

Exhibit 5.14: Guidance for the Treatment of Historical Archaeological Resources

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INTRODUCTION

As a supplement to Chapter 5, this Exhibit presents additional information on historical archaeological methods for the identification, evaluation, and treatment processes for historic-era archaeological resources and the professional qualifications required to perform the work.

In addition to the methods presented in this Exhibit, Caltrans developed guidance for specific property types in four Historical Context and Archaeological Research Design studies for agriculture, mining, townsite and work camps properties (Caltrans 2007, 2008, 2010, and 2013) and are collectively referred to as “HARD Studies.”¹ Other sources of historical archaeological methodology include the [Society for Historical Archaeology](#), *Introducing Archaeology* (Camp and Muckle 2020), *Historical Archaeology* (Orser 2016), *International Handbook of Historical Archaeology* (Majewski and Gaimster, eds., 2009), and *The Cambridge Companion to Historical Archaeology* by Hick and Beaudry (2006)² among others.

¹ Caltrans, *A Historical Context and Archaeological Research Design for Agricultural Properties in California*, (Caltrans, Sacramento, CA, 2007); *A Historical Context and Archaeological Research Design for Mining Properties in California*, (2008); *A Historical Context and Archaeological Research Design for Townsite Properties in California* (2010); *A Historical Context and Archaeological Research Design for Work Camp Properties in California*, (2013); and *A Historical Context and Methodology for Evaluating Trails, Roads, and Highways in California*, (2016).

² Stacey L. Camp and Robert J. Muckle, *Introducing Archaeology*, (University of Toronto Press, 2020), Charles E. Orser, *Historical Archaeology*, (Routledge, Oxfordshire, 2016); Teresita Majewski and David Gaimster (Eds.), *International Handbook of Historical Archaeology*, (Springer, New York, 2009), Dan Hicks and Mary C. Beaudry, *The Cambridge Companion to Historical Archaeology*, (Cambridge University Press, 2006).

QUALIFICATIONS

The Section 106 PA (106 PA³) and PRC 5024 MOU (5024 MOU⁴) require that cultural resource studies are conducted by appropriately qualified Professionally Qualified Staff (PQS) or consultant equivalents.

In accordance with Attachment 1 of the 106 PA/5024 MOU, staff must meet the minimum qualification levels for Co-Principal Investigator (Co-PI) or Principal Investigator (PI) in historical archaeology to conduct identification efforts for historical archaeological sites that require an Extended Phase I (XPI). Co-PI-level historical archaeologists, under the direction of a PI-level historical archaeologist, may evaluate historical archaeological sites that do not require excavation. A PI historical archaeologist must assume lead responsibility for evaluations of historical archaeological sites that require excavation (Phase II), including historic-era Native American archaeological sites.

Those not fully qualified at the historical archaeological PI level may perform these tasks under the direct supervision of a PI historical archaeologist. Note Caltrans PQS at the PI level for historical archeology must peer review all historical archaeological work completed under the terms of the 106 PA/5024 MOU.

See Attachment 1 of the 106 PA/5024 MOU or SER Vol II Exhibit 1.7 for more information on PQS qualifications and Exhibit 1.6 for information on the expertise required to perform specific tasks.

INTERDISCIPLINARY APPROACH

Depending on the nature of the resources present, a multi-disciplinary approach may be necessary. An effective interdisciplinary team can include architectural historians, historical archaeologists, and prehistoric archaeologists who collaboratively evaluate resources with both built environment and archaeological elements.

³ First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act as it Pertains to the Administration of the Federal-Aid Highway Program in California, effective January 1, 2014.

⁴ 2015 Memorandum of Understanding between the California Department of Transportation and the California State Historic Preservation Officer Regarding Compliance with Public Resources Code Section 5024 and Governor's Executive Order W-26-92, addended 2019.

Types of cultural resources that may require a collaborative approach include the remains of buildings and structures, cultural landscapes, battlefields, cemeteries, water conveyance features, and mining resources and landscapes. For a discussion of properties requiring study see Chapter 4. For a discussion of treatment of archaeological resources see Chapter 5; for built-environment resources see Chapter 6.

