CUL-4

Cultural Resources Monitoring and Mitigation Plan

Rice Solar Energy Project

Prepared for

Solar Reserve, LLC

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Acronyms and Abbreviations

ACC	air-cooled condenser
AFC	Application for Certification
AGF	Army ground forces
Applicant	Solar Reserve, LLC
ARMR	Archaeological Resource Management Report
ATSF	Atchinson, Topeka, and Santa Fe
BLM	U.S. Bureau of Land Management
CAMA	California-Arizona Maneuver Area
CD	Commission Decision
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
cm	centimeter(s)
COC	condition of certification
CPM	Compliance Project Manager
CRA	Colorado River Aqueduct
CRHR	California Register of Historical Resources
CRM	Cultural Resources Monitor
CRMMP	Cultural Resources Mitigation and Monitoring Plan
CRR	Cultural Resources Report
CRS	Cultural Resources Specialist
Discovery	inadvertent discovery
DPR	Department of Parks and