, Berkeley.
- Kahn, Ava, and Marc Dollinger (editors)
2003 *California Jews*. Brandeis University Press, Waltham, MA.
- Kaprielian, Isabel
1983 Women and Work: The Case of Finnish Domestic and Armenian Boarding-house Operators. *Resources for Feminist Research* 12(4):51–54.
- Kardatzke, Tim, and Catherine Spude
2002 *Archeological Investigations in Skagway, Alaska. Vol. 9: Excavations at the Pantheon Saloon Complex*. National Park Service, Anchorage Support Office, Anchorage, AK.
- Karskens, Grace
1997 *The Rocks: Life in Early Sydney*. Melbourne University Press, Melbourne, Australia.
- Karutz, Gary
2007 Southern California for Health, Wealth, and Sunshine: The Role of Boomers and Boosters. Paper presented at the South Pasadena Library Volunteer Recognition Day, March 23, 2007, Pasadena, CA.
- Kasson, John F.
1990 *Rudeness and Civility: Manners in 19th-Century Urban America*. Hill & Wang, New York, NY.
- Keating, Ann Durkin
2002 *Building Chicago: Suburban Developers and the Creation of a Divided Metropolis*. University of Illinois Press, Champaign.
- Keller, Jean A.
2001 *Student Health at Sherman Institute, 1902–1922*. Doctoral dissertation, University of California, Riverside.
- Kelley, Robert
1989 *Battling the Inland Sea*. University of California Press, Berkeley.
- Kelley, Robin D.G.
1993 We Are Not What We Seem': Rethinking Black Working-Class Opposition in the Jim Crow South. *Journal of American History* 80:75–112.

Kelman, Ari

- 2003 *A River and Its City: The Nature of Landscape in New Orleans*. University of California Press, Berkeley.

Kelso, Gerald K.

- 1994 Palynology in Historical Rural-Landscape Studies: Great Meadows, Pennsylvania. *American Antiquity* 59(2):359–372.

Kelso, William, and Rachel Most (editors)

- 1990 *Earth Patterns: Essays in Landscape Archaeology*. University Press of Virginia, Charlottesville.

Kessler-Harris, Alice

- 1982 *Out to Work: A History of Wage-earning Women in the United States*. Oxford University Press, New York, NY.

Ketz, K. Anne, Elizabeth J. Abel, and Andrew J. Schmidt

- 2005 Public Image and Private Reality: An Analysis of Differentiation in a Nineteenth-Century St. Paul Bordello. *Historical Archaeology* 39(1):74–88.

Keyes, Jonathan J.

- 2000 A Place of Its Own: Urban Environmental History. *Journal of Urban History* 26(3): 380–390.

Kimmelman, Alex Jay

- 1994 “Strictly White and Always Sober,” Tucson’s Pioneer Hotels: A Photo Essay. *The Journal of Arizona History* 35(1):63–80.

King, Julia

- 1994 Rural Landscape in the Mid-nineteenth Century Chesapeake. In *Historical Archaeology of the Chesapeake Region*, Barbara Little and Paul Shackel, editors, pp. 283–299. Smithsonian Institution Press, Washington, DC.
- 2006 Household Archaeology, Identities and Biographies. In *The Cambridge Companion to Historical Archaeology*, Dan Hicks and Mary Beaudry, editors, pp. 293–313. Cambridge University Press, Cambridge, England.

King, Leslie J.

- 1984 *Central Place Theory*. Sage Publications, Thousand Oaks, CA.

Kirker, Harold

- 1986 *California’s Architectural Frontier: Style and Tradition in the Nineteenth Century*, expanded and revised from 1960 edition. Peregrine Smith, Salt Lake City, UT.

Klassen, Henry

- 1992 T. C. Power & Bro.: The Rise of a Small Western Department Store, 1870–1902. *Business History Review* 66(4):671–722.

Klein, Daniel B., and Chi Yin

- 1994 *The Private Provision of Frontier Infrastructure: Toll Roads in California, 1850–1902*. UCTC Working Paper No. 238, University of California Transportation Center (UCTC), University of California, Berkeley.

Knight, Oliver

- 1973 Toward an Understanding of the Western Town. *Western Historical Quarterly* 4(1):27–42.

Knights, Peter R.

- 1971 *The Plain People of Boston, 1830–1860: A Study in City Growth*. Oxford University Press, New York, NY.

Kosberg, Milton L.

- 1952 *The Polish Colony of California: 1876–1914*. Master's Thesis, Department of History, University of Southern California. Reprinted 1972 by R&E Research Associates, San Francisco, CA.

Krase, Jerome

- 1997 Polish and Italian Vernacular Landscapes in Brooklyn. *Polish American Studies* 54(1): 9–31.

Krueckeberg, Donald (editor)

- 1983 *Introduction to Planning History in the United States*. Center for Urban Policy Research, New Brunswick, NJ.

Kurillo, Max, and Erline Tuttle

- 2000 *California's El Camino Real and its Historic Bells*. Sunbelt Publications, San Diego, CA.

Kyle, Douglas E.

- 1990 *Historic Spots in California*. Stanford University Press, Stanford, CA.

La Brack, Bruce

- 1988 *The Sikhs of Northern California, 1904–1975*. AMS Press, New York, NY.

Lamb, Lisa Nicole

- 2003 Historical Archaeology of the Indian Key (8MO15) Warehouse: An Analysis of Nineteenth Century Ceramics. Master's thesis, University of South Florida, Tampa.

Lambert, Rebecca T.

- 1918 *History of Glenn County*. Historic Record Company, Los Angeles, CA.

Landon, David

- 1996 Feeding Colonial Boston: A Zooarchaeological Study. *Historical Archaeology* 30(1):1–153.

Landon, David, and Timothy Tumberg

- 1996 Archaeological Perspectives on the Diffusion of Technology. *Industrial Archaeology* 22(2):40–57.

Larkey, Joann Leach

- 1969 *Davisville '68: The History and Heritage of the City of Davis, Yolo County, California*. Davis Historical and Landmarks Commission, Davis, CA.

Larsen, Eric L.

- 2003 Integrating Segregated Urban Landscapes of the Late-Nineteenth and Early-Twentieth Centuries. *Historical Archaeology* 37(3):111–123.

Laslett, Peter, and Richard Wall (editors)

- 1972 *Household and Family in Past Time*. Cambridge University Press, Cambridge, England.

Latta, Frank Forrest

- 1936 *El Camino a Los Angeles: an address delivered before the Kern County Historical Society February 20, 1933*. Kern County Historical Society, Bakersfield, CA.

Lawrence, Susan

- 2000 *Dolly's Creek: An Archaeology of a Victorian Goldfields Community*. Melbourne University Press, Melbourne, Australia.

Lawson, John D.

- 1986 *Redding and Shasta County: Gateway to the Cascades: an Illustrated History*. Windsor Publications, Northridge, CA.

Leach, William

- 1994 *Land of Desire: Merchants, Power, and the Rise of a New American Culture*. Vintage Books, New York, NY.

Lears, T. J. Jackson

- 1981 *No Place of Grace: Antimodernism and the Transformation of American Culture, 1880–1920*. Pantheon Books, New York, NY.
1985 *Fables of Abundance: A Cultural History of Advertising in America*. Basic Books, New York, NY.

Leavitt, J. W.

- 1982 *The Healthiest City: Milwaukee and the Politics of Health Reform*. Princeton University Press, Princeton, NJ.

Lebsock, Suzanne

- 1984 *The Free Women of Petersburg: Status and Culture in a Southern Town, 1784–1860*. Norton, New York, NY.

LeeDecker, Charles H.

- 1991 Historical Dimensions of Consumer Research. *Historical Archaeology* 25(2):30–45.

Lendol, Calder

- 1999 *Financing the American Dream: A Cultural History of Consumer Credit*. Princeton University Press, Princeton, NJ.

Leone, Mark P.

- 1986 Symbolic, Structural, and Critical Archaeology. In *American Archaeology, Past and Future: A Celebration of the Society for American Archaeology 1935–1985*, edited by David J. Meltzer, Don D. Fowler, and Jeremy Sabloff, pp. 413–438. Smithsonian Institution Press, Washington, D.C.

Leone, Mark, and Silas Hurry

- 1998 Seeing: The Power of Town Planning in the Chesapeake. *Historical Archaeology* 32(4): 34–77.

Leung, Peter C. Y., and L. Eve Armentrout Ma (editors)

- 1984 *One Day, One Dollar: Locke, California, and the Chinese Farming Experience in the Sacramento Delta*. Chinese/Chinese American History Project, El Cerrito, CA.

Levi, G.

- 2001 On Microhistory. In *New Perspectives in Historical Writing*, Peter Burke, editor, pp. 97–119. Pennsylvania State University Press, University Park.

Levinson, Robert

- 1994 *The Jews in the California Gold Rush*, 2nd edition. Commission for the Preservation of Pioneer Jewish Cemeteries and Landmarks of the Judah L. Magnes Museum, Berkeley, CA.

Lewis, E. J.

- 1880 *History of Tehama County, California*. Elliott & Moore, San Francisco, CA. Reprinted 1975 by California History Books, Fresno, CA.

Lewis, Kenneth

- 1976 *Camden: A Frontier Town in Eighteenth Century South Carolina*. Occasional Papers of the Institute of Archeology and Anthropology, Anthropological Studies 2. University of South Carolina, Columbia.

The Lewis Publishing Company

- 1889 *An Illustrated History of Los Angeles County, California*. The Lewis Publishing Company, Chicago, IL.
1890 *An Illustrated History of Southern California*. The Lewis Publishing Company, Chicago, IL.
1891 *History of Northern California*. The Lewis Publishing Company, Chicago, IL.
1892a *The Bay of San Francisco, The Metropolis of the Pacific Coast and Its Suburban Cities: A History. Vol. 1*. The Lewis Publishing Company, Chicago, IL.
1892b *History of the Counties of Fresno, Tulare, and Kern, California*. The Lewis Publishing Company, Chicago, IL. Reprinted 1974 by California Traveler, n.p.

Liebman, Ellen

- 1983 *California Farmland: A History of Large Agricultural Landholdings*. Rowman and Allanheld, Totowa, NJ.

Light, John

- 1984 The Archaeological Investigation of Blacksmith Shops. *Industrial Archaeology* 10(1): 55–68.
1986 An Industrial Smithy: Bear Creek, Yukon. *Industrial Archaeology* 12(1):39–48.

Light, John, and Henry Unglik

- 1984 *A Frontier Fur Trade Blacksmith Shop: 1796–1812*. Studies in Archaeology, Architecture, and History, Parks Canada, Quebec, Canada.

Lightfoot, Kent G.

- 2005 *Indians, Missions, and Merchants: The Legacy of Colonial Encounters on the California Frontiers*. University of California Press, Berkeley.

Limbaugh, Ronald H.

- 1999 Making Old Tools Work Better: Pragmatic Adaptation and Innovation in Gold-Rush Technology. *California History* 77(4):24–51.

Limbaugh, Ronald H., and Willard P. Fuller, Jr.

- 2004 *Calaveras Gold: the Impact of Mining on a Mother Lode County*. University of Nevada Press, Reno.

Lindley, Walter, and J. P. Widney

- 1896 *California of the South*, 3rd edition. D. Appleton & Company, New York, NY.

Little, Barbara

- 1992 *Text Aided Archaeology*. CRC Press, Boca Raton, FL.

Little, Barbara, and Erika Martin Seibert, with Jan Townsend, John Sprinkle, and John Knoerl, Jr.

- 2000 *Guidelines for Evaluating and Registering Archaeological Properties*. National Register Bulletin 36, U.S. Department of the Interior, National Park Service, Washington, D.C.

Lokke, Janet

- 1980 ‘Like a Bright Tree of Life:’ Farmland Settlement of the Sacramento River Delta. *California History* 59(3):222–239.

Lotchin, Roger W.

- 1979 *San Francisco, 1846–1856: From Hamlet to City*. University of Nebraska Press, Lincoln.

Lothrop, Gloria Ricci

- 1993 The Boom of the Eighties Revisited. *Southern California Quarterly* 75(Fall/Winter): 263–301.

Lyman, George D.

- 1925 The Beginnings of California’s Medical History. *California and Western Medicine* 13(5): 561–576.

Lynch, Robert M.

- 1997 *The Sonoma Valley Story*. Sonoma Index Tribune, Sonoma, CA.

Lynes, Russell

1963 *The Domesticated Americans*. Harper & Row, New York, NY.

MacPhail, Elizabeth C.

1975 When the Red Lights Went Out in San Diego: The Little Known Story of San Diego's "Restricted District." *Journal of San Diego History* 20(2):1–28.

Mann, Ralph

1982 *After the Gold Rush: Society in Grass Valley and Nevada City, California, 1849–1870*. Stanford University Press, Stanford, CA.

Marchand, Roland

1986 *Advertising the American Dream: Making Way for Modernity, 1920–1940*. University of California Press, Berkeley.

Marcus, George E., and Michael M. Fischer

1986 *Anthropology as Cultural Critique: An Experimental Moment in the Human Sciences*, expanded and revised from 1986 edition. University of Chicago Press, Chicago, IL.

Marshall, Howard Wright

1981 *American Folk Architecture: A Selected Bibliography*. American Folklife Center, Washington, D.C.