Caltrans PQS architectural historians and consultants trained in historical research can assist with background research for evaluations of historic-era archaeological sites, and they may need to be consulted prior to evaluating these resources. Professionals with knowledge of cultural geography, the history of technology, folklore, and social history may add valuable insights to understanding material culture.

If a District does not have staff with the requisite expertise, teams may be created from a combination of District Caltrans PQS, Headquarters PQS, or appropriately qualified consultants. Requests for assistance from Headquarters staff should be sent to the Chief of the Cultural Studies Office (CSO).

HISTORICAL ARCHAEOLOGICAL METHODS

Evaluation of historical archaeological resources is a deductive process that includes development of a historic context and research design relevant to the type of property being evaluated. The historical archaeological resource will be examined to see if it has yielded or is likely to yield important information and, therefore, could be eligible for the National Register of Historic Place (NRHP)⁵ or considered a historical resource for purposes of the California Environmental Quality Act (CEQA). The discussion should be well grounded in comparative studies on similar site types that serve to focus the research potential of the sites in the project study.

Consultation

Archaeological resources represent community history, providing direct ties to the past and as such require outreach and consultation with community members, descendent communities, and other interested parties. Public interest groups – at the local, national, and, occasionally, international level – along with historical societies, museums, and

⁵ For Caltrans-owned resources evaluated under the 5024 MOU, the California Historical Landmarks criteria is applied in addition to the NRHP.

advocational groups may also be consulting partners in understanding the history of cultural resources.

When working on early historic-era sites in California, it is important to keep in mind the changes happening to traditional Native Californian's lives during this period. Movement to reservations, homesteads, and other locations that weren't traditionally part of Indigenous culture was a critical transition period for tribal families and communities. Use of and adaptation to European and American artifacts and technologies requires a specialized understanding of this transition to historic-era material culture.

Equity and Community

There is a growing awareness that equity has not always been considered in the building of transportation infrastructure. In 2021, the U.S. Secretary of Transportation acknowledged the structural racism built into our country's highway system (Kelly 2021)⁶, and it has been documented in many studies and reports. With this understanding, it becomes even more important to be diligent in including descendent communities in the project consultation process, especially when relevant historic-era resources are present. Community-based archaeological outreach and volunteerism can be a good way to involve descendent communities, along with other interested community members, in project outcomes.

Identification Methods

Efforts to identify historical archaeological sites generally include a combination of pre-field research, survey, and recordation. Research and recordation are discussed below.

During archaeological survey, look for changes in the landscape that indicate activities occurred during the historic era. Attributes of historical archaeological sites can include the remains of structures, landscape features, mounds or depressions, and artifact scatters or artifact concentrations. Also look for non-native vegetation; it could indicate past occupation and land use when archaeological evidence is not initially obvious. Consider the potential for concealed or buried deposits, even in cases where little surface evidence is visible during survey.

⁶ Alexandra Kelly, Transportation Secretary Pete Buttigieg says 'there is racism physically built' into America's infrastructure, *Changing America*, (2021).

Recording Historical Archaeological Resources

PQS should follow the professional standards outlined by OHP (1995)⁷ when recording historical archaeological resources. Recorded features should include the remains of structures, landscaping and non-native vegetation, artifact concentrations, and depressions which may indicate presences of important hollow-filled features such as privies, refuse pits, and wells. For large resources, site areas should be grouped into loci, which will help define site boundaries and indicate land use patterns.

Historical archaeological resources can be recorded as isolates (generally up to three artifacts), individual sites, districts, or landscapes. For more information on isolates, see Chapter 5, Section 5.5.1 Properties Exempt from Evaluation. Taking a broad view of the archaeological remains recorded in a project area, combined with historical research, can help identify interrelated archaeological resources that form districts and landscapes. While defining districts and landscapes can be challenging, eligibility thresholds for the archaeological sites and features that are contributors to these larger resources can often be lower than if they were being viewed and evaluated individually. It is important to note that what can look like an isolated feature or deposit may be part of a larger complex, such as a mining or agricultural landscape.

