Archaeological Resource Management Reports (ARMR):
Recommended Contents and Format
February 1990

Preface

The California Office of Historic Preservation (OHP), under its state and federal mandates, has developed Archaeological Resource Management Reports (ARMR): Recommended Contents and Format (ARMR Guidelines) for the preparation and review of archaeological reports. The purpose of this guidance is to improve the quality of public archaeology in California. The ARMR Guidelines were developed to aid archaeological report preparation and review by ensuring that all needed data would be included and organized to optimize efficiency and utility. "Needed data" refers to information usually required by regulatory or review agencies and by the Information Centers of the California Archaeological Inventory. The checklist included with this guidance was developed as an additional means of rapidly assessing archaeological report quality.

It may be unnecessary to include all classes of information presented in this guidance in all reports. The content appropriate for any report should be determined by the type and scale of a project, by the nature and scheduling of cultural resources studies, and by the complexity of the resources and the information under consideration. Applicable federal or state laws and regulations, local ordinances and procedures may also determine appropriate report content.

Certain federal and state agencies routinely produce abbreviated reports adequate for management decisions. Some of the information discussed in this guidance (e.g., setting, research design, methods description) is presented in agency handbooks, manuals, guidelines, or overviews. Reference to these sources may be substituted in reports for an extended discussion of this information when routine or repetitive undertakings are involved.

Although these guidelines do not represent a state-mandated program, the OHP strongly urges anyone involved with public archaeology to read and use them. This guidance can be understood and effectively used by the professional archaeologist as well as by a broad spectrum of other professionals and decision- makers interested in ensuring that an investment in archaeology serves the public interest. Local governments in particular should adopt the guidelines as the standard according to which archaeological studies will be carried out, reported, and judged.

This guidance, and further guidance to follow, are major elements of the preservation planning process carried out by the OHP in accordance with its mandates. A central goal of this process is to ensure that land use planning at all levels of government routinely and affirmatively takes into account the needs and the value of historic properties. We hope this guidance will be an effective contribution toward attainment of that goal.

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3. note special circumstances (e.g., Native American or other public concerns, controversies, undertaking time constraints, political sensitivity).

G. Indicate what action is being requested under the terms of applicable laws or regulations, and cite the specific section(s) of regulations to which the report is pertinent. Examples include requests for OHP consultation and concurrence in the adequacy of identification effort (36 CFR 800.4 [b]); requests for concurrence in National Register of Historic Places eligibility (36 CFR 800.4[c]); and requests for concurrence in determinations of effect (36 CFR 800.5). Include a description of further actions the agency anticipates taking to comply with pertinent laws such as CEQA or the NHPA. If the document addresses previous review comments, it may be appropriate to attach review comments to the cover letter.

H. Name the agency contact person most familiar with the undertaking and with archaeological resources studies who has authority to deal with issues raised during the course of review (e.g., agency cultural resource specialists who prepare the letters and reports). Include phone number.

II. Title Page

The National Park Service has developed, and is encouraging the use of, a National Archaeological Data Base (NADB) comprising an annotated bibliography of archaeological resource management (ARM) reports. If used extensively and consistently, the NADB can be a valuable and efficient tool for managing ARM information. Consistent information and format in title pages will greatly facilitate computer entry of NADB data. A title page consistent with NADB standards, as outlined below, is appropriate for all reports.

A. List the authors. Include name, address, and phone number of any consulting firm.

B. Date the report by month and year.

C. Present the report title. Indicate the type of investigation conducted, undertaking name, location including county and city or equivalent designation.

D. Identify the entity submitting the report, such as the consulting firm, agency, or group that prepared and submitted the document. The submitter and the author may be identical.

E. Identify the party to whom the document was submitted (e.g., contracting or responsible party such as an agency, developer, or a lead agency under CEQA).

F. Reference the contract number/federal agency permit number.

G. Cite the U.S.G.S. topographic quadrangles depicting study area.

H. List the acreage included in the study.

I. List keywords. NADB accommodates a large number of key words. Appropriate content for the title page depends on the type and complexity of the report. Key words can

V. Undertaking Information/Introduction

Undertaking means the land- or resource-disturbing activity for which an ARM study is prepared. The nature of an undertaking can determine the nature of the ARM study. Information about the undertaking is needed to determine how important archaeological resources may be affected. How much information is appropriate for a given report may depend on what was included in previous reports for the undertaking, and on the scope and size of the undertaking. Some of the following topics may not be relevant to a given undertaking.