Mason, Jesse

1883 *History of Santa Barbara County: With Illustrations and Biographical Sketches of its Prominent Men and Pioneers*. Thompson & West, Oakland, CA.

Mathes, Pauline Peterson

1991 *Bit of Sweden in the Desert: A History of Kingsburg, California from the 1850's to the early 1940's*. Pioneer Publishing Co., Fresno, CA.

May, Dean

1994 *Three Frontiers: Family, Land and Society in the American West, 1850–1900*. Cambridge University Press, New York, NY.

May, Elaine Tyler

1980 *Great Expectations: Marriage and Divorce in Post-Victorian America*. University of Chicago Press, Chicago, IL.

May, Philip R.

1970 *Origins of Hydraulic Mining in California*. Holmes Book Co., Oakland, CA.

Mayne, Alan

1993 *The Imagined Slum: Newspaper Representation in Three Cities, 1870–1914*. Leicester University Press, London.

Mayne, Alan, and Susan Lawrence

1999 Ethnographies of Place: A New Urban History Research Agenda. *Urban History* 26(3): 325–348.

McAdie, Alexander, George Pardee, and E. A. Sterling

1905 Redeeming the Arid West. *Sunset Magazine* 14(4):325–338.

McAfee, Ward

1973 *California's Railroad Era 1850–1911*. Golden West Books, San Marino, CA.

McCarthy, John P., and Jeanne A. Ward

2000 Sanitation Practices, Depositional Processes, and Interpretive Contexts of Minneapolis Privies. *Historical Archaeology* 34(1):111–129.

McClurg, Sue

2000 *Water & the Shaping of California*. Heyday Books, Berkeley, CA.

McDannold, Thomas A.

2000 *California's Chinese Heritage: A Legacy of Places*. Heritage West Books, Stockton, CA.

McEvoy, Arthur F.

1986 *The Fisherman's Problem: Ecology and Law in the California Fisheries, 1850–1980*. Cambridge University Press, Cambridge, MA.

McGowan, Joseph A.

1949 Freight to the Mines in California, 1849–1859. Doctoral dissertation, University of California, Berkeley.

1961 *History of the Sacramento Valley*, Vol. 1. Lewis Historical Publishing Company, New York, NY.

McGowan, Joseph A., Julie Dominguez, Chester Grant, Edith Pitti, Susan Searcy, and Cynthia St. Louis

1979 Report of the Historical Development of City of Sacramento Block Bounded by I and J, 5th and 6th Streets: 1850–1920. Sacramento Archives and Museum Collection Center (SAMCC), Sacramento, CA.

McIlroy, Jack, and Mary Praetzelis

1997 Vanished Community: 19th Century San Francisco Neighborhoods: From Fourth Street to Mission Creek and Beyond. Archaeological Research Design and Treatment Plan for the SF-80 Bayshore Viaduct Seismic Retrofit Projects. Report to California Department of Transportation District 4, Oakland, from Anthropological Studies Center, Sonoma State University, Rohnert Park, CA.

McKanna, Calre V., Jr.

1984 Hold Back the Tide: Vice Control in San Diego, 1870–1930. *Pacific Historian* 28(3): 54–64.

McKelvey, Blake

1963 *The Urbanization of America 1860–1915*. Rutgers University Press, New Brunswick, NJ.

McKenney, L. M.

1881 *McKenney's Pacific Coast Directory for 1880–1881*. L. M. McKenney, San Francisco, CA.

1884 *McKenney's Pacific Coast Directory for 1883–1884*. L. M. McKenney, San Francisco, CA.

1887 *McKenney's Pacific Coast Directory for 1886–1887*. L. M. McKenney, San Francisco, CA.

McKillop, Heather

1995 Recognizing Children's Graves in Nineteenth-Century Cemeteries: Excavations in St Thomas Anglican Churchyard, Belleville, Ontario, Canada. *Historical Archaeology* 29(2):77–99.

Melosi, Martin V.

1980 *Pollution and Reform in American Cities, 1870–1930*. University of Texas Press, Austin.

1981 *Garbage in the Cities: Refuse, Reform, and the Environment: 1880–1980*. Texas A&M University Press, College Station.

1993 *Urban Public Policy: Historical Modes and Methods*. Pennsylvania State University Press, University Park.

2000 *The Sanitary City: Urban Infrastructure from Colonial Times to the Present*. Johns Hopkins University Press, Baltimore, MD.

2002 The Fresno Sanitary Landfill in an American Cultural Context. *The Public Historian* 24(3):17–35.

2004a The Automobile and the Environment in American History, Automobile in American Life and Society, University of Michigan-Dearborn and Benson Ford Research Center. <http://www.autolife.umd.umich.edu/Environment/E_Overview/E_Overview1.htm>. Accessed 27 March 2008.

2004b The Automobile Shapes the City, Automobile in American Life and Society, University of Michigan-Dearborn and Benson Ford Research Center. <http://www.autolife.umd.umich.edu/Environment/E_Casestudy/E_casestudy1.htm>. Accessed 27 March 2008.

Menefee, C. A.

1873 *Historical and Descriptive Sketch Book of Napa, Sonoma, Lake, and Mendocino: comprising sketches of their topography, productions, history, scenery, and peculiar attractions*. Reporter Publishing House, Napa City, CA.

Meyer, Michael D., Erica S. Gibson, and Julia G. Costello, with commentary by Diana diZerega Wall and Timothy J. Gilfoyle

2005 City of Angels, City of Sin: Archaeology in the Los Angeles Red-Light District ca. 1900. *Historical Archaeology* 39(1):107–125.

Meyerowitz, Joanne

1988 *Women Adrift: Independent Wage Earners in Chicago, 1880–1930*. University of Chicago Press, Chicago, IL.

Miller, George L.

- 1991 A Revised Set of CC Index Values for Classification and Economic Scaling of English Ceramics from 1787 to 1880. *Historical Archaeology* 25(1):1–25.

Miller, Henry

- 1988 Baroque Cities in the Wilderness. *Historical Archaeology* 22(2):57–73.

Miller, Naomi, and Kathryn Gleason (editors)

- 1994 *The Archaeology of Garden and Field*. University of Pennsylvania Press, Philadelphia.

Mitchell, S. L.

- 1915 The Automobile in California Life and Industry. *California's Magazine* 1(1):223–226.

Modell, John

- 1977 *The Economics and Politics of Racial Accommodation: The Japanese of Los Angeles, 1900–1942*. University of Illinois Press, Urbana.

Modell, John, and Tamara K. Hareven

- 1973 Urbanization and Malleable Household: An Examination of Boarding and Lodging in American Families. *Journal of Marriage and the Family* 35(August):467–479.

Moehring, Eugene P.

- 2004 *Urbanism and Empire in the Far West, 1840–1890*. University of Nevada Press, Reno.

Monaghan, Jan

- 1973 *Chile, Peru, and the California Gold Rush of 1849*. University of California Press, Berkeley.

Monkkonen, Eric H.

- 1988 *America Becomes Urban: The Development of U. S. Cities and Towns, 1780–1980*. University of California Press, Berkeley.

Montgomery, David

- 1980 *Workers' Control in America: Studies in the History of Work, Technology, and Labor Struggles*. Cambridge University Press, New York, NY.

Morgan, Wallace M.

- 1914 *History of Kern County, California*. Historic Record Company, Los Angeles, CA.

Morrison, Anne, and John H. Haydon

- 1917 *History of San Luis Obispo County and Environs*. Historic Record Company, Los Angeles, CA.

Moskowitz, Marina

- 2004 *Standard of Living: The Measure of the Middle Class in Modern America*. Johns Hopkins University Press, Baltimore, MD.

Mrozowski, Stephen, Grace Ziesing, and Mary Beaudry

- 1996 *Living on the Boott: Historical Archaeology at the Boott Mills Boardinghouses, Lowell, Massachusetts*. University of Massachusetts Press, Amherst.

Mumford, Lewis

- 1961 *The City in History: Its Origins, Its Transformations, and Its Prospects*. Harcourt Brace, New York, NY.

Munro-Fraser, J. P.

- 1879 *History of Solano County, California*. Wood Alley, San Francisco, CA.
1880 *History of Sonoma County*. Pacific Press, Oakland, CA. Reprinted 1973 by Charmaine Burdell Verdonda, Petaluma, CA.
1882 *History of Contra Costa County, California*. W. A. Slocum & Co., San Francisco, CA.

Murphy, Miriam

- 1978 The Working Women of Salt Lake City: A Review of the *Utah Gazetteer*, 1892–93. *Utah Historical Quarterly* 46(2):121–135.

Murray, Tim, Penny Crook, and Laila Ellmoos

- 2003 Understanding the Archaeology of the Modern City. In *Exploring the Modern City: Recent Approaches to Urban History and Archaeology*, Tim Murray, editor, pp. 113–135. Historic Houses Trust of New South Wales and LaTrobe University, Melbourne, Australia.

Museum of London

- 1994 *Archaeological Site Manual*. Museum of London Archaeology Service, London, England.

Myers, Denys Peter

- 1978 *Gaslighting in America: A Pictorial Survey, 1815–1910*. Dover Publications, Mineola, NY.

Nadeau, Remi A.

- 1965 *City-makers: The Story of California's First Boom, 1868–1876*. Trans-Anglo, Los Angeles, CA.
1974 *The Water Seekers*. Peregrine Smith, Santa Barbara, CA.
1992 *Ghost Towns & Mining Camps of California: A History & Guide*, 4th edition. Crest Publishers, Santa Barbara, CA.

Nash, Linda

- 2006 *Inescapable Ecologies: A History of Environment, Disease, and Knowledge*. University of California Press, Berkeley.

Nassaney, Mike, and Marjorie Abel

- 1993 The Political and Social Contexts of Cutlery Production in the Connecticut Valley. *Dialectical Anthropology* 18(3–4):247–289.

National Park Service (NPS)

- 1987 *California and Pony Express Trails: Eligibility/Feasibility Study Environmental Assessment for National Historic Trail Authorization*. U.S. Department of the Interior, National Park Service, Washington, D.C.
- 1991 *How to Apply the National Register Criteria for Evaluation*, National Register Bulletin 15, U.S. Department of the Interior, National Park Service, Washington, D.C.
- 1996 *Revised Thematic Framework*. U.S. Department of the Interior, National Park Service, Washington, D.C.
- 1998 *California and Pony Express National Historic Trails: Comprehensive Management and Use Plan Environmental Statement*. U.S. Department of the Interior, Washington, D.C.

National Women's History Museum

- 2007 *Reforming Their World: Women in the Progressive Era*, National Women's History Museum. www.nwhm.org/ProgressiveEra/wctu.html. Accessed 2008.

Nelson, Howard J.

- 1977 The Two Pueblos of Los Angeles: Agricultural Village and Embryo Town. *Southern California Quarterly* 59(1):1–11.

Nessin, Fern I.

- 1983 *Great Waters: A History of Boston's Water Supply*. Published for Brandeis University by University Press of New England, Hanover, NH.

Nevell, Michael

- 2003 The Archaeology of the Canal Warehouses of North-West England and the Social Archaeology of Industrialization. *Industrial Archaeology Review* 17(1):43–57.

Nicolson, Loren

- 1993 *Rails Across the Ranchos*, Centennial Edition. California Heritage Publishing Associates, San Luis Obispo, CA.

Noble, Bruce J., and Robert Spude

- 1997 *Guidelines for Identifying, Evaluating, and Registering Historic Mining Properties*. National Register Bulletin 42. Revised ed. National Park Service, Washington, DC.

Nunis, Doyce B., Jr. (editor)

- 1993 *Southern California Local History: A Gathering of the Writings of W. W. Robinson*. Historical Society of Southern California, Los Angeles, CA.

Office of Historic Preservation, California (OHP)

- 2001 *Instructions for Nominating Historical Resources to the California Register of Historical Resources*. Office of Historic Preservation, Sacramento, CA.
- 2009 Old Temescal Road. California Historical Landmark, Office of Historical Preservation, Sacramento, CA. <http://ohp.parks.ca.gov/listed_resources/default.asp?num=638>. Accessed 2009.

O’Kane, Elisabeth

- 1995 ‘To Lift the City out of the Mud’: Health, Sanitation and Sewerage in Houston, 1840–1920. *Houston Review* 17(1):2–28.

Ogle, Maureen

- 1996 *All the Modern Conveniences: American Household Plumbing 1840–1890*. Johns Hopkins University Press, Baltimore, MD.

Oildale News

- 1965 *Valley of Oil, 1863–1964*. *Oildale News*, Oildale, CA.

Olmstead, Alan L., and Paul Rhode

- 1988 An Overview of California Agricultural Mechanization, 1870–1930. *Agricultural History* 62(3).

Ong, Paul

- 1981 An Ethnic Trade: The Chinese Laundries in Early California. *Journal of Ethnic Studies* 8(4):95–113.

Orpilla, Mel

- 2005 *Filipinos in Vallejo*. Arcadia, Charleston, SC.

Orser, Charles E., Charles E. Orser, Jr., and Michael S. Nassaney

- 2007 *The Archaeology of Race and Racialization in Historic America*. University of Florida Press, Gainesville.

Orsi, Richard J.