Linear Features

There is an overlap between historian and historical archaeologist when documenting and researching certain resources, particularly linear resources including canals, railroads, and trails. A multidisciplinary approach should be used when dealing with these types of sites. While historians bring a rigor to historic research, historical archaeologist bring a complimentary perspective to this type of resource. Temporary camps, historic deposits, construction techniques, and other related ancillary features may not be visible in the historic record but will leave traces on the landscape that will be recognizable to a historic archaeologist. Working together across disciplines can provide a greater, more nuanced, and more holistic evaluation/interpretation of the resources. See Caltrans (2016) *A Historic Context and Methodology for Evaluating Trails, Roads, and Highways* for additional guidance.

⁷ Office of Historic Preservation, *Instructions for Recording Historical Resources*, (Office of Historic Preservation, Sacramento, 1995).

Recording Historic-era Artifacts

When recording sites on [DPR 523 forms](#), include a list of artifacts and describe their material, form, and function if possible. Special attention should be paid to diagnostic characteristics that can help date the site, such as molded decoration, printed patterns, embossed or impressed language, seams and openings, and maker's marks. Taking the time to inventory a large refuse scatter may be prohibitive at the survey level, and a rough estimate on the number of each specific artifact types (i.e. 100+ hole-in-cap cans) may be more appropriate, leaving in-depth recordation for a possible Phase II effort.

Recording Sheet Refuse and Refuse Deposits

During field recordation, all features need to be recorded in sufficient detail to characterize the feature, including type and quantity of artifacts present, dimensions, depth, function, and possible relationship to other features. Sampling can be the most efficient way to record large refuse features. For sheet refuse and large refuse deposits, there can be a fine line between recording and gathering enough information to evaluate the feature. When feasible, gridding features and recording a selected sample can be an efficient tool for capturing data. Additionally, bisecting or doing transects through a feature can also capture a sample of data that can point towards associations and period of use, frequency of artifact types, and function of the deposit. Within these samples, it is important to describe artifacts, including diagnostic information (see discussion above), as well as the general characteristics of each feature. Note that the term "refuse deposit" is preferable to use of language like trash or can dump.

Archival Research

Archival research is conducted at several stages throughout the life of a project. The level of effort expended should reflect the extent of anticipated impacts on historical resources within the Area of Potential Effects (APE) or Project Area Limits (PAL).

Prior to archaeological survey, initial archival research ("pre-field research") is conducted. Pre-field research forms the basis for understanding the project area by identifying land-use patterns and site types or specific cultural resources that may be encountered during a survey, which can help establish the period of significance for the survey. Archival research can also provide additional information needed to determine whether historic era resources qualify for treatment under Attachment 4 of the 106 PA/5024 MOU.

After field survey, further documentary research (“site-specific research”) may be necessary to understand a historic-era site’s history and use. Site-specific research includes review of historical maps and photographs, oral histories, and more detailed archival research. The effort spent on historical research should be proportional to the site’s potential for significance. Less research is required for sites where compromised integrity can be clearly established.

Oral histories gathered from current landowners, direct descendants of former landowners, tribal members, and other descendent communities can be a critical element of historical research. Often oral histories are the only information available for an archaeological site or district. Outreach and interviews should be conducted with respect and an understanding that “history” can have multiple perspectives.

For a site that can be protected with an Environmentally Sensitive Area and is being assumed eligible, some site-specific research may be necessary to establish a basis for the assumption of eligibility and identify the site’s boundaries and major features. A greater level of effort is needed for a site that will be impacted or destroyed by a project and requires evaluation. The focus should be on occupation/occupants, land-use history, and placement of the site within an economic, political, and social framework. The emphasis of this framework can be at a local level, broadening to a regional, state, or national level if appropriate.

The results of the site-specific research will be used to write an effective research design and capture a resource’s data potential. Site-specific research and research into similar archaeological site types for comparative purposes also helps form the basis for a well-developed historic context.

Historic Context Development

An effective historic context provides the historical circumstances that explain the importance of a property or group of related properties by identifying the period of significance, geographic scope, and historical themes that are used to support evaluations of significance for NRHP or California Historical Landmark (CHL) eligibility or determine if resources are historic resources for the purposes of CEQA, as applicable. Context development should be sufficiently broad to address all potential areas of historical significance. However, the themes developed should concentrate on the essential physical

features or important information a resource is most likely to possess. The PQS should avoid lengthy discussions that lack relevance. Evaluations of historical archaeological resources require a closely integrated assessment of both physical and historical evidence.