A. Identify the contracting institution, contract number, permit number and expiration date.

B. Explain why the study was undertaken, citing relevant Federal, State, and local laws. Mention any studies that preceded and recommended the present effort.

C. Describe the undertaking, including the nature and extent of disturbance anticipated. If the undertaking consists of many features or facilities, identify and describe the nature and extent of its land- and resource-disturbing potential. Include:

1. an undertaking location map consisting of photocopies of relevant portions of appropriate USGS quadrangles clearly delineating the undertaking boundaries. Indicate the undertaking name, quad name, quad scale, township/range, and sections on each copy.

2. specific characteristics of the undertaking that influenced the nature of the ARM study. Include impact map(s) consisting of a photocopy of the undertaking location map (see above) that delineate areas of potential effects (APE), both direct and indirect. If appropriate, duplicate this map in Section XI, and include copies of planning maps, engineering drawings, architectural drawings, or artist's renderings that assist in defining the nature and extent of the undertaking.

D. Include a schedule for the undertaking. Describe phases of planning and construction.

E. Identify the geographical limits of the ARM study area in acres (e.g. the length and width of the survey area for linear undertakings). This area may or may not coincide with the undertaking area.

F. Describe how personnel conducting the work were organized and list the active participants and their duties. Statements of qualifications are to be provided in an appendix. Identify the persons participating in the study such as Native American observers, monitors, and consultants, interested parties with special knowledge or expertise, and technical specialists.

scaled to the size and type of undertaking as well as the recognized patterns of historic land use.

2. For resource identification reports, evidence of a record search for known archaeological resources and previous ARM reports conducted at an Information Center of the California Archaeological Inventory should be included. Either a copy of the record search report performed by Information Center staff or the results of a records search performed by a professional consultant should be provided in an appendix.

3. If other documentary research is conducted, provide the names and addresses of institutions and other sources consulted and include copies of correspondence. Refer to the types of documents examined and briefly outline the results.

VII. Research Design

Research designs are explicit statements of the theoretical and methodological approaches to be followed in an archaeological study. Research designs should be included in almost every type of archaeological report, and should vary in nature and level of detail with the undertaking and investigation type. In some cases, research designs have been developed for specific geographic regions, types of investigations, or types of resources. At a minimum, such research designs should be included into ARM reports by reference. In other reports, project-specific research design sections are necessary (e.g., evaluative and data recovery excavations).

Research designs link theory, known information, research goals, and methods. The use of previously formulated research designs is acceptable if these designs are current and relate directly to the area and type of study under consideration. Predictive models are elements of a research design applicable to archaeological surveys. Predictive models are structured predictions concerning the types and locations of archaeological phenomena anticipated in an area.

A. Discuss the theoretical basis of the proposed research. Cite or discuss the research paradigms under which the investigators are operating.

B. Summarize previous research. A summary of important research questions pertinent to the study area or to identified resources should be presented, with particular emphasis on the identification of relevant data gaps. Statements appealing to generally recognized goals of archaeology or anthropology by themselves usually lack the detail necessary for an adequate research design.

C. Present testable hypotheses or state the goals of the research. Any useful theoretical approach should be capable of generating testable hypotheses. A research design should present important research questions recognized for the region and relevant to the study, based on previous research.

D. Identify the test implications of the hypotheses.

1. Describe expected archaeological resource types, archaeological patterns, and data categories anticipated, as they relate to test implications. Discuss operational

7. Describe measures undertaken or needed to restore archaeologically disturbed site areas when archaeological field studies are completed.

C. Indicate where collected materials, photographs, and other documents are curated. Curatorial agreements and reburial agreements should be provided in an appendix.

   1. When photos or other documentation (e.g., remote sensing data) are not included in the report, name the repository where these data are stored. Provide appropriate reference numbers used to file and retrieve this data at the repository.

   2. Discuss problems or constraints in conducting the research.

IX. Report of Findings

This section presents the information collected during the study. Thorough description of collected data is essential for the construction of meaningful and well-supported interpretations. When interpretations of data are mixed with or substituted for basic data presentations, the reader is left with no basis for independently assessing conclusions and inferences. It is therefore critical to explicitly separate data presentation from interpretation of those results whenever possible. Specific descriptive requirements for particular types of ARM studies are outlined below.

A. Archaeological Resource Inventory Reports

   1. If no archaeological resources were located, their absence should be explicitly noted.

   2. If resources were previously reported or anticipated but were not located, discuss the possible environmental and cultural factors that may have hidden or destroyed the resources.