- 1975 The Octopus Reconsidered: The Southern Pacific and Agricultural Modernization in California, 1865–1915. *California Historical Quarterly* 54(3):197–220.
2005 *Sunset Limited: The Southern Pacific Railroad and the Development of the American West, 1850–1930*. University of California Press, Berkeley.

Ostrogorsky, Michael

- 1987 Economic Organization and Landscape: Physical and Social Terrain Alteration in Seattle. In *Living in Cities: Current Research in Urban Archaeology*, Edward Staski, editor, pp. 10–18. The Society for Historical Archaeology, Special Publication Series, No. 5, Ann Arbor, MI.

Otterstrom, Samuel M.

- 2003 The Influences of Transportation and Geography on the Settlement and Development of Lake County, California. *Journal of the West* 42(2):34–44.
2004 *A Geographical History of United States City-Systems: From the Frontier to the Urban Transformation*. Edwin Mellen Press, New York, NY.

Outcalt, John

- 1925 *History of Merced County, California with a Biographical Review*. Historic Record Company, Los Angeles, CA.

Ovnick, Mary

1994 *Los Angeles: The End of the Rainbow*. Balcony Press, Los Angeles, CA.

Owens, G.

1866 *A General Directory and Business Guide of the Principal Towns in the Upper Country, Embracing a Portion of California*. Towne & Bacon Printers, San Francisco, CA.

Owens, G.

1866 *A General Directory and Business Guide of the Principal Towns in the Upper Country, Embracing a Portion of California*. A. Gensoul, San Francisco, CA.

Paddison, Joshua

2010 1848–1865: Gold Rush, Statehood, and the Western Movement. Calisphere. California Digital Library, University of California, Oakland. www.calisphere.universityofcalifornia.edu/calculatures/eras/era4.html May 26, 2001.

Paden, Irene, and Margaret Schlichtmann

1959 *The Big Oak Flat Road to Yosemite: An Account of Freightage from Stockton to Yosemite Valley*. The Holmes Book Company, Oakland, CA.

Palmer, Hans Christian

1965 Italian Immigration and the Development of California Agriculture. Doctoral dissertation. University of California, Berkeley.

Palmer, Lyman L.

1880 *History of Mendocino County, California*. Alley, Bowen & Co., San Francisco, CA.

1881 *History of Napa and Lake Counties, California*. Slocum, Bowen & Co., San Francisco, CA.

Palmer, Marilyn

2005 Understanding the Workplace: A Research Framework for Industrial Archaeology in Britain. *Industrial Archaeology Review* 18(1):9–17.

Palmer, Marilyn, and Peter Neaverson

1998 *Industrial Archaeology: Principles and Practice*. Routledge, London, England.

Parker, J. Carlyle (editor)

1892 *Memorial & Biographical History of Merced, Stanislaus, Calaveras, Tuolumne, and Mariposa Counties, California*. Lewis Publishing Co., Chicago, IL. Reprinted 1980 by The Guild McHenry Museum of Art and History, Modesto, CA.

Parmelee, Robert D.

1972 *Pioneer Sonoma*. Sonoma Index-Tribune, Sonoma, CA.

Pastron, Allen, and Eugene Hattori (editors)

1990 *The Hoff Store Site and Gold Rush Merchandise from San Francisco, California*. The Society for Historical Archaeology, Special Publication Series, No. 7, Ann Arbor, MI.

- Paul, Rodman W.
1963 *Mining Frontiers of the Far West: 1848–1880*. Holt, Rinehart and Winston, New York, NY.
- Paule, Dorothea Jean
1952 *The German Settlement at Anaheim*. Master's thesis, University of Southern California, Los Angeles, CA. Reprinted 1974 by R&E Research Associates, San Francisco, CA.
- Peel, Mark
1986 On the Margins: Lodgers and Boarders in Boston, 1860–1900. *Journal of American History* 72(4):813–834.
- Peña, Elizabeth, and Jacqueline Denmon
2000 The Social Organization of a Boardinghouse. *Historical Archaeology* 34(1):79–96.
- Penner, Bruce
1997 Old World Traditions, New World Landscapes. *International Journal of Historical Archaeology* 1(4):257–321.
- Perkins, William
1964 *Three Years in California: William Perkins Journal of Life at Sonora, 1849–1852*. University of California Press, Berkeley.
- Petershagen, George F.
1991 Toward a State Highway System: California's Roads and Highways, 1850–1895. Master's thesis, Department of History, California State University, Sacramento.
- Peterson, Edward
1972 *Redding, the First Hundred Years, 1872–1972*. North-Cal Printing & Litho, Redding, CA.
- Petrick, Paula
1981 Capitalists with Rooms: Prostitution in Helena, Montana, 1865–1900. *Montana* 31(April): 28–41.
- Phelps, Robert
2000 “All hands have gone downtown”: Urban Places in Gold Rush California. In *Rooted in Barbarous Soil: People, Culture, and Community in Gold Rush California*, Richard J. Orsi and Kevin Starr, editors, pp. 113–140. University of California Press, Berkeley.
- Pilling, Arnold R., and Patricia Pilling
1989 Jews of Del Norte County, California: The Wolf Morris Family. *Western States Jewish History* 21(2):122–131.
- Pillors, Brenda Elaine
1982 The Criminalization of Prostitution in the United States: The Case of San Francisco, 1854–1919. Doctoral dissertation, University of California, Berkeley.

Pitt, Leonard

- 1971 *The Decline of the Californios: A Social History of the Spanish-Speaking Californians, 1846–1890*. University of California Press, Berkeley.

Pitti, Jose, Antonia Castaneda, and Carlos Cortes

- 1988 A History of Mexican Americans in California. In *Five Views: An Ethnic Sites Survey for California*, pp. 205–265. California Department of Parks and Recreation, Office of Historic Preservation, Sacramento.
- 2000 A History of Mexican Americans in California. *La Prensa San Diego*. <<http://www.las-culturas.com/lib/sd/blsd092200a.php>>. Accessed May 26, 2010.

Platt, Harold L.

- 1983 *City Building in the New South: The Growth of Public Services in Houston, 1830–1915*. Temple University Press, Philadelphia, PA.
- 1991 *Electric City: Energy and the Growth of the Chicago Area, 1880–1930*. University of Chicago Press, Chicago, IL.

Pomeroy, Earl

- 1965 *The Pacific Slope: A History of California, Oregon, Washington, Idaho, Utah, and Nevada*. Knopf, New York, NY.

Porter, Peter, and F. Lukerman

- 1976 The Geography of Utopia. In *Geographies of the Mind*, D. Lowenthal and M. Bowden, editors, pp. 197–223. Oxford University Press, Oxford, England.

Powers, Madelon

- 1994 The ‘Poor Man’s Friend’: Saloonkeepers, Workers, and the Code of Reciprocity in U.S. Barrooms, 1870–1920. *International Labor and Working-Class History* 45:1–15.
- 1991 Decay from Within: The Inevitable Doom of the American Saloon. In *Drinking: Behavior and Belief in Modern History*, Susanna Barrows and Robin Rooms, editors, pp. 112–131. University of California Press, Berkeley.
- 1997 *Faces Along the Bar: Lore and Order in the Workingman’s Saloon, 1870–1920*. University of Chicago Press, Chicago, IL.

Praetzellis, Adrian, and Julia G. Costello

- 2002 Don’t Keep Everything: Artifact Discard Policy. *Society for California Archaeology Newsletter* 36(3):30–33.

Praetzellis, Adrian, and Mary Praetzellis

- 2001 Mangling Symbols of Gentility in the Wild West. *American Anthropologist* 103(3): 645–654.

Praetzellis, Mary (editor)

- 1994 *West Oakland, A Place to Start From. Research Design and Treatment Plan, Cypress I-880 Replacement Project*, Vol. 1: *Historical Archaeology*. Report to California Department of Transportation District 4, Oakland, from Anthropological Studies Center, Sonoma State University, Rohnert Park, CA.

Praetzellis, Mary, and Adrian Praetzellis

- 1980 The Old West in a New Light. *Early Man* 2(2):13–17.
- 1983 The Contents of Mrs. Menefee's Well: Possibilities for the Archaeological Study of Family Life. *Pacific Coast Archaeological Society Quarterly* 19(1):27–38.
- 1990 *Junk!: Archaeology of the Pioneer Junk Store, 1877–1908*. Papers in Northern California Anthropology No. 4. Anthropological Studies Center, Sonoma State University, Rohnert Park, CA.
- 2004 *Putting the "There" There: Historical Archaeologies of West Oakland*. Cypress Replacement Project Interpretive Report No. 2. Report to California Department of Transportation District 4, Oakland, from Anthropological Studies Center, Sonoma State University, Rohnert Park, CA.
- 2007 Remaking Connections: Archaeology and Community after the Loma Prieta Earthquake. In *Archaeology as a Tool for Civic Engagement and Social Justice*, Barbara Little and Paul Shackel, editors, pp. 109–130. Alta Mira Press, Latham, MA.

Praetzellis, Mary, and Adrian Praetzellis (editors)

- 1993 *Tar Flat, Rincon Hill, and the Shore of Mission Bay: Archaeological Research Design and Treatment Plan for the S-480 Terminal Separation Rebuild*. California Department of Transportation, District 4, Oakland, CA.
- 2010 *South of Market: Historical Archaeology of 3 San Francisco Neighborhoods*. Prepared for the California Department of Transportation, District 4, Oakland, CA.

Princeton University/Cognitive Science Laboratory

- 2008 221 Nassau St./ Princeton, NJ 08542. wordnetweb.princeton.edu/perl/webwn. Accessed June 2008.

Pritchard, William

- 1972 *An Archaeological Investigation of the Eagle Theatre in Old Sacramento, California*. Adan E. Treganza Anthropology Museum Papers, San Francisco State College, San Francisco, CA.

Pulsipher, Lydia

- 1994 The Landscapes and Ideational Roles of Caribbean Slave Gardens. In *The Archaeology of Garden and Field*, Naomi Miller and Kathryn Gleason, editors, pp. 202–222. University of Pennsylvania Press, Philadelphia.

Purcell, Mae Fisher

- 1940 *History of Contra Costa County*. The Gillick Press, Berkeley, CA.

Quebedeaux, Richard

- 1992 *Prime Sources of California and Nevada Local History: 151 Rare and Important County and State Directories 1850–1906*. Arthur H. Clark Co., Spokane, WA.

Ramsey, Eleanor M., and Janice S. Lewis

- 1988 A History of Black Americans in California. In *Five Views: An Ethnic Historic Site Survey for California*, pp. 57–101. California Department of Parks and Recreation, Office of Historic Preservation, Sacramento.

Rathje, William, and Cullen Murphy

2001 *Rubbish: The Archaeology of Garbage*. Harper, New York, NY.

Rathje, William L., W. W. Hughes, D. C. Wilson, M. K. Tani, G. H. Archer, R. G. Hunt, and T. W. Jones

1992 The Archaeology of Contemporary Landfills. *American Antiquity* 57(3):437–447.

Rayman, Ronald

1977 Deluxe Accommodations: Stockton's Yo Semite House Hotel, 1869–1923. *California Historical Quarterly* 56 (2):164–169.

Reinelt, Eric

1989 The City's First Seamen's Home. *Milwaukee History*, 12(2):54–68.

Reitz, Elizabeth

1986 Urban/Rural Contrasts in Vertebrate Fauna from the Southern Atlantic Coastal Plain. *Historical Archaeology* 20(2):47–58.

Rentschler, G. W.

1893 *Directory of Yolo, Solano, Sutter, Butte, Colusa, Glenn, Placer, Nevada, Yuba, Tehama, Sacramento and Shasta Counties*. San Francisco Directory Company, San Francisco.

Reps, John W.

1981 *The Forgotten Frontier: Urban Planning in the American West Before 1890*. University of Missouri Press, Columbia.

Richards, Leonard L.

2007 *The California Gold Rush and the Coming of the Civil War*. Vintage Books, New York, NY.

Riordan, Timothy, and William Hampton Adams

1985 Commodity Flows and National Market Access. *Historical Archaeology* 19(2):5–18.

Robbins, William G.

1970 Opportunity and Persistence in the Pacific Northwest: A Quantitative Study of Early Roseburg, Oregon. *Pacific Historical Review* 39(August):28, 279–296.

1982 *Colony and Empire: The Capitalist Transformation of the American Frontier*. Macmillan, New York, NY.

Robinson, John W.

1989 *The San Bernardinos, The Mountain Country from Cajon Pass to Oak Glen: Two Centuries of Changing Use*. Big Santa Anita Historical Society, Arcadia, CA.

Robinson, William Wilcox

1955 *The Story of Ventura County*. Title Insurance and Trust Company, Los Angeles, CA.

1981 *Los Angeles from the Days of the Pueblo: A Brief History and Guide to the Plaza Area*. Chronicle Books, San Francisco, CA.