The historic context consists of a broadly stated chronological history of the study area, focusing on:

- Initial settlement
- Economic development
- Local historic events, related to regional and national history
- Social ties/networks
- Industrial and commercial development
- Transportation and supply networks
- Other aspects of related history.

Both primary and secondary sources can be consulted to develop a historic context. If historical overviews covering the same geographical area were developed for previous Caltrans projects, it is acceptable to use these

Developing a Research Design

As a critical component of evaluating the importance of a historic-era site, component of a site, or a district, a research design combines the project archaeologist's overall understanding of the project area with detailed, site-specific research to come up with a series of questions that the site data can address.

In addition to the physical remains and material culture that are the basis of historical archaeology, research themes and questions depend on thoughtful evaluation of documentary information and oral histories, whenever available. Archival documents, archaeological evidence, and oral history are independent lines of evidence that can assist in comparative analysis and address biases and gaps present in each individual source. Poorly documented remains are sometimes assumed, inappropriately, to have little value for addressing important historical research questions. Archaeological sites and features may be able to inform and validate important research questions regardless of the availability of historical documentation. Although limited documentation may make sharply focused associations difficult to define, one of historical archaeology's strengths is its ability

to illuminate poorly documented themes. The individual researcher must clearly identify both the strengths and weaknesses of the data when evaluating a site. Refer to the implementation plan in the appropriate HARD studies for additional guidance on research themes and questions that can be used to evaluate information.

Data Requirements

Another component of the research design is a discussion of data requirements. Data requirements, often referred to as data sets or data needs, are classes of data necessary for addressing the questions explored in the research design. These data are derived from a combination of archaeological inquiry and archival research. The specific questions elicited by research themes, as well as the themes themselves, evolve over time. Through the thoughtful interpretation of a site's material culture, archaeological data contribute significantly to these evolving discussions. By using these data to elicit answers to research questions—the source of the site's interpretive or informational value—archaeologists can ultimately evaluate a resource's eligibility for listing in the NRHP under Criterion D.

Decision Thresholds and Redundancy

One consideration for data requirements is a discussion of how much information is needed (threshold) and how much is too much (redundancy). This question can be difficult to answer. Although historical archaeological resources are not well suited for “hard-and-fast rules or formulae. In the context of public-funded research, however, it is important for archaeologists to articulate the bases of their interpretations” (Caltrans 2013:202).

National Register of Historic Places Evaluation Criteria

Applying the NRHP criteria for evaluation requires that researchers follow a set process and understand certain terms. **All four of the National Register Criteria need to be considered when evaluating a property.** Historic resources with both historic-era archaeology and built environment components also require consideration of all four criteria. For additional guidance see the Parks Service's National Register Bulletin series, most notably, [Bulletin 15](#), *How to Apply the National Register Criteria for Evaluation* and [Bulletin 36](#), *Guidelines for Evaluating and Registering Archeological Properties*.⁸

⁸ National Park Service, *How to Apply the National Register Criteria for Evaluation*, National Register Bulletin, 15, (NPS, Washington, DC, revised for the Internet from the 1990 edition, 2002). NPS, *Guidelines for Evaluating and Registering Archaeological Properties*, National Register Bulletin, 36, (NPS, Washington, DC, 2000).

Assessing Site Significance: A Guide for Archaeologists and Historians (Hardesty and Little 2009) offers practical advice and many informative case studies.⁹

To be eligible under criterion A or B, historic-era sites should retain adequate physical characteristics to reflect a particular historical theme, event, or person important in local, state, or national history. Generally, the property retains a sense of time and place through its historic setting, spatial design, architecture, and layout or physical remains. Archival research is usually required when assessing the NRHP eligibility of a resource under all criteria, but especially criterion A or B. An assessment of eligibility of an architectural and/or archaeological resource under these criteria must include a discussion of site attributes and property types that retain enough physical integrity to convey the sense of history or association with a person during the period of time that the event or activity occurred. If the physical remains are not present, or if the building, structure, site or object has been altered so that it no longer looks like it did during the period that the event took place, then it likely would not meet criterion A or B conditions for eligibility.