   3. Archaeological resources identified.

      a. Provide information regarding the archaeological resources that were observed and recorded, including:

         i. prehistoric archaeological sites (i.e., primarily surface and subsurface properties);
         ii. historic archaeological sites;
         iii. isolated artifacts.

      b. Recent or contemporary resources (e.g., modern roads, power lines, structures) noted but not formally recorded might also be discussed and included on a map, although such information may not be appropriate or necessary, and is usually not confidential.

      c. The following maps should generally be included in a report on the results of inventory. Maps depicting archaeological site locations should not be included in reports that will be publicly circulated. The following types of maps might be placed in a separate appendix:

terms of data presentation, no distinction is made here between excavation conducted for evaluative purposes and excavation performed as a data recovery or mitigation phase. Data and interpretation should be presented separately when possible. Summarize the results of lengthy, appended special studies.

1. Describe the physical context of the archaeological deposit, including:

   a. site topography and geomorphology (if not addressed in Setting)

   b. soil type, structure, chemistry, stratigraphy and their relationship to surrounding soils. Summarize results of special studies such as particle size analysis and soil chemistry, and include a copy of special studies reports in an appendix.

      i. non-cultural soil constituents (floral, faunal). Include a summary of special studies and insert reports in an appendix;

      ii. anthropic soils and stratigraphic relationships.

   c. profiles of excavation units, trenches, or auger borings, as appropriate,

2. Describe archaeological features. Functional ascriptions/interpretations, such as hearth, oven, housepit, may be unavoidable at this level of data presentation. It may be appropriate to discuss the relationship between feature and non-feature archaeological material distributions (e.g., the relationship between midden deposits and ovens or housepits).

   a. Describe physical evidence including location, dimensions, attributes, and associations.

   b. Provide or reference illustrations and photographs of features.

   c. Either present in full or summarize the results of special studies related to features (e.g., radiocarbon, flotation, micro-constituent analysis, chemical analysis).

3. Enumerate and describe artifacts by material type and artifact class (e.g., flaked-stone). Avoid typological ascriptions that impose or imply function or chronological association in the initial description. For example, biface, uniface, or modified flake is preferable to knife, scraper, or used flake. Such interpretations can follow in a separate subsection, as described below.

   a. Discuss typological consideration of artifacts such as stone tools, beads, bone and groundstone tools, and historic materials.

   b. Include illustrations/photographs of formal artifacts. These can be included in an appendix.

   c. Present the results of analyses of artifact manufacture and use (e.g., flaked-stone manufacturing technology, use-wear studies, pottery analysis, basketry identification). Extensive and detailed analyses may be included in appendices. A summary of the results of these studies should be presented in the body of the

overlying or underlying the human remains in a patterned arrangement, or were found within burial pit fill.

    ii. Report the results of analyses, including specialists' reports in an appendix. Description of the remains and reporting the results of any analyses may occur under the reporting of archaeological features (Section IX.B.1.g.). iii. Include photographs and illustrations.

    iv. Record/report the reburial location on a New Deposit/Redeposit Record (DPR 422I). Such information should be included in a confidential appendix and treated in a manner sensitive to the desires of the most likely descendants of the human remains.

6. Describe the spatial distribution and patterning of cultural material by class (e.g., flaked-stone, bone). Present data on the intrasite distribution of cultural materials, i.e., vertical and horizontal stratigraphy, assisted by data tables.

X. Discussion/Interpretation

Descriptive data presented above should be discussed and interpreted with explicit reference to the research design or study objectives defined earlier in the report. In addition, unanticipated data recovered during the study may warrant discussion of additional research topics not included in the research design.

A. Discuss results of the investigation as they relate to specific topics and questions presented in research design. Preferably, organize the discussion according to the structure of the research questions, hypotheses, and test implications presented in the research design.

B. Discuss the results of the study in terms of the general research objectives of the study (e.g., settlement patterns, subsistence, change through time). This discussion should place the investigation in a regional context, noting its role or contribution to an understanding of local, regional, state, or national history or prehistory.