- Rochlin, Harriett, and Fred Rochlin
1984 *Pioneer Jews: A New Life in the Far West*. Houghton Mifflin, New York, NY.
- Rogers, Justus H.
1891 *Colusa County: Its History Traced from a State of Nature through the Early Period of Settlement and Development, to the Present Day*. n.p., Orland, CA.
- Rohrbough, Malcolm J.
1997 *Days of Gold: The Gold Rush and the American Nation*. University of California Press, Berkeley.
- Rolland, David,
2008 One Emigration Shaped Two Regions, Point Reyes Light, Tomales Bay Publishing Co., Point Reyes Station, CA. <<http://www.ptreyeslight.com/swiss/lead.html>> Accessed Nov. 2008.
- Rose, Mark H.
1995 *Cities of Light and Heat: Domesticating Gas and Electricity in Urban America*. Pennsylvania State University Press, University Park.
- Rosen, Christine M., and Joel A. Tarr
1994 The Importance of an Urban Perspective in Environmental History. *Journal of Urban History* 20 (May 1994):299–310.
- Rosenzweig, Roy
1983 *Eight Hours for What We Will: Workers and Leisure in an Industrial City, 1870–1920*. Cambridge University Press, New York, NY.
1984 Review: The Parks and the People: Social History and Urban Parks. *Journal of Social History* 18(2):189–295.
- Rosenzweig, Roy, and Elizabeth Blackmar
1992 *The Park and the People: A History of Central Park*. Cornell University Press, Ithaca, NY.
- Rosner, David
1982 *A Once Charitable Enterprise: Hospitals and Health Care in New York and Brooklyn, 1885–1915*. Cambridge University Press, New York, NY.
- Rostow, W.W.
1960 *The Stages of Economic Growth: A Non-Communist Manifesto*. Cambridge University Press, London, England.
- Rotman, Deborah
2003 Learning and Community: Exploring the Materiality of Rural Education in America. Paper presented at Society for Historical Archaeology 2003 Annual Meeting, Providence, RI. <http://www.crai-ky.com/education/reports/learning.pdf>. Accessed June 2010.

Rotman, Deborah, and John Staicer

- 2002 Curiosities and Conundrums: Deciphering Social Relations and the Material World at the Ben Schroeder Saddletree Factory and Residence in Madison, Indiana. *Historical Archaeology* 36(2):92–110.

Ruhkala, Roy

- 1974 *History of Rocklin, California*. Rocklin Historical Society, Rocklin, CA.

Ryan, Mary P.

- 1981 *Cradle of the Middle Class: The Family in Oneida County, New York, 1790–1865*. Cambridge University Press, New York, NY.
1997 *Civic Wars: Democracy and Public Life in the American City during the 19th Century*. University of California Press, Berkeley.

Sacramento Daily Bee

- 1880 No title. *Sacramento Daily Bee*, 24 December. Sacramento, CA.

Sacramento Union

- 1888 No title. *Sacramento Union*, 8 March. Sacramento, CA.

Samford, Patricia

- 1990 *The Bates Site: Investigation of a Quaker Merchant*. Colonial Williamsburg Archaeological Reports, Department of Archaeological Research, Colonial Williamsburg Foundation, Williamsburg, VA.

Samson, Peter

- 1981 The Department Store, Its Past and Its Future: A Review Article. *Business History Review* 55(1):26–34.

San Joaquin Valley Argus

- 1870 *San Joaquin Valley Argus*, 10 September. Merced, CA.
1872 *San Joaquin Valley Argus*, 23 March. Merced, CA.

Sanborn Map Company

- 1867–1970 Digital Sanborn Maps, 1867–1970. Proquest, Ann Arbor, MI. <<http://sanborn.umi.com/>> Accessed 2008.
2003 Sanborn Fire Insurance Maps. Document extracted from Fire Insurance Maps in the Library of Congress. Earth Sciences and Map Library, University of California, Berkeley. <www.lib.berkeley.edu/EART/snb-intr.html#intro>. Accessed 2008.

Sanchez, George

- 1993 *Becoming Mexican American? Ethnicity, Culture and Identity in Chicano Los Angeles, 1900–1945*. Oxford University Press, New York, NY.

Sando, Ruth Ann, and David L. Felton

- 1993 Inventory Records of Ceramics and Opium from a 19th-Century Chinese Store in California. In *Hidden Heritage: Historical Archaeology of the Overseas Chinese*, Priscilla We-gars, editor, pp. 151–176. Baywood Publishing Company, New York, NY.

Sandweiss, Eric

- 1997 What is "Diversity?" The Lessons of the 19th Century City. *Gateway Heritage* 18(2):4–13.

Santa Cruz Public Library

- 2008 History of the Sewerage System of the City of Santa Cruz, Santa Cruz County History - Community Services, History of the Sewerage System of the City of Santa Cruz, Santa Cruz Public Libraries. Santa Cruz Public Libraries, Santa Cruz, CA. <http://www.santacruzpl.org/history/topics/3/>. Accessed May 2010.

Santos, Robert L.

- 1994 Dairying in California through 1910. *Southern California Quarterly* 76:175–194. <<http://library.csustan.edu/bsantos/dairy.html>>. Accessed 25 April 2008.
1995 *Azoreans to California: A History of Migration and Settlement*. Alley-Cass Publications, Denair, CA.

Sargent, Elizabeth Ann Quinn

- 1927 *Amador County History*. Amador County Federation of Women's Clubs, Jackson, CA.

Schaffer, Daniel (editor)

- 1988 *Two Centuries of American Planning*. Johns Hopkins University Press, Baltimore, MD.

Schmitt, Peter J.

- 1969 *Back To Nature: The Arcadian Myth in Urban America*. Oxford University Press, New York, NY.

Schmitz, Dawn M.

- 2004 The Humble Handmaid of Commerce: Chromolithographic Advertising and the Development of Consumer Culture, 1876–1900. Doctoral dissertation, University of Pittsburgh, Philadelphia, PA.

Schoenherr, Allan

- 1992 *A Natural History of California*. University of California Press, Berkeley.

Schoenherr, Allan A., C. Robert Feldmeth, and Michael J. Emerson

- 1999 *Natural History of the Islands of California*. University of California Press, Berkeley.

Schoenwetter, James, and John Hohmann

- 1997 Landuse Reconstruction at the Founding Settlement of Las Vegas, Nevada. *Historical Archaeology* 31(4):41–58.

Schofer, Jerry P.

- 1975 *Urban and Finnish Communities in California: 1860–1960*. R&E Research Associates, San Francisco, CA.

School for Advanced Research

- 2006 Short Seminar: Place, Event, and Narrative Craft: Method and Meaning in Microhistory. *Annual Report for the Year 2005–2006, School for Advanced Research on the Human Experience*. Santa Fe, NM.

Schuetz-Miller, Mardith K.

- 1994 *Building and Builders in Hispanic California, 1769–1850*. Santa Barbara Trust for Historic Preservation, Santa Barbara, CA.

Schultz, Stanley K.

- 1989 *Constructing Urban Culture: American Cities and City Planning, 1800–1920*. Temple University Press, Philadelphia, PA.

Schulz, Peter D.

- 1979 Research Design for Historical Archaeology on the J/K/6/7 Block, Sacramento. Sacramento City Museum and History Division, Sacramento, CA.

Schulz, Peter D., and Sherri Gust

- 1983 Faunal Remains and Social Status in 19th-Century Sacramento. *Historical Archaeology* 17(1):44–53.

Schuyler, David

- 1986 *The New Urban Landscape: The Redefinition of City Form in 19th Century America*. Johns Hopkins University Press, Baltimore, MD.

Scott, Mel

- 1985 *The San Francisco Bay Area: A Metropolis in Perspective*, 2nd edition. University of California Press, Berkeley.

Seasholes, Nancy

- 1998 Filling Boston's Mill Pond. *Historical Archaeology* 32(3):121–136.

Seely, Bruce E.

- 1981 Blast Furnace Technology in the Mid-19th Century: A Case Study of the Adirondack Iron and Steel Company. *Industrial Archaeology* 7:27–54.

Seifert, Donna

- 1991 Within Sight of the White House; Archaeology of Working Women. *Historical Archaeology* 25(4):82–108.

Seifert, Donna (editor)

- 1991 Gender in Historical Archaeology. *Historical Archaeology* 25(4):1–155.

Seifert, Donna J., and Joseph Balicki

- 2005 Mary Ann Hall's House. *Historical Archaeology* 39(1):59–73.

Sen, Arijit H.

2002 *Mapping Transnational Boundaries: Urban Cultural Landscapes of South Asian Immigrants in San Francisco and Berkeley*. University of California Press, Berkeley.

Sensi-Isolani, Paola A., and Phylis Cancilla Martinelli (editors)

1993 *Struggle and Success: An Anthology of the Italian Immigrant Experience in California*. Center for Migration Studies, New York, NY.

Severson, Thor

1973 *Sacramento: An Illustrated History: 1839–1874*. California Historical Society, San Francisco, CA.

Shackel, Paul

1993 *Personal Discipline and Material Culture*. University of Tennessee Press, Knoxville.

1998 Classical and Liberal Republicanisms and the New Consumer Culture. *International Journal of Historical Archaeology* 2(1):1–20.

Shackel, Paul (editor)

1993 *Interdisciplinary Investigations of Domestic Life in Government Block B: Perspectives on Harpers Ferry's Armory and Commercial District*, Occasional Report, No. 6. National Capital Region, National Park Service, Washington, D.C.

1994 *Domestic Responses to Nineteenth-Century Industrialization: An Archaeology of Park Building 48, Harpers Ferry National Historical Park*. Occasional Report, No. 12. National Capital Region, National Park Service, Washington, D.C.

Shanks, Michael, and Ian Hodder

1998 Processual, Postprocessual, and Interpretive Archaeologies. In *Reader in Archaeological Theory: Post-Processual and Cognitive Approaches*, edited by David Whitley, pp. 69–98. Routledge, New York, NY.

Shoup, Paul

1915 Electric Transportation in California. *California's Magazine* 1(1):235–244.

Simmel, George

1950 The Metropolis and Mental Life. In *The Sociology of George Simmel*, Kurt Wolfe, editor and translator, pp. 409–417. Free Press of Glencoe, New York, NY.

Siu, Paul C. P.

1987 *The Chinese Laundryman: A Study in Social Isolation*. New York University Press, New York.

Small, Kathleen Edwards

1926 *Early History of Tulare County California*. S. J. Clarke Publishing Company, Chicago, IL. Reprinted 2001 by Bear State Books, Exeter, CA.

Smith, A. McCall

1974 *A Modern History of Tulare County*. Limited Editions, Visalia, CA.

Smith, Richard Harold

- 1976 *Towns Along the Tracks: Railroad Strategy and Town Promotion in the San Joaquin Valley, California*. Doctoral dissertation, University of California, Los Angeles.

Society of California Archivists

- 1996 *Directory of Archival and Manuscript Repositories in California*, 4th edition, Diane S. Nixon, compiler. Society of California Archivists, Sacramento.

Sonoma County Recorder's Office

- 1995 *Inventory of Maps, 1848–1994, Office of the Recorder, Sonoma County*. Claire McCulloch, compiler, Chief Deputy Recorder, Sonoma County Recorder's Office, Santa Rosa, CA.

Sonoma County Recorder's Office and Sonoma County Historical Records Commission

- 1987 *Inventory of Records, 1834–1986, Office of the Recorder, Sonoma County, California*, expanded and revised from 1979 edition titled *Inventory of Records, 1834–1978*. Sonoma County Recorder's Office and Sonoma County Historical Records Commission, Santa Rosa, CA.

South, Stanley

- 1977 *Method and Theory in Historical Archaeology*. Academic Press, New York, NY.

Southern California Panama Expositions Commission

- 1975 *A History of Southern California, Comprising the Counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura*. California History Books, Fresno, CA.

Southern California Writer's Project

- 1941 *Santa Barbara: A Guide to the Channel City and its Environs*. Hastings House, New York, NY.

Speek, Peter A.

- 1921 *A Stake in the Land*. Harper & Brothers Publishing, New York, NY. <<http://books.google.com/books?id=KrhHAAAIAAJ&printsec=titlepage>>.

Spence, Clark C.

- 1970 *Mining Engineers & the American West: The Lace-boot Brigade, 1849–1933*. Yale University Press, New Haven, CT.

Spencer-Hancock, Dianne

- 1978 *Fort Ross: Indians-Russians-Americans*. Fort Ross Interpretive Association, Jenner, CA.

Spencer-Wood, Suzanne (editor)

- 1987 *Consumer Choice in Historical Archaeology*. Plenum Press, New York, NY.

Spencer-Wood, Suzanne, and Sherene Baugher

- 2001 Introduction and Historical Context for the Archaeology of Institutions of Reform. Part I: Asylums. *International Journal of Historical Archaeology* 5(1):3–17.

Sprague, Roderick

- 1981 A Functional Classification for Artifacts from 19th and 20th Century Sites. *North American Archaeologist* 2(3):251–261.
- 2002 China or Prosser Button Identification and Dating. *Historical Archaeology* 36(2):111–127.

Spude, Catherine H.

- 2005 Brothels and Saloons: An Archaeology of Gender in the American West. *Historical Archaeology* 39(1):89–106.
- 2006 *Archeological Investigations in Skagway, Alaska, Volume 10: The Mascot Saloon*. National Park Service, U.S. Department of the Interior, Klondike Gold Rush National Historical Park Service, Anchorage, AK.

Standart, M. Collette

- 1976 The Sonoran Migration to California, 1848–1856: A Study in Prejudice. *Southern California Historical Quarterly* 58(Fall):333–357.