For criterion C, eligibility is based on the architectural, engineering, or artistic elements of a property. While all properties change over time, an eligible property retains the physical features or characteristics and historic fabric that are essential to convey a sense of the time and place related to the property's significance. It is also important to identify and consider the connection between the historic-era archaeological deposits and any other character-defining elements of a property.

National Register Bulletin 36, describes five basic steps for evaluating an archaeological property's eligibility for listing in the NRHP under criterion D, as summarized here:

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

⁹ Don Hardesty and Barbara Little, *Assessing Site Significance: A Guide for Archaeologists and Historians*, (Alta Mira Press, New York, 2009).

5. Identify the important information that the property is likely to contain

To be eligible for listing in the NRHP, a property must contain information considered important to our understanding of certain aspects of human history. Archaeological data is not intrinsically significant; its importance is relative to its ability to advance our understanding of our history. Reviews of current scholarship in disciplines such as history, geography, anthropology, and archaeology can define what constitutes important information. Research issues should focus on significant themes or topics that the site may reasonably address, issues that cannot be addressed through historical research alone. Changes in research orientation are a normal part of social science and what constitutes important issues can be a moving target that must be reassessed frequently.

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

An archaeological site must also be able to convey its significance to those for whom it has value. Under criterion D, this could include professional archaeologists, tribes, and other descendant communities who may seek to understand the site data, as well as the public who may be interested in the general history of the site.

Site Integrity

According to National Register Bulletin 15:

The evaluation of integrity is sometimes a subjective judgment, but it must always be grounded in an understanding of a property's physical features and how they relate to its significance. The retention of specific aspects of integrity is paramount for a property to convey its significance. Determining which of these aspects are most important to a particular property requires knowing why, where, and when the property is significant (2002:35).

There are seven aspects of integrity to consider: location, design, setting, materials, workmanship, feeling and association. The ability of a property to convey its historical significance is measured by assessing its integrity. The appraisal of integrity comes after an assessment of significance: significance + integrity = eligibility.

Evaluation Methods

Evaluating historical archaeological sites is a nuanced process that requires an understanding of both physical and historical evidence in relation to the historic context and research design. The evaluation process may or may not require excavation in order to obtain enough information to assess the site's eligibility to the National Register of Historic Places (NRHP).

Eligibility is demonstrated when a site possesses integrity and archaeological data potential. Document the site's potential to yield information in the Historic Resources Evaluation Report (HRER) or in a Phase II report. These documents must include well-developed, rigorous research design that considers the site-specific context with comparisons to similar historical archaeological sites. It is important to understand that site disturbance does not always equate to loss of integrity.

While an argument for eligibility without test excavation can be made for some sites, it should be used sparingly for situations where property access problems would delay completion of the environmental document. It might also be used when the project's effects to the site can be reasonably assessed and there is enough information on integrity to make a final effect determination for the site. Evaluation of historical archaeological sites without excavation is documented in the HRER. Caltrans PQS at the Co-PI level and consultants who meet the same qualifications may perform the evaluations with peer review by a PI-level historical archaeologist. See Chapter 5 and Exhibit 6.5 for more information on the HRER document and Chapter 5 and Exhibit 5.5 for the Phase II report.

Excavation Methods

The Secretary of the Interior's [Standards for Archeological Documentation](#) provide general guidance on the conduct of archaeological investigations (USDI 1983)¹⁰. Although field investigation methods vary with site structure and the overall goals of the work,

¹⁰ United States Department of the Interior (USDI), Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines, (Revised 2001).

archaeologists need to use generally accepted professional standards, or best practices, to evaluate the information potential of historical archaeological sites. This section offers guidance on these standards. Its goal is to foster common standards without constraining genuine innovation.

Field methods for testing historical archaeological sites often differ from those used to sample prehistoric archaeological sites. The types of sampling strategies commonly used at prehistoric archaeological sites (particularly random sampling) are not very useful when investigating historical archaeological sites, since sample units may more appropriately be the identified features themselves. It may be necessary to clear vegetation from broad areas of the site, or features within the site, in order to locate features or artifact concentrations before planning an excavation.