XI. Management Considerations

The discussion of management topics should address the management goals of the study in a manner that is consistent with the specific regulatory process relevant to the ARM study. For example, an inventory report should discuss how complete the study was, the likelihood that additional resources are present in an undertaking APE, and measures that would be necessary to identify such resources. Unfortunately, terminology for similar procedures varies among local, state and federal guidelines or regulations. For example, an archaeological site might considered National Register eligible under the Section 106 process and significant under the Appendix K Guidelines for CEQA. The terms used in an ARM report should be consistent with the terms defined in the relevant guidelines or regulations.

     i.   Present clear evidence that information from the resources can address or contribute to the resolution of important, specific research questions outlined in the research design.

     ii.   Summarize or reference, as appropriate, the evidence that indicates the resource contains in appropriate contexts and in sufficient quantity and quality, the material needed to meet the data requirements of the stated hypotheses or research questions documented in Sections IX and X above.

     iii. Evaluate each resource in terms of its overall potential to address important questions or fill data gaps. Compare the resource to others in its local or regional context to determine how much it can help to achieve stated research goals.

C. Assess Effects.

Determining the nature of an undertaking's effects on an archaeological site depends on knowing what makes an archaeological resource important, and what specific ground disturbances or other physical changes are proposed.

For example, two projects may both involve grading. In one case, grading will disturb an archaeological resource important because of the information that it contains. In the other case, grading will disturb an archaeological resource important because it visibly represents a particular human adaptation to specific environmental challenges. In the first case, the assessment of effects might conclude that the information can be acceptably recovered through archaeological excavation. In the second case, there is no way to preserve the association between the site and its surroundings if grading occurs, and the effect of the grading might be considered adverse. The difference in the effect determination is due to the different reasons the archaeological sites were determined important.

The focus of an ARM report (inventory, evaluation, etc.) and what phase of the undertaking is involved will largely determine whether or not an assessment of effects can be included in the report. Lack of project design information or unevaluated resources are just two of many factors that could preclude an assessment of effects.

1. Discuss or reference a previous discussion of the general undertaking (see Section V-D). Discuss the likely effects the undertaking may have on each important archaeological resource. Use appropriate regulatory language and reference the local, state, or federal regulations or guidelines under which the effects of the undertaking are determined. Explain each determination.

    a. Discuss anticipated direct and indirect impacts to archaeological resources. Direct impacts include destruction, alteration, and isolation of the property of its setting, when setting is a characteristic contributing to the importance of the resource. While 36 CFR Part 800 does not distinguish between direct and indirect effects, anticipated indirect impacts of an undertaking should be presented. Indirect impacts could include growth inducement, increased public use, erosion of resources outside the undertaking area. It is also appropriate to discuss beneficial effects in addition to adverse effects.

- Sufficient information exists to evaluate resources. Offer recommendations regarding the importance of the resources. Often this is not possible for archaeological deposits on the basis on surface inspection alone.

b. Inventory incomplete. An initial effort to locate archaeological resources may reveal that a different level of effort or additional inventory work is necessary. This section should identify the constraints, limitations, or rationale behind the recommendation for additional work and offer specific recommendations for additional inventory.

2. Evaluation Reports

a. Evaluation results are summarized and conclusions or recommendations regarding the importance of archaeological resources are presented. When necessary, insert the following sorts of items in a confidential appendix:

i. State Historical Landmarks nominations.

ii. National Register of Historic Places nominations.

iii. National Register eligibility opinions.

iv. Opinions on the importance of the resources under CEQA.

b. Provide conclusions regarding the effect of the undertaking on important archaeological resources (e.g., no effect, no adverse effect, adverse effect). Recommend further studies or actions such as mitigation or other treatment for identified effects.

3. Treatment Reports

a. After mitigation, such as data recovery, has been completed, state whether the resource retains significance and propose additional measures needed to protect the resource or to recover additional significant information.

b. Discuss how effectively the treatment program met expectations.

XII. References (Use of American Antiquity format is encouraged).

XIII. Appendices

Depending on the type and purpose of the archaeological report, some of the following information may or may not be appropriate. In addition, investigators preparing archaeological reports for publication or wide distribution in addition to regulatory review, may wish to exclude some of the administrative information from the body of the report and instead include such information as a detached appendices or attachments.

A. Personnel qualification statements, briefs, or resumes.

information should occur only after coordinating with the NAHC and with appropriate groups and individuals recommended by the NAHC.

D. Heritage Nomination Forms.

    1. National Register of Historic Places forms.

    2. National Historic Landmark forms.

    3. Registered State Historical Landmark forms.

    4. State Point of Historical Interest forms.

XV. Further Reading and Guidance - Selected References

The following references are recommended for further information and guidance. Copies of many of these references, or information on their availability, can be obtained from the California Office of Historic Preservation, P.O. Box 942896, 1416 Ninth Street, Sacramento, California 94296-0001, (916) 445-8006.

Department of the Interior Guidance

Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation. Federal Register, Vol. 48, No. 190, September 29, 1983.