Stansel, Edwin N. (compiler)

- 1975 *1850–1975: A History of Grand Lodge of Free and Accepted Masons, State of California*. Grand Lodge Free and Accepted Masons of California, San Francisco, CA.

Stansell, Christine

- 1986 *City of Women: Sex and Class in New York, 1790–1860*. Knopf, New York, NY.

Starbuck, David

- 1990 The General Hospital on Mount Independence; 18th-century Health Care at a Revolutionary War Cantonment. *Northeast Historical Archaeology* 19:50–68.

Starr, Kevin

- 1973 *Americans and the California Dream, 1850–1915*. Oxford University Press, New York, NY.

State Board of Health of California (SBOH)

- 1871 *First Biennial Report of the State Board of Health of California for the Years 1870 and 1871*. D. W. Gelwicks, State Printer, Sacramento, CA.
- 1873 *Second Biennial Report of the State Board of Health of California for the Years 1871, 1872 and 1873*. T. A. Springer, State Printer, Sacramento, CA.
- 1875 *Third Biennial Report of the State Board of Health of California for the Years 1874 and 1875*. G. H. Springer, State Printer, Sacramento, CA.
- 1879 *Fifth Biennial Report of the State Board of Health of California for the Years 1878 and 1879*. F. P. Thompson, Supt. State Printing, Sacramento, CA.
- 1880 *Sixth Report of the State Board of Health of California for the Year Ending June 30, 1880*. D. Young, Supt. State Printing, Sacramento, CA.
- 1914 California State Board of Health, Sanitary Report No. 202. Dept. of Public Health Records, R384.007, Series 9, Box 1/10–2/4, California State Archives, Office of the Secretary of State, Sacramento, California.

- 1918 *Twenty-Fifth Biennial Report of the State Board of Health of California for the Fiscal Years from July 1, 1916, to June 30, 1918*. California State Printing Office, Sacramento, CA.
- 1921 *Twenty-Sixth Biennial Report of the State Board of Health of California for the Fiscal Years from July 1, 1918, to June 30, 1920*. California State Printing Office, Sacramento, CA.
- 1923 *Twenty-Seventh Biennial Report of the State Board of Health of California for the Fiscal Years from July 1, 1920 to June 30, 1922*. California State Printing Office, Sacramento, CA.

State Historical Resources Commission

- 1993 Guidelines for the Curation of Archeological Collections. State of California, Resources Agency. Office of Historic Preservation, Sacramento. <<http://ohp.parks.ca.gov/pages/1054/files/guide93.pdf>>

Stein, J. K., and Joel A. Tarr

- 1998 At the Intersection of Histories: Technology and the Environment. *Technology and Culture* 39:601–640.

Stern, Norton B.

- 1978 Denouement in San Diego in 1888. *Western States Jewish Historical Quarterly* 11(1): 49–55.
- 1982 The Jewish Community of a Nevada Mining Town. *Western States Jewish Historical Quarterly* 15(1):48–78.

Stevens, Albert Clark

- 1907 *Cyclopedia of Fraternities: A Compilation of Existing Authentic Information and the Results of Original Investigation as to the Origin, Derivation, Founders, Development, Aims, Emblems, Character, and Personnel of More Than Six Hundred Secret Societies in the United States*, E. B. Treat and Company. E. B Treat and Company, New York, NY.

Stoddart, Thomas Robertson, and Carlo M. De Ferrari (editors)

- 1963 *Annals of Tuolumne County*. Mother Lode Press, Sonora, CA.

Stockton City Council

- n.d. Archives of the Stockton City Council. City Clerk's Office, Stockton, CA.

Stofer, Paula

- 1994 Shared Beds, Shared Bread. *Michigan History* 78(6):36–45.

Stott, Richard B.

- 1989 *Workers in Metropolis: Class, Ethnicity, and Youth in Antebellum New York City*. Cornell University Press, Ithaca, NY.

Stottman, M. Jay

- 2000 Out of Sight, Out of Mind: Privy Architecture and the Perception of Sanitation. *Historical Archaeology* 34(1):39–61.

Sullivan, Michael, and Carol Griffith

- 2005 *Down in the Dumps: Context Statement and Guidance on Historical Period Waste Management and Refuse Deposits*. Arizona State Office of Historic Preservation, Phoenix.

Supernowicz, Dana E., and George Petershagen

- 1993 *Surmounting the Sierra: An Historical Narrative and Determination of Eligibility for the Highway 50 Corridor between Union Hill and Lake Valley*. The El Dorado National Forest in cooperation with California Department of Transportation, Sacramento, CA.

Sutcliffe, Anthony (editor)

- 1980 *The Rise of Modern Urban Planning, 1880–1914*. St. Martin's Press, New York, NY.

Swope, Karen

- 1993 *With Infinite Toil: Historical Archaeology in the Beveridge Mining District, Inyo County, California*. Doctoral dissertation, University of California, Riverside.
2006 "D" Street. In *Encyclopedia of Prostitution and Sex Work, Vol. 1.*, Melissa Hope Ditmore, editor, pp. 126–127. Greenwood Press, Westport, CT.

Swope, Karen, and Beth Padon

- 1997 *Redlands Chinatown: Archaeological Investigations for Krikorian Premier Theater Project, Redlands, San Bernardino County, CA*. Archaeological Information Center, San Bernardino County Museum, Redlands, CA.

Sykes, Alexis Broadbent

- 2003 *Signs of Life: Rediscovering Nineteenth Century Indian Key through Glass Analysis*. Master's thesis, University of South Florida, Tampa.

Symonds, James (editor)

- 2002 *The Historical Archaeology of the Sheffield Cutlery and Tableware Industry, 1750–1900*. ARCUS, Sheffield, England.

Takaki, Ronald

- 1989 *Strangers from a Different Shore: A History of Asian Americans*. Little Brown, Boston, MA.

Taniguchi, Nancy, J.

- 2000 Weaving a Different World: Women and the California Gold Rush. *California History* 79(2):141–168.

Tarlow, Sarah

- 2002 Excavating Utopia. *International Journal of Historical Archaeology* 6(2):299–323.
2006 Representing Utopia. The Case of Cyrus Reed's Koreshan Unity Settlement. *Historical Archaeology* 40(1):89–99.

Tarr, Joel A.

- 1984 The Evolution of the Urban Infrastructure in the Nineteenth and Twentieth Centuries. In *Perspectives on Urban Infrastructure*, Royce Hanson, editor, pp. 4–66. The National Academy Press, Washington, DC.

- 1996 *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective*. University of Akron Press, Akron, OH.
- Tarr, Joel A., and Gabriel Dupuy
1988 *Technology and the Rise of the Networked City in Europe and America*. Temple University Press, Philadelphia, PA.
- Taylor, Bayard
1862 *At Home and Abroad: A Sketch-book of Life, Scenery and Men*. G. P. Putnam, New York, NY. <http://books.google.com/books?id=vPUIAAAAMAAJ&printsec=titlepage&source=gbs_v2_summary_r&cad=0>.
- Taylor, Quintard
1994 *The Forging of a Black Community: Seattle's Central District through the Civil Rights Era*. University of Washington Press, Seattle.
- Teaford, Jon C.
1984 *The Unheralded Triumph: City Government in America, 1870–1900*. Johns Hopkins University Press, Baltimore, MD.
- Thernstrom, Stephan
1964 *Poverty and Progress; Social Mobility in a Nineteenth-century City*. Harvard University Press, Cambridge, MA.
1970 *The Growth of Los Angeles in Historical Perspective: Myth and Reality*. Institute of Government and Public Affairs, University of California, Los Angeles.
1972 *Poverty and Progress: Social Mobility in a 19th Century City*. Atheneum, New York, NY.
- Thernstrom, Stephan, Ann Orlov, and Oscar Handlin
1980 *Harvard Encyclopedia of American Ethnic Groups*. Harvard University Press, Cambridge, MA.
- Thernstrom, Stephan, and Peter R. Knights
1970 Men in Motion: Some Data and Speculations about Urban Population Mobility in 19th Century America. *Journal of Interdisciplinary History* 1(Autumn):7–35.
- Thernstrom, Stephan, and Richard Sennett (editors)
1969 *Nineteenth-Century Cities: Essays in the New Urban History*. Yale University Press, New Haven, CT.
- Thompson & West
1880 *History of Sacramento County, California*. Thompson & West, Oakland, CA. Reprinted 1960 by Howell-North, Berkeley, CA.
- Thompson, John
1958 The Settlement Geography of the Sacramento–San Joaquin Delta, California. Doctoral dissertation, Department ?, Stanford University, Stanford, CA.
1980 From Waterways to Roadways in the Sacramento Delta. *California History* 59(Summer):144–169.

- Thompson, Wilbur R.
1965 *A Preface to Urban Economics*. Johns Hopkins Press, Baltimore, MD.
- Thornton, Mark V.
1988 *Big Oak Flat & Groveland: Gold Rush Gateway to Yosemite*. Southern Tuolumne County Historical Society, n.p.
- Tilley, Christopher
1994 *A Phenomenology of Landscape: Places, Paths and Monuments*. Berg, Oxford, England.
- Timmins, Geoffrey
2005 Domestic Industry in Britain during the 18th and 19th Centuries: Field Evidence and Research Agenda. *Industrial Archaeology Review* 17(1):67–75.
- Tinkham, George
1921 *History of Stanislaus County*. Historic Record Company, Los Angeles, CA.
- Tobar, Christian
2008 The Pacific Electric Railway and Its History in the San Bernardino Valley, Pacific Electric Railway: Arrowhead Hot Springs Line. http://www.geocities.com/gatewaycityca/History_of_PE_in_SB.html. Accessed June 2009.
- Tobriner, Stephen
2006 *Bracing for Disaster: Earthquake-Resistant Architecture and Engineering in San Francisco, 1838–1933*. Heyday Books, Berkeley, CA.
- Toll, William
1982 *The Making of an Ethnic Middle Class: Portland's Jewry over Four Generations*. State University of New York Press, Albany, NY.
- Tomes, Nancy
1998 *The Gospel of Germs: Men, Women, and the Microbe in American Life*. Harvard University Press, Cambridge, MA.
- Tong, Benson
1994 *Unsubmissive Women: Chinese Prostitutes in Nineteenth-Century San Francisco*. University of Oklahoma Press, Norman.
- Tout, Otis
1931 *The First Thirty Years in Imperial Valley, California: 1901–1931*. Arts & Crafts Press, San Diego, CA.
- Trosow, Esther
1997–2005 Pacific Grove History. City of Pacific Grove. <<http://www.ci.pg.ca.us/misc/history.htm>>. Accessed April 2010.

Tuason, Julie A.

- 1996 *Gendered Landscapes: Women, Men, and the Spatial Transformation of Urban Parks in the United States, 1850–1920*. Doctoral dissertation, Rutgers University, New Brunswick, NJ.

Tufts, Warren P.

- 1946 The Rich Pattern of California Crops. In *California Agriculture*, Claude B. Hutchinson, editor, pp. 113–238. University of California, Berkeley.

Tygiel, Jules

- 1979 Housing in Late Nineteenth-Century American Cities: Suggestions for Research. *Historical Methods* 12(2):84–97.

Ullman, E. L.

- 1957 *American Commodity Flow: A Geographical Interpretation of Rail and Water Traffic based on Principles of Spatial Interchange*. University of Washington Press, Seattle.

Underhill, George R.

- 1980 *Voyage to California and Return: George R. Underhill, 1849–1852*. Underhill Society of America, Manhasset, NY.

U.S. Department of Commerce, Bureau of the Census (U.S. Bureau of the Census)

- 1850–1950 Various states and counties, manuscript census, population schedules. <<http://persi.heritagequestonline.com>>. Accessed 2008.
1919 *Religious Bodies 1916: Part I, Summary and General Tables*. Department of Commerce, Washington, DC.
1975 *Historical Statistics of the United States, Colonial Times to 1979*. Vol. 1. U.S. Bureau of the Census, Washington, DC.

U.S. Department of the Interior

- 1983 *Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines*. 48 FR 44742. Revised 2001.

U.S. Geological Survey (USGS)

- 1891 *Big Trees, California, Quadrangle Map*, 1/125,000 scale. U.S. Geological Survey, Washington, DC.

Van Bueren, Thad

- 2006 Between Vision and Practice. *Historical Archaeology* 40(1):133–151.

Van Orman, Richard A.

- 1968 Hotels of the Old West. *American History Illustrated* 3(6):38–44.

Vance, James, Jr.

- 1972 California and the Search for the Ideal. *Annals of the Association of American Geographers* 62(2):185–210.

Varney, Philip

- 1990 *Southern California's Best Ghost Towns*. University of Oklahoma Press, Norman.
Ghost Towns of Northern California. Voyageur Press, Stillwater, MN.

Vaught, David

- 2002 *Cultivating California: Growers, Specialty Crops, and Labor, 1875–1920*. Johns Hopkins University Press, Baltimore, MD.
2003 After the Gold Rush: Replicating the Rural Midwest in the Sacramento Valley. *Western Historical Quarterly* 34:447–467.