Some historical archaeological sites require exploratory backhoe trenches or grading to provide information on site stratigraphy and feature location. Trenching may be an essential first step for investigating sites with long occupations where there may be buried components, flood deposits, or other vertically stratified elements. Historical archaeological features are often smaller and more discreet than prehistoric deposits such as middens, and many historic sites, especially in urban or developed areas can be capped by fill dirt, concrete, or pavement. Removal of the fill/cap is an important way to see a larger picture. Others (such as single component sites) may require shallow block exposures or broad excavations that have the potential to reveal a maximum number of subsurface and surface features.

Subsurface features may be located by means of trenches, shovel tests, backhoe scrapes, or probes with metal rods in search of changes in soil compaction, color, or constituents. They may also be discerned by metal detecting, remote sensing, and other geophysical techniques, although such procedures require the use of experienced analysts. The topography of the site may also provide clues to the presence of subsurface features. Once the important features of a site are located, controlled test units may be appropriate to maximize the information yield with a minimum amount of disturbance.

Mapping

Thoroughly examine the surface of the site when the preparing an accurate sketch map for the site record. Look for depressions, terraces, rock alignments, non-native vegetation, and

other evidence of use during the historic era. For XPI and Phase II excavations, the site should be mapped using standard archaeological techniques, using Global Positioning System (GPS) device, a transit and stadia rod or other pertinent methods. The surface features of the site and all excavation units should be plotted and tied to a permanent datum established outside the transportation project's ADI.

Stratigraphic Excavation and the Harris Matrix

Excavation methods, which are specified in the Research Design and Excavation Plan, guide the way the site is excavated. Where discernible layers and features are present, excavation should be undertaken stratigraphically. Use arbitrary levels as a measure of control within unstratified deposits or very large deposits.

When complex stratigraphy is present or work is occurring over a large area, use the Harris Matrix (Harris 1989)¹¹ to record the relationships between strata (called contexts) during the excavation. Each context, including the original cut and subsequent fill episodes, must be assigned a unique designation, and must be recorded on a standard form. This matrix is used to interpret the stratigraphic sequence after the excavation is completed, helping 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 non-contributing elements. Sites with little stratigraphy or simple stratigraphy can be excavated without using the Harris Matrix.

Unit of Measure

Several units of measurements are used by archaeologists. The distance between survey transects, the length or width of a building foundation, dimensions of excavation units, and dimensions of artifacts. The standard measurements in historical archaeology for structures and other features is that the best unit of measurement is the one used by those who created site (early European and American settlers used feet and inches, while those of Spanish and Mexican descent used vara, etc.). Thus, a 12-foot by 20-foot building built by an Italian family is better understood using feet than meters. The same goes for artifacts. The dimensions of evaporated milk cans changed over time making them extremely diagnostic.

¹¹ Edward C. Harris, *Principles of Archaeological Stratigraphy*, (Academic Press, New York, NY, 1989).

Thus, the meaning of a 2-15/16-inch diameter can is lost when measured as 7.46125 millimeters.

Whenever possible it is important to maintain this standard of measurement in order to make comparisons with other historical properties and collections. It might be appropriate to use other measurements on sites occupied by Asian and Pacific Islanders and their descendants. More recently, metric measurements are being used for Japanese and Chinese ceramics, as it is a more relevant unit of measure for these types of wares (Ross and Campbell 2018; Lightfoot 1995)¹².

At times, standard units of measure can conflict with the treatment of other archaeological components, such as a dual component site with a prehistoric site. In these situations, pick one unit of measure; meters can be converted to feet and inches at a later time. The idea behind maintaining a standard unit of measurement is to allow the most effective means of cross comparison between sites and collections.

Artifact Collection

In most circumstances, Caltrans does not recommend collecting artifacts during the identification phase (field surveys or XPIs). At this level there is no mechanism to curate artifacts. Caltrans recommends recording the artifacts and leaving them at the site.