Guidelines for Federal Agency Responsibilities under Section 110 of the National Historic Preservation Act. Federal Register, Vol. 53, No. 31. February 17, 1988.

The Section 110 Guidelines: Annotated Guidelines for Federal Agency Responsibilities under Section 110 of the National Historic Preservation Act. Jointly issued by the Advisory Council on Historic Preservation and the National Park Service, U.S. Department of the Interior, Washington, D.C. 1989.

The Curation and Management of Archeological Collections: A Pilot Study. Alexander J. Lindsay, et al. Cultural Resources Management Series. U.S. Department of the Interior, Washington, D.C. September 1980.

Archeological Survey: Methods and Uses. Thomas F. King. National Park Service, U.S. Department of the Interior, Washington, D.C. 1978.

Using UTM Grid System to Record Historic Sites. Heritage Conservation and Recreation Service, U.S. Department of the Interior, Washington, D.C. 1980.

How to Apply the National Register Criteria for Evaluation. (Bulletin 15). National Park Service, U.S. Department of the Interior, Washington, D.C. 1982.

National Register Bulletin Series. National Park Service, Department of the Interior, Washington, D.C.

Quantifying the Present and Predicting the Past: Theory, Method, and Application of Archaeological Predictive Modeling; Bureau of Land Management, U.S. Department of the Interior, Washington, D.C. 1987.

Miscellaneous Guidance and Readings

Appendix K, Archaeological Impacts. In CEQA: California Environmental Quality Act Statutes and Guidelines. Office of Planning and Research, Office of Permit Assistance, Sacramento, California,
1986.

Scholars as Contractors. William J. Mayer-Oakes and Alice W. Portnoy, editors. Cultural Resource Management Studies. National Park Service, U.S. Department of the Interior, Washington, D.C. 1979.

Scholars as Managers, or How the Managers Can Do It Better. Alice W. Portnoy, editor. National Park Service, U.S. Department of the Interior, Washington, D.C. 1979.

Guidelines for Cultural Resource Management (CRM) Reports. San Bernardino County Archaeological Information Center, San Bernardino, California.

California Archaeological Inventory Handbook for Completing An Archaeological Site Record. California Office of Historic Preservation, Sacramento, California. 1989.

California Archaeological Site Inventory Information Center Procedural Manual. California Office of Historic Preservation, Sacramento, California.

California Archaeological Resource Identification and Data Acquisition Program: Sparse Lithic Scatters. California Office of Historic Preservation, Sacramento, California, 1988.

V.   Undertaking Information/Introduction (page 4 of ARMR Guidelines)

   A. Identify the contracting institution, contract and permit numbers, etc.
   B. Explain why the study was conducted.
   C. Describe the undertaking (include maps).
   D. Include a schedule for the undertaking.
   E. Identify the geographical limits of ARM study area.
   F. Describe how personnel were organized and list participants (qualifications in appendix).

VI.   Setting (page 4)

   A. Natural Setting (e.g., landforms, geology, soils, flora, fauna; current land use).
   B. Cultural Setting (include records and literature search results).

VII.   Research Design (page 6)

   A. Discuss the theoretical basis of the proposed research.
   B. Summarize previous research.
   C. Present testable hypotheses or state the research goals.
   D. Identify the test implications of the hypotheses or expected archaeological information.

VIII.   Methods (page 6)

   A. Present definitions for archaeological resource types.
   B. Describe the methods employed and map the areas investigated.
   C. Indicate where collected materials, photos, etc., are curated.

IX.   Report of Findings (page 8)

   A. Archaeological Resource Inventory Reports
       1. Present results (list resources present or absent).
       2. Include site records and location maps in confidential appendices.

   B. Archaeological Excavation Reports
       1. Describe the physical context of the archaeological deposit.
       2. Describe archaeological features, artifacts, materials (ecofacts).
       3. Describe the discovery, examination, and disposition of human remains.

X. Discussion/Interpretation (page 12)

   A. Discuss results of the investigation as they relate to specific research design items.
   B. Discuss results of the study in terms of general research objectives.

XI.   Management Considerations (page 12)

   A. Inventory Reports
       1. Identify the management status of resources identified during the study.

race, color, national origin, age or handicap. Any person who believes he or she has been discriminated against in any program, activity, or facility operated by a recipient of Federal assistance should write to: Director, Equal Opportunity Program, U.S. Department of the Interior, National Park Service, P.O. 37127, Washington, D.C. 20013- 7127.