Vázsonyi, Andrew

- 1978 The *Cicisbeo* and the Magnificent Cuckhold: Boardinghouse Life and Lore in Immigrant Communities. *Journal of American Folklore* 91(360):641–656.

Vileisis, Ann

- 1997 *Discovering the Unknown Landscape: A History of America's Wetlands*. Island Press, Washington, D.C.

Voss, Barbara

- 2005 The Archaeology of Overseas Chinese Communities. *World Archaeology* 37(3):424–439.

Waghorn, Annita

- 2004 *Historic Archaeological Investigations of the City Center Cinemas Block, Stockton, California*. Report to City of Stockton, from Anthropological Studies Center, Sonoma State University, Rohnert Park, CA.

Wagner, Philip L., and Marvin W. Mikesell (editors and translators)

- 1962 *Readings in Cultural Geography*. University of Chicago Press, Chicago, IL.

Walker, Clifford James

- 1999 *One Eye Closed, The Other Red: The California Bootlegging Years*. Back Door Publishing, Barstow, CA.

Walker, Richard A.

- 2001a California's Golden Road to Riches: Natural Resources and Regional Capitalism, 1848–1940. *Annals of the American Association of Geographers* 91(1):167–199.
2001b Industry Builds the City: The Suburbanization of Manufacturing in the San Francisco Bay Area, 1850–1940. *Journal of Historical Geography* 27(1):36–57.

Wall, Diana diZerega

- 1994 *The Archaeology of Gender*. Plenum, New York, NY.
2001 Afterword: Becoming New York: The Five Points Neighborhood. *Historical Archaeology* 35(3):133–135.

Waller, Altina

- 1982 *Reverend Beecher and Mrs. Tilton: Sex and Class in Victorian America*. University of Massachusetts Press, Boston.

Walters, Shipley

1988 *Clarksburg: Delta Community*. Yolo County Historical Society, Woodland, CA.

Walton, John

2001 *Storied Land: Community and Memory in Monterey*. University of California Press, Berkeley.

Wang, Joan

2004 Race, Gender, and Laundry Work. *Journal of American Ethnic History* 24(1)58–99.

Warboys, Michael

2000 *Spreading Germs: Disease Theories and Medical Practice in Britain, 1865–1900*. Cambridge University Press, New York, NY.

Warner, Sam Bass, Jr.

1970 *Writing Local History: The Use of Social Statistics*. American Society for State and Local History, Technical Leaflet, No. 7. ASSLH, Nashville, TN.

1978 *Streetcar Suburbs: The Process of Growth in Boston, 1870–1900*. Harvard University Press, Cambridge, MA.

Warner, Ted J.

1992 California, Pioneer Settlements. In *Encyclopedia of Mormonism*, Vol. 1, pp. 246–248. Macmillan Publishing Company, New York, NY. <<http://contentdm.lib.byu.edu/cdm4/document.php?CISOROOT=%2FEoM&CISOPTR=4391&REC=0&CISOBX=Pioneer+Settlement+in+California>>

Watkins, Rolin C.

1925a *History of Monterey and Santa Cruz Counties, California*, Vol. 1. S. J. Clarke Publishing Company, Chicago, IL.

1925b *History of Monterey, Santa Cruz, and San Benito Counties, California: Cradle of California's History and Romance*. S. J. Clarke Publishing Co., Chicago, IL.

Watrous, S.

1998 Fort Ross: The Russian Colony in California. In *Fort Ross*, L. Kalani, editor, pp. 11–20. Fort Ross Interpretative Association, Fort Ross, CA.

Waugh, Isami Arifuku, Alex Yamato, and Raymond Y. Okamura

1988 A History of Japanese Americans in California. In *Five Views: An Ethnic Historic Site Survey for California*, pp. 159–203. California Department of Parks and Recreation, Office of Historic Preservation, Sacramento.

Weber, Adna

1963 *The Growth of Cities in the Nineteenth Century: A Study in Statistics*. Cornell University Press, Ithaca, NY.

Weber, David J.

1982 *The Mexican Frontier, 1821–1846: The American Southwest Under Mexico*. University of New Mexico Press, Albuquerque.

Weber, Lin

- 1998 *Old Napa Valley: The History to 1900*. Wine Ventures, St. Helena, CA. Webster's New World Dictionary
1988 *Webster's New World Dictionary of American English*. Victoria E. Neufledt, editor-in-chief, 3rd College Edition. Simon & Schuster, New York, NY.

Wee, Stephen R.

- 1996 Expert Testimony from *Putah Creek Council v. Solano Irrigation District and Solano County Water Agency*. Sacramento Superior Court No. 515766. Sacramento, CA.
2004 Appendix B: History of the South Fork of the American River Water Supply Development. In *Report to the State Water Resources Control Board's Hearing Regarding El Dorado Irrigation District's Water Rights for its South Fork American River System*. JRP Historical Consulting Services, Davis, CA.

Weidner, Charles H.

- 1974 *Water for a City: A History of New York City's Problem from the Beginning to the Delaware River System*. Rutgers University Press, New Brunswick, NJ.

Weiser, Kathy

- 2006 *The Great American Bars and Saloons*. Chartwell Books, Edison, NJ.

Weissberg, Muriel

- 1988 Gold Rush Jewish Merchants in Shasta County, CA. *Western States Jewish History* 20(4):291–310.

Wells, Harry L.

- 1881 *History of Siskiyou County, California*. D. J. Stewart & Co., Oakland, CA.

West, Elliott

- 1980 The Saloon: A Frontier Institution. *American West* 17(1):14–29, 56.
1995 *Growing Up with the Country: Childhood on the Western Frontier*. University of New Mexico Press, Albuquerque.

West Point Foundry Archaeology Project

- 2006 Industrial Archaeology Michigan Tech, Department of Social Sciences, Michigan Technological University, Houghton, MI. <<http://www.westpointfoundry.org/>>. Accessed September 2006.

Wey, Nancy

- 1988 A History of Chinese Americans in California. In *Five Views: An Ethnic Historic Site Survey for California*, pp. 103–158. California Department of Parks and Recreation, Office of Historic Preservation, Sacramento.

Wheeler, Kathleen

- 2000 View from the Outhouse: What We Can Learn from the Excavation of Privies. *Historical Archaeology* 34(1):3–19.

Whitaker, Jan

- 2006 *Service and Style: How the American Department Store Fashioned the Middle Class*. St. Martin's Press, New York, NY.

White, Gerald T.

- 1962 *Standard Oil Company of California: Formative Years in the Far West*. Appleton-Century-Crofts, New York, NY.

White, John H., Jr.

- 1973 The Railroad Reaches California: Men, Machines, and Cultural Migration. *California Historical Quarterly* 52(2):131–144.

White, Richard

- 1994 John Sutter and the Natural World. In *John Sutter and the Wider West*, Kenneth N. Owens, editor, pp. 93–110. University of Nebraska Press, Lincoln.
1997 Western History, 203–230. In *The New American History*, Eric Foner, editor, pp. 203–230. Temple University Press, Philadelphia.

Whitley, David

- 1998 New Approaches to Old Problems. In *Reader in Archaeological Theory: Post-Processual and Cognitive Approaches*, edited by David Whitley, pp. 1–30. Routledge, New York, NY.

Wik, Reynold

- 1974 *The Mechanization of Agriculture and the Grain Trade in the Great Central Valley of California*. Pioneer Museum Project, n.p.
1975 Some Interpretations of the Mechanization of Agriculture in the Far West. *Agricultural History* 49(1):73–83.

Wille, Lois W.

- 1991 *Forever Open, Clear and Free: The Struggle for Chicago's Lakefront*, 2nd edition. University of Chicago Press, Chicago, IL.

Wilson, John

- 1990 We've Got Thousands of These: What Makes a Historic Farmstead Significant. *Historical Archaeology* 24(1):23–33.

Wilson, John Albert

- 1880 *History of Los Angeles County*. Thompson & West, Oakland, CA.

Wilson, Nathan

- 2009 Too Powerful to Overcome Narcotics Addiction: California's Civil Addict Program, 1961–1971. Master's thesis, Department of History, California State University, Sacramento.

Wilson, William H.

- 1989 *City Beautiful Movement*. Johns Hopkins University Press, Baltimore, MD.

Winer, Margot, and James Deetz

- 1990 The Transformation of British Culture in the Eastern Cape, 1820–1860. *Social Dynamics* 16(1):55–75.

Wolfe, Albert Benedict

- 1906 *The Lodging House Problem in Boston*. Houghton, Mifflin and Company, Boston, MA.

Wolfe, Allis Rosenberg

- 1976 Women, Consumerism and the National Consumer's League in the Progressive Era, 1900–1923. *Labor History* 16(3):378–392.

Woodbridge, Sally B., and John M. Woodbridge

- 1992 *San Francisco Architecture: The Illustrated Guide to Over 1,000 of the Best Buildings, Parks, and Public Artworks in the Bay Area*. Chronicle Books, San Francisco, CA.

Woodruff, Jacqueline McCart

- 1947 *Benicia: The Promise of California, 1846–1889*. n.p., Vallejo, CA.

Woolf, Paul N.

- 1939 A Historical Appraisal of the Flour Milling Industry of California. Doctoral dissertation, University of California, Berkeley.

Wooten, Kimberly, and R. Scott Baxter

- 2008 *Shenandoah Valley and the Amador Wine Country*. Arcadia Publishing, San Francisco, CA.

Wrangel, F. P. V.

- 1969 Russia in California, 1833: Report of Governor Wrangel, James R. Gibson, editor and translator. *Pacific Northwest Quarterly* 60:205–215.

W. W. Elliott & Co.

- 1883 *History of Kern County, California*. W. W. Elliott & Co., San Francisco, CA. Reprinted 1965 by Merchants Printing & Lithographing Co., Bakersfield, CA.
1885 *Calaveras County Illustrated and Described, Showing its Advantages for Homes*. W. W. Elliott & Co., Oakland, CA.

Wylie, Alison

- 1992 On 'heavily decomposed red herrings': Scientific Method in Archaeology and the Ladening of Evidence with Theory. In *Metaarchaeology: Reflections by Archaeologists and Philosophers*, edited by Lester Embree, pp. 269–288. Kluwer Academic Publishing, Boston, MA.
2002 *Thinking from Things: Essays in the Philosophy of Archaeology*. University of California Press, Berkeley.

Yamin, Rebecca

- 2001 Becoming New York: The Five Points Neighborhood. *Historical Archaeology* 35(3): 1–135.

Yenne, Bill

- 2003 *The American Brewery: From Colonial Evolution to Microbrew Revolution*. MBI Publishing Co., St. Paul, MN.

Yentsch, Anne

- 1991 Engendering Visible and Invisible Ceramic Artifacts, Especially Dairy Vessels. *Historical Archaeology* 25(4):132–155.
- 1993 Working with Fill in San Francisco. In *Tar Flat, Rincon Hill, and the Shore of Mission Bay: Archaeological Research Design and Treatment Plan for SF-480 Terminal Separation Rebuild*, Mary Praetzellis and Adrian Praetzellis, editors, pp. 331–346. Anthropological Studies Center, Sonoma State University, Rohnert Park, CA.
- 1994 *A Chesapeake Family and Their Slaves: A Study in Historical Archaeology*. Cambridge University Press, Cambridge, England.

Yentsch, Anne, and Judson Kratzer

- 1994 Techniques for Excavating and Analyzing Buried Eighteenth Century Garden Landscapes. In *The Archaeology of Garden and Field*, Naomi Miller and Kathryn Gleason, editors, pp. 168–201. University of Pennsylvania Press, Philadelphia.

Yolo County Democrat

- 1867 *Yolo County Democrat*, 14 December. Woodland, CA.

Young, Otis

- 1970 *Western Mining: An Informal Account of Precious Metals Prospecting, Placering, Lode Mining, and Milling on the American Frontier from Spanish Times to 1893*. University of Oklahoma Press, Norman.

Zelinsky, Edward Galland, and Nancy Olmsted

- 1985 Upriver Boats—When Red Bluff Was the Head of Navigation. *California History* 64(2): 86–118.

Zucchi, John

- 1990 *Italians in Toronto: Development of a National Identity*. McGill-Queen's University Press, Georgetown, Canada.

Zunz, Oliver

- 1982 *The Changing Face of Inequality: Urbanization, Industrial Development, and Immigrants in Detroit, 1880–1920*. University of Chicago Press, Chicago, IL.

APPENDIX A

RESEARCH THEMES AND QUESTIONS FOR TOWNSITES

Appendix A. Research Themes and Questions for Townsites.