Documentation methods for testing (Phase II) and data recovery (Phase III) may include collection of artifacts for analysis in the lab, field analysis and on-site discard, or a combination of both. The Phase II or Phase III Proposal, which includes a historic context, research design, and data requirements, will also describe the artifact collection policy. See Exhibits 5.4 and 5.7 for more information. Decisions regarding methods of artifact collection, analysis, discard, and curation are made on a project-by-project basis and may require consultation with state and federal partners, as well as other consulting parties.

Hazards Specific to Historical Archaeological Sites

In addition to the standard safety precautions discussed above, work at historical archaeological sites may involve special hazards such as pathogenic and chemical

¹² Douglas Ross and Ranae Campbell, Identification and Dating of Japanese Ceramics from 19th and 20th Century Sites, Workshop presented at the Society for Historical Archaeology 51st Annual Conference, New Orleans, LA, (2018). Kent Lightfoot Culture Contact Studies: Redefining the Relationship Between Prehistory and Historical Archaeology, *American Antiquity*, (60(2):199-217, 1995).

contamination. Privy pits, for example, may contain pathogenic organisms. Industrial sites often include areas with hazardous chemicals, including lead, mercury, and asbestos. Historic-era mining operations used a range of chemicals in processing resources, some of which can remain in the soil for years. In addition, these sites can contain physical features that present a danger, such as mine shafts or adits. With the exception of mine shafts, hazards can typically be controlled or avoided by appropriate hygienic practices and protective equipment such as rubber gloves and masks. Washing hands before eating should be standard safety practice whenever work occurs in potentially contaminated soils.

Laboratory Methods

Analysis of historic-era artifacts has two goals: to address research questions identified in the research design and to generate comparative data for other researchers to use. To meet these goals, treatment must be consistent throughout the process, from analytical unit to analytical unit and from site to site, so that intra- and inter-site comparisons can be made. Data must be collected from the artifacts and standardized in a master database in such a manner that queries can be run to answer a variety of research questions. An example of such a database is the relational [Sonoma Historic Artifact Research Database](#), or SHARD, used to catalog historic-era artifacts. In addition, the Society for Historical Archaeology (SHA) provides guidance on artifact cleaning and labeling in preparation for curation with their manual *Standards and Guidelines for the Curation of Archaeological Collections* (1993)¹³. Laboratory and cataloging procedures must be clearly detailed and explained so that other researchers can easily use the assembled information.

Cleaning Artifacts

Different treatments are used for different kinds of artifacts, and each needs to be individually inspected before cleaning begins. The goal is to clean the artifacts as much as possible without losing any information; too often, data are inadvertently destroyed by carelessness at this stage. Take extra care to avoid brushing off or washing away and destroying any diagnostic details or residues. For example, bottles often retain fragments of paper labels that fall off when washed; applied color labels on glass can be rubbed off; painted or gilded ceramic decoration may be inadvertently scrubbed away. Some ceramics are so friable that they will fall apart in water. Occasionally, bottle contents are still intact

¹³ Society for Historical Archaeology, *Standards and Guidelines for the Curation of Archaeological Collections. The Society for Historical Archaeology Newsletter* (26(4), 1993).

and, if safe to handle, the contents removed and preserved for later analysis. Shell and bone often disintegrate if left to soak in water. It is important to dry brush the bone to remove as much residual dirt as possible and then, if not too fragile, quickly wash it; shell is simply dry brushed. Carefully inspect textiles by very gently rinsing them in running water to remove as much dirt as possible and laying them flat to dry. Dry-brush metal with a toothbrush or a wire brush to remove as much encrustation as possible without destroying useful information.

Cataloging using Functional Classifications

Artifacts can be cataloged using a general functional classification based on South's (1977)¹⁴ categories, which have been modified and expanded for use with mid-19th- to early-20th-century sites in the western United States. The materials are separated into broad Group divisions and then are further split into Class and Subclass. For the purposes of analytical research and intersite comparison, the Class division is most versatile, allowing a comprehensive range of functions while maintaining a manageable aggregate of categories. Another advantage of this classification system is that additions can be made as necessary to accommodate a variety of site types and research questions. See the HARD studies (Caltrans 2007, 2008, 2010, and 2013) for more details on cataloging and functional classifications.

Quantifying Artifacts—MNV/MNI

Quantifying artifacts is an important part of historical archaeology. Unlike prehistoric artifact analysis, weights or piece counts of historic artifacts are often less useful than calculating the minimum number of vessels (MNV) or minimum number of individual items (MNI). "... MNV counts describe the minimum number of original items that can account for the fragmentary specimens present in the archaeological assemblage" (Voss and Allen 2010:1)¹⁵. Because one broken bottle can be represented by one or many pieces, it is important to use another way to quantify historic artifacts. In some situations, weight can be a useful analytical tool, such as for quantifying window glass or for fragments of undistinguishable materials such as slag.

¹⁴ Stanley South, *Method and Theory in Historical Archaeology*, (New York, NY: Academic Press, 1977).

¹⁵ Barbara L. Voss and Rebecca Allen, Guide to Ceramic MNV Calculation Qualitative and Quantitative Analysis. *Technical Briefs in Historical Archaeology*, (5:1-9, 2010).

Special Studies

There are several specialized studies that can be conducted on historical archaeological features and artifacts including focused studies of glass and ceramics, historic gravesites, parasitology, faunal remains, archaeobotanical studies, to name a few.

CURATION AND DISCARD POLICIES

Prepare a comprehensive discard policy that clearly define items to be discarded and how they will be recorded, i.e. quantified count and or weight. Give serious consideration to what materials will be collected during field excavation, and during laboratory analysis, what artifacts or artifact types will be retained or discarded. During fieldwork, record discarded materials by fully explaining and documenting the reasons for discard, with reference to the discard policy approved for the project. Once artifacts and ecofacts have been thoroughly catalogued for purposes of data analysis, materials with low research value (e.g., nails and nondiagnostic fragments of glass) may be appropriately discarded.

The SHA (1993) provides guidance on discard and deaccession. A discussion of deaccession and discard policies for collections facilities and museums around the United States can be found in Praetzellis and Costello (2002), Childs (1995), and de Vitis (2012)¹⁶.

As discussed above, some test excavations use field laboratory methods to document and analyze artifacts in the field prior to reburial on site. This method reduces the need to curate artifacts and collections and is generally applied to XPI excavations. Phase II and Phase III excavation proposals can include guidelines for recording and discarding certain categories of artifacts and materials after they have been cataloged and analyzed, if appropriate.

A curation agreement should be in place prior to excavation. It should be noted, most curation facilities provide specific guidance in place for long-term curation. Please see Chapter 5, Section 5.5.7 for guidance on curation.

¹⁶ Adrian Praetzellis and Julia G. Costello, Don't Keep Everything: Historic Artifacts Discard Policy, *Society for California Archaeology Newsletter* (36(3):30–33, 2002). S. Terry Child, The Curation Crisis, *Common Ground* (winter/spring 7(4), 1995). Thomasina de Vitis, *Ideally Reality: Alignment of Deaccession Policy and Emerging Practice in History Museums*, Master's thesis, Department of Museology, University of Washington, Seattle, WA, (2012).

DATA RECOVERY, CREATIVE MITIGATION, AND PUBLIC OUTREACH

Data recovery has been the standard best practice for mitigating site damage and destruction related to the construction of an undertaking. The purpose behind this effort is to obtain archaeological data that would otherwise be destroyed through project activities. However, there are circumstances when data recovery is not possible or not desired by descendent communities. Trends across the United States are to consider mitigation opportunities beyond traditional excavations (Douglas and Manney 2020)¹⁷. In response to these trends and input from the OHP and stakeholders, Caltrans has implemented new mitigation options in lieu of or in combination with data recovery.

Traditional data recovery can be paired with public outreach, digital mitigation, community-based and community-directed mitigation strategies. Implementation of other creative mitigation approaches can make the excavation data more impactful, relevant, and engaging to the public. In situations where the archaeological remains are from historic-era Native American sites, it is important to discuss mitigation with the descendant communities when it is appropriate.

¹⁷ John G. Douglas and Shelby A. Manney, *Creative Mitigation: Alternative Strategies for Resources, Stakeholders, and the Public*, (Cambridge University Press 2020).