Property Type Features		Research Issues	Archaeological Research Questions
THEME: Townsite Establishment And Evolution		Reclamation, Restructuring, and Flood Protection Properties	
Fill, terrace, channelized waterway, levee, ditch	Reconstructing the processes by which townsites were prepared and structured and changed over time.	What is the relationship between the archaeological and documentary evidence of initial town layout? To what degree did preexisting conditions influence town layout? Can stages in the development of California towns be discerned through the archaeological evidence of townsite creation?	How does this feature relate to municipal ordinances regarding infrastructure improvements? Is it possible to distinguish ad hoc and unsanctioned efforts to fill, drain, and otherwise create usable land? What was the scope of community acceptance and participation in municipal improvements? For example, how quickly do individual property owners comply with requirements for establishing sidewalks or conforming to street grades? Is there evidence of unsanctioned (i.e., illegal but perhaps socially accepted) efforts to create usable land? What is the evidence of non-legal owners' improvements (i.e., the expression of possessory rights)?
	Documenting ad hoc and unsanctioned efforts to fill, drain, and otherwise create usable land.	How did urban places (of all sizes, e.g., villages, towns, and cities) relate to their larger zones of influence during the frontier and succeeding stages of development? How was town layout shaped by outlying contacts, transportation routes, and avenues of supply?	How was town layout influenced by geological features? How was the environment physically modified to create the townsite? How were engineering features (such as levees) created? What physical changes were necessary to modify the original site to conform to the vision promoted for it (for example, the imposition of a street grid on steep topography)? What does it indicate about modifications necessary to conform to culturally defined notions of habitability?
	Understanding the interactions between townsites and larger regions.	Is it possible to reconstruct plant succession and environmental change at various scales? What does such information indicate about changing land use? What was the pre-townsite environment and what was the impact of non-native introduced species? What was the groundcover preceding the gold rush? How was this affected by initial settlement? How did early land use vary from place to place? How was land used around dwellings? How did the domestic landscape compare with that of workplaces? What is the pollen signature of post-disaster (fire, earthquake) environment? What evidence is there of species succession?	
	Documenting the technology of townsite creation by cuts, fills, street bulkheads, buried vessels, etc.		
	Reconstructing plant succession and environmental change at various scales.		

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Property Type Features	Research Issues	Archaeological Research Questions
	Assessing the relationship between townsites design and ideology.	To what extent does the physical layout of the town reflect the vision proposed by townsites boosters? Where there is lack of conformance, what causal factors might be responsible? For example, did carrying out the plan require extreme engineering efforts (e.g., a grid over steep/hilly site)? What do ad hoc and unsanctioned land modification efforts indicate about the relationship between townsites design and ideology (real vs. ideal behaviors)? What implications did the placement of fences, buildings, and landscaping have for modes of social interaction?
THEME: Infrastructure Development – Waste Disposal Facilities		
Sewer, refuse accumulation (e.g., municipal refuse dumps)	Documenting local vernacular solutions as well as illicit activities in the construction of public facilities.	How does the structure of this feature relate to municipal ordinances regarding infrastructure improvements? How can this feature contribute to our understanding of the scope of community acceptance and participation in municipal improvements (e.g., the rate at which individual property owners comply with requirements to tie into municipal sewer lines)?
	Assessing the relationship between urbanism and environmental change and degradation.	What environmental pollution was created by this property? Would its deleterious effects have been immediate (e.g., lead contamination of soil) or more widely spread (e.g., chemical contamination of groundwater)?
	Assessing the relationship between the availability of technologies and their local acceptance.	Was this an ad hoc or a designed structure, would its design or location have been considered up-to-date, and what might the implications be of this? What was the relationship between this property's period of use and contemporary science (e.g., germ theory and the rise of the public health profession)? Is there innovation in design or construction, and what might those innovations be attributed to (ethnicity, regionalism, expediency)?
THEME: Infrastructure Development – Municipal Facilities		
Structural remains (e.g., foundation of courthouse, church, prison, etc.)	Documenting local vernacular solutions as well as illicit activities in the construction of public facilities.	How do construction techniques evidenced here relate to municipal ordinances for standards employed in construction of public buildings? To what degree does the property show innovation in design or construction? To what degree does the property reflect popular/conventional design and/or construction techniques OR regional, ethnic, or vernacular tradition? Is there evidence of expedient construction using whatever was at hand? Is it possible to understand the relationship between the availability of technologies, their cost, and the evolution of their local acceptance? To what extent were building codes and standards complied with and what does that indicate about the community?

Property Type Features	Research Issues	Archaeological Research Questions
	Explicating the symbolic dimensions of public facilities and how these factors affected the facilities' structure and function.	To what degree does the property's design exemplify the ideologies of its creators? How did this design affect its operation?
Refuse accumulation (e.g., sheet refuse, hollowrefuse-filled features)	Documenting local vernacular solutions as well as illicit activities in the construction of public facilities	How was waste disposal treated at this municipal facility? How do actual practices compare with municipal standards and codes?
	Documenting institutional living conditions and ways of life.	What was life like for inmates and staff in this institution and how did it compare with that presented in official policies? How did the institution's managers impose its ideology and how successful were they? What evidence is there of unsanctioned activities on the part of inmates or staff that indicates resistance to this ideology?
THEME: Infrastructure Development – Schools		
Structural remains (e.g., building, yard, activity area)	Documenting institutional living conditions and ways of life.	How is community diversity (gender, economic, ethnic, religious, or political) manifest in the school grounds (for example, male versus female play areas)? What community activities occurred on the school grounds? What evidence is there of divisions within the community at these activities? For example, the presence of certain families may suggest ostracism of others based on ethnic, religious, or other differences.
Refuse accumulation (e.g., sheet refuse, hollow refuse-filled features)	Documenting institutional living conditions and ways of life.	How do classroom activities or other in-school behaviors change over time and what may those changes be attributed to? What social role training occurred at the school? What were the social dynamics of the institution? How structured was the classroom? For example, did the school use portable desks or desks bolted to the floor? How effective were educational reform movements in the operation of individual schools?
THEME: Infrastructure Development – Public Open-Space Facilities		
Formal public garden, ad hoc open public space, activity areas	Explicating the symbolic dimensions of public facilities and how these factors affected the facilities' structure and function.	To what degree did ideological and/or pragmatic considerations contribute to this public garden's form? What activities occurred in public spaces, either sanctioned or unsanctioned? How was this public space used as an emergency urban open space (e.g., post-fire housing or military camp)?

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Property Type Features	Research Issues	Archaeological Research Questions
	Assessing the relationship between urbanism, environmental change and degradation.	How was the natural environment modified to create the property? What is the pollen evidence of floral succession? How was vacant land used?
THEME: Infrastructure Development – Transportation Facilities		
Road, bridges, railroad	Documenting local vernacular solutions as well as illicit activities in the construction of public facilities.	How do the materials, techniques, and designs used to create this property compare with official codes and standards? In what ways does the property show innovation in design or construction? In what ways does the property reflect popular/conventional design and/or construction techniques OR regional, ethnic, or vernacular tradition? What evidence is there of extemporized construction that used whatever materials were at hand?
	Assessing the relationship between the availability of technologies and their local acceptance.	Would the materials, techniques, and designs used to create this property have been considered up-to-date or old fashioned, and what might the implications of this be? What evidence does the property contain of local innovation, improvisation, or the use of appropriate technology' as opposed to the adoption of standardized design and materials? Is there innovation in design or construction, and what might those innovations be attributed to (ethnicity, regionalism, expediency)? To what extent were building codes and standards complied with and what does that indicate about the community?
THEME: Industry – Buildings and Structures		
Structural remains (e.g., building foundation, forge, casting floor, mill foundations, boiler mounts)	Reconstructing specific industrial and manufacturing processes.	What evidence does this feature contain of undocumented or poorly understood industrial or manufacturing processes?
	Assessing the relationship between the availability of technologies and their local acceptance.	How would the technologies used at this location have compared with those available elsewhere at the time? Would the industrial processes used here have been considered up-to-date or archaic in their context? To what degree did small town industrial artisans (such as blacksmiths) fill niche markets in order to distinguish themselves from the shops of larger urban centers, like San Francisco? Is there evidence for a high degree of local repair or fabrication that might indicate this adaptation? Is there evidence of local innovation in industrial products or processes? Did blacksmiths become nascent machinists through specialization in new technologies such as bicycles and automobiles?

Property Type Features Research Issues		Archaeological Research Questions
	Documenting working conditions and industrial pollution.	What evidence is there of industrial pollution or other hazards that may explain the working conditions of industrial workers?
	Documenting worker's use of space.	What evidence is there of spatially discrete areas that inform us about division of labor, industrial work practices, or the incorporation (or otherwise) of mass production? What activities occurred in those areas and how might they refine our understanding of this industry? Is there evidence of gendered use of space? How does workers' use of space change over time?
	Assessing the relationship between changing social relation of production and worker's experience of the workplace.	What evidence is there of spatial differentiation in layout of the site, such as a break or resting area separate from the working area, that may relate to the transition from craft to industrial mass production? Is there evidence of status differentiation within the work force and how is it expressed? Is there evidence of paternalism, surveillance, or social control in the design of the workplace and how is it related to changes in the relations of production? How were women accommodated in the workplace?
THEME: Industry – Processes		
Raw material, waste, by-products, or refuse accumulation	Reconstructing specific industrial and manufacturing processes.	Does the material evidence indicate a concern with the health implications of this industrial process, either by management or labor? What technological innovations were carried out at the site that makes it distinctive? What evidence is there of undocumented or poorly understood industrial or manufacturing process?
	Assessing the relationship between the availability of a technology and its acceptance.	What evidence is there of local innovation or the use of 'appropriate technology' as opposed to the adoption of standardized tools and materials? How effective were these innovations?
	Documenting working conditions and industrial pollution.	What environmental pollution was created by this property? Would its deleterious effects have been immediate (e.g., lead contamination of soil) or more widely spread (e.g., chemical contamination of groundwater)?
THEME: Industry – Social Spaces		
Rest break area	Documenting working conditions and industrial pollution.	What evidence is there of industrial pollution or other hazards to which workers were exposed during non-working periods?

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Property Type Features	Research Issues	Archaeological Research Questions
	Documenting worker's use of space.	Were workers provided with a discrete rest break area? To what extent does this feature reflect individual worker behavior and what is the nature of that behavior? Is there evidence of leisure activities? Is there evidence of illicit activities restricted by management through corporate policies?
	Assessing the relationship between changing social relation of production and worker's experience of the workplace.	What evidence is there of paternalism, surveillance, or social control in the design of the workplace? What evidence is there of resistance to these controls (such as drinking on the job, pilfering, etc.)?
THEME: Commercial Behavior, Service Industries – Buildings and Structures		
Structural remains (e.g., laundry boiler base, brothel crib)	Reconstructing undocumented architectural features of specialized buildings and structures.	What undocumented buildings or structures were at this location, how were they built, and how did they function?
	Assessing the relationship between the availability of technologies and their local acceptance.	Would the materials, techniques, and designs used to create this property have been considered up-to-date, archaic, or somewhere in between? Does the property contain evidence of local innovation, improvisation, or 'appropriate technology' as opposed to the adoption of standardized design and materials?
THEME: Commercial Behavior, Service Industries – Processes		
Refuse accumulation (e.g., sheet refuse, hollow refuse-filled features)	Aiding middle-range theory by defining the archaeological correlates of well-documented contexts	What are the archaeological expressions of the trade carried out at this location?
	Reconstructing context-specific historic foodways and dietary patterns, as well as the local expression of national and international trade.	To what degree did this business's waste disposal practices conform to contemporary standards and understandings of disease? How did these practices affect public health? What foodways did customers and/or employees practice at this business? How did the class, ethnicity, or gender of its clients affect this business's practices? What range of durable goods was available for sale? Which goods originated locally and which from further afield? How integrated was this business into national and international trade networks? To what degree did living conditions in lodging houses reflect the level of poverty claimed by late 19th-century social reformers?

Property Type Features	Research Issues	Archaeological Research Questions
	Problematising historically constructed identities such as “whore” and “Chinese laundryman” by documenting poorly understood ways of life.	What were residents’ lives like (e.g., did employees/owners live on the premises)? What strategies did they use to supplement their income? How separate were their business and private lives? How do the remains of personal accoutrements broaden our understanding of this household or population? What was the effect of a tightly integrated live/work situation on expressions of ethnic or class identity? Were the lives of Chinese laundry workers significantly different from Chinese immigrants engaged in other professions? How?
THEME: Commercial Behavior, Mercantile – Buildings		
Structural remains (e.g., store/warehouse foundation, cellar)	Documenting store and warehouse construction for reconstruction as well as to assess vernacular influences and innovative design elements.	How did the physical structure of small town stores change from crude wood and canvas shacks to permanent buildings? What factors contributed to this change? Do the remains indicate the level of investment in the success of this place at this time (transitory vs. permanent)? What evidence is there of expedient construction using whatever was to hand? To what extent would this feature have been considered up-to-date with regard to commercial space design and marketing? Does the property reflect innovation in design or construction? Does the property reflect popular/conventional design and/or construction techniques OR regional, ethnic, or vernacular tradition?
THEME: Commercial Behavior, Mercantile – Stock		
Artifact accumulation (sheet refuse, hollow refuse-filled feature)	Reconstructing trade networks across time and space to assess both commodity flow and its implications for the relative participation of communities in markets on a variety of scales. Documenting the availability of specific types of artifacts at particular times and places as prerequisite for studies of consumerism.	How wide and what were the characteristics of the trade networks evidenced at this time and place? What is the relationship between the intensity of the local community’s participation in trade networks and its participation in larger cultural trends? At what point in the development of a small town do we see a transition from general supply stores to specialized drug, hardware, and grocery stores? What range of artifacts was available at this time and place? Was the stock oriented toward the preferences of a particular (class or ethnic) population? To what extent do items stocked in the store reflect local consumer preferences versus product availability in the West? To what degree are changes in transportation infrastructure (arrival of the railroad) attributable to changes in consumer preferences? What was the relationship between the small-scale businesses of small towns and the sedentary merchants of the urban centers? How did the range and types of goods available in these venues differ?

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Property Type Features Research Issues		Archaeological Research Questions	
THEME: Domestic Behavior, Townsite Residents – Buildings			
Structural remains (e.g., house foundation, cellar, outbuilding)	Reconstructing undocumented house structure and use to assess vernacular influences, regional variation, and innovation.		What was the layout of this property and how was it built? In what ways does this property reflect a recognized architectural, ethnic, or vernacular building tradition or is it innovative in design or construction? Is this property an example of the expedient construction associated with an event such as a citywide fire or the gold rush? At what point did residences become separate from places of work? Did certain occupational groups generally live and work in the same building in the stages of town growth?
THEME: Domestic Behavior, Townsite Residents – Yards			
Activity area, garden	Reconstructing undocumented garden and yard structure and use to assess vernacular influences, regional variation, and innovation.	What was the layout of this property and how was it built? In what ways does this property reflect a recognized architectural, ethnic, or vernacular tradition	
	Documenting the lived reality of poorly understood populations.	How was the garden or yard used (e.g., are activity areas evident)? What evidence is there of illicit or clandestine activities that may represent worker resistance? How was the property used to express ethnic or class identity?	
THEME: Domestic Behavior, Townsite Residents – Refuse Disposal			
Sheet refuse, artifact cache (hollow/refuse-filled feature)	Documenting the lived reality of poorly understood populations.	What was life like at this place? What activities were carried out here? Is there evidence of patterned use of specific areas? What can be discerned about the traditional cultural practices, coping strategies, diet, and the health and healthcare of residents? How do these data compare with contemporary literature and public perceptions of this population?	
	Investigating the role of material culture and consumerism in the transition to industrial capitalism.	To what degree did residents participate in popular vs. traditional culture? What was the relationship between consumer practices and factors such as class and ethnicity? What was the role of material culture in childhood socialization and how did it vary by class or ethnicity? Did owners or residents attempt to separate workspace from private space? Conversely, is there evidence of combined work and private spaces? To what degree did local households depend on outside markets as opposed to domestic production, and did that relationship change in periods of economic recession?	

Property Type Features	Research Issues	Archaeological Research Questions
	Analyzing the dynamics of class, ethnic, and gender interaction.	What was the role of material culture in the maintenance of power relations and the negotiation of identity? Is there evidence of resistance to the power structure? Was division of labor gender, ethnic, or class-based? How did the changing ethnic, gender, and age composition of the household influence the behavioral patterns observed in material remains, and what factors may account for those trends? How did food preparation and consumption serve to structure or re-structure social and cultural identities? How did the relationship between consumerism, class, and gender change over time in small towns? How did working-class consumption patterns change over time? What was the relationship between homeownership and material well being as measured by the possession of consumer products?
	Problematizing historical constructs such as gender, race, and the 'slum' by emphasizing theoretical approaches including agency, feminist theory, and critical materialism.	Can this property contribute to a new understanding of a concept whose applicability is generally taken for granted? Can the concept be usefully problematized through data derived from this property? What, for example, was a slum? In what context was the term applied and how do the remains of slum dwellers' possessions help us redefine the label in particular historic contexts?

APPENDIX B

REFERENCES FOR THE HISTORICAL ARCHAEOLOGY LAB

Ceramic marks:

Gates, William C. Jr., and Dana E. Ormerod

- 1982 The East Liverpool, Ohio, Pottery District: Identification of Manufacturers and Marks. *Historical Archaeology* 16(1–2).

Godden, Geoffrey A.

- 1991 *Encyclopedia of British Pottery and Porcelain Marks* (revised edition). Barrie and Jenkins, London, England.

Kowalsky, Arnold A. and Dorothy W. Kowalsky

- 1999 *Encyclopedia of Marks on American, English, and European Earthenware, Ironstone and Stoneware: 1780–1980*. Schiffer Publishing Ltd., Atglen, PA.

Lehner, Lois

- 1988 *Lehner's Encyclopedia of U.S. Marks on Pottery, Porcelain and Clay*. Collector Books, Paducah, KY.

Praetzelis, Mary, Betty Rivers, and Jeanette K. Schultz

- 1983 *Ceramic Marks from Old Sacramento*. California Archaeological Reports No. 22. Department of Parks and Recreation, Sacramento, CA.

Molded patterns:

Dieringer, Ernie, and Bev Dieringer

- 2001 *White Ironstone China Plate Identification Guide: 1840–1890*. Schiffer Publishing, Atglen, PA.

Sussman, Lynne

- 1985 *The Wheat Pattern: An Illustrated Survey*. Studies in Archaeology, Architecture and History, Parks Canada, Ottawa.

Wetherbee, Jean

- 1974 *White Ironstone*. Published by the author, Canajoharie, NY.
1980 *A Look at White Ironstone*. Wallace-Homestead Book Company, Des Moines, IA.
1985 *A Second Look at White Ironstone*. Wallace-Homestead Book Company, Des Moines, IA.
1996 *White Ironstone: A Collector's Guide*. Antique Trader Books, Dubuque, IA.

Transfer print patterns:

Sussman, Lynne

- 1979 *Spode/Copeland Transfer-Printed Patterns Found at 20 Hudson's Bay Company Sites*. Canadian Historic Sites: Occasional Papers in Archaeology and History, No. 22. National Historic Parks and Sites Branch, Ottawa, Canada.

Williams, Petra

- 1978 *Staffordshire Romantic Transfer Patterns: Cup Plates and Early Victorian China*. Fountain House East, Jeffersontown, KY.
1981 *Flow Blue China*. Fountain House East, Jeffersontown, KY.
1988 *Flow Blue China II*. Fountain House East, Jeffersontown, KY.

1993 *Flow Blue China and Mulberry Ware: Similarity and Value Guide*. Fountain House East, Jeffersontown, KY.

Williams, Petra, and Marguerite R. Weber

1986 *Staffordshire II Romantic Transfer Patterns: Cup Plates and Early Victorian China*. Fountain House East, Jeffersontown, KY.

Alcoholic-beverage bottles:

Barnett, R. E.

1991 *Western Whiskey Bottles*. Maverick Publications, Bend, OR.

Thomas, John L.

1977 *Whiskey Bottles of the Old West*. Maverick Publications, Bend, OR.

Wilson, Bill, and Betty Wilson

1968 *Spirits Bottles of the Old West*. Henington Publishing Company, Wolfe City, TX.

Bitters:

Ring, Carlyn

1980 *For Bitters Only*. The Nimrod Press Inc., Boston, MA.

Watson, Richard

1965 *Bitters Bottles*. Thomas Nelson & Sons, New York, NY.

1968 *Supplement to Bitters Bottles*. Thomas Nelson & Sons, Camden, NJ.

Wilson, Bill, and Betty Wilson

1969 *Western Bitters*. Northwestern Printing Company, Santa Rosa, CA.

Bottle marks:

Toulouse, Julian Harrison

1971 *Bottle Makers and Their Marks*. Thomas Nelson Inc., New York, NY.

2001 *Bottle Makers and Their Marks*. Reprint of first edition. The Blackburn Press, Caldwell, NJ.

Canning jars:

Creswick, Alice M.

1973 *The Red Book of Fruit Jars No.2*. Private Printing, Grand Rapids, MI.

Leybourne, Douglas M. Jr.

1997 *The Collector's Guide to Old Fruit Jars, Red Book 8*. North Muskegon, MI.

Rodrigues, Arleta

1971 *Fruit Jars: Canister to Kerr*. James Publications, Castro Valley, CA.

Toulouse, Julian Harrison

1969 *Fruit Jars*. Thomas Nelson & Sons, Camden, NJ.

Food/Soda-water bottles:

Markota, Peck, and Audie Markota

1994 *Western Blob Top Soda and Mineral Water Bottles*. Second Edition, Private Printing, Sacramento, CA.

Zumwalt, Betty

1980 *Ketchup, Pickles, Sauces: 19th Century Food in Glass*. Mark West Publishers, Fulton, CA.

Manufacturing techniques/Bottle types:

Jones, Olive, and Catherine Sullivan

1985 *The Parks Glass Glossary: for the Description of Containers, Tableware, Flat Glass and Closures*. Parks Canada, Hull, Quebec, Canada.

Lindsey, Bill

2007 Historic Bottle Glass Identification and Information Website, designed by Bill Lindsey, and maintained at http://www.blm.gov/historic_bottles/index.htm to be relocated through a cooperative effort between the Society for Historical Archaeology and the Bureau of Land Management to http://www.sha.org/research_resources/historic_bottle.htm by end of March 2007.

Putnam, H. E.

1965 *Bottle Identification*. Self published.

Patent/proprietary medicines:

Baldwin, Joseph K.

1973 *A Collector's Guide to Patent and Proprietary Medicine Bottles of the Nineteenth-Century*. Nelson Inc., Nashville, TN.

Fike, Richard E.

1987 *The Bottle Book: A Comprehensive Guide to Historic, Embossed Medicine Bottles*. Gibbs M. Smith, Salt Lake City, UT.

Wilson, Bill, and Betty Wilson

1971 *19th Century Medicine in Glass*. 19th Century Hobby & Publishing Co., Amador City, CA.

Pressed glass:

Lee, Ruth Webb

1946 *Ruth Webb Lee's Handbook of Early American Pressed Glass Patterns*. Sixteenth printing. Ruth Webb Lee, Northboro, MA.

1960 *Early American Pressed Glass*. Thirty-sixth edition. Lee Publications, Wellesley Hills, MA.

1985 *Victorian Glass Handbook: Pattern Glass and Specialties of the Nineteenth Century (1830's-1880's)*. Charles E. Tuttle Company, Rutland, VT.

McCain, Mollie Helen

1982 *The Collector's Encyclopedia of Pattern Glass*. Collector's Books, Paducah, KY.

Metz, Alice Hulett

1958 *Early American Pattern Glass*. Spencer-Walker Press, Columbus, OH.

2000 *Much More Early American Pattern Glass*. Collector Books, Paducah, KY.

Other/Small Finds references include (but are not limited to):

Barnes, Frank C.

1968 *Cartridges of the World*, edited by John T. Amber. Follet Publishing Co., Chicago, IL.

1989 *Cartridges of the World*, edited by John T. Amber. DBI Books, Inc., Northbrook, IL.

Busch, Jane

1981 An Introduction to the Tin Can. *Historical Archaeology* 15(1):95–104.

Herskovitz, Robert M.

1978 *Fort Bowie Material Culture*. University of Arizona Press, Tucson, AZ.

Kresge, S.S. Co.

1913 Kresge's Katalog of 5-cent & 10-cent Merchandise (reprint 1975).

Luscomb, Sally C.

1992 *The Collector's Encyclopedia of Buttons*. Schiffer Publishing, West Chester, PN.

Martells, Jack

1976 *The Beer Can Collector's Bible*. Ballantine Books, New York, NY.

Miller, George L. with contributions by Patricia Samford, Ellen Shlasko, and Andrew Madsen

2000 Telling Time for Archaeologists. *Northeast Historical Archaeology* 29:1–22.

Montgomery Ward & Co.

1895 *Montgomery Ward & Co. Catalog and Buyers Guide No. 57, Spring and Summer 1895*.

1969 reprint by Dover Publications, Inc., New York, NY.

Nelson, Lee H.

n.d. Nail Chronology as an Aid to Dating Old Buildings (AASLH Technical Leaflet).

Rock, James T.

1981 *Tin Cans: Notes and Comments*. Submitted to the USDA Forest Service, Klamath National Forest, Yreka, CA.

1984 Cans in the Countryside. In *Historical Archaeology* 18(2):97–111.

1984 Evaporated Milk: Its Archaeological Contexts. *Northwest Anthropological Research Notes* 18(1):108–116.

1987 *A Brief Commentary on Cans*. Report for the USDA Forest Service, Klamath National Forest, Yreka, CA.

1993 *Can Chronology*. Coyote Press, Salinas, CA.

Russell and Erwin Manufacturing Company

1865 *Illustrated Catalogue of American Hardware of the Russell and Erwin Manufacturing Company*. Reprint edition 1980, Association for Preservation Technology.

Sears, Roebuck and Co.

1897 *1897 Sears, Roebuck Catalogue* (reprint 1968). Chelsea House, New York, NY.

1902 *1902 Sears, Roebuck Catalogue* (reprint 1986). Bounty Books, New York, NY.

Weinstock, Lubin & Co.

1891 Edition of The Weinstock Lubin Co. Catalog (reprint 1975).

Woshner, Mike

1999 *India-Rubber and Gutta-Percha: An Illustrated History of Rubber and Pre-Plastic Antiques and Militaria*. O'Donnell Publications, Alexandria, VA.

Cover photographs:

Butcher Shop of T.F. Allen on Third Street in San Bernardino, CA (ca. 1875). Courtesy San Bernardino Public Library
Street Scene on Third below D Street (date unknown). Courtesy San Bernardino Public Library

California Department of Transportation.

A Historical Context and Archaeological Research Design for Townsite Properties in California.
Division of Environmental Analysis, California Department of Transportation, Sacramento, CA. 2010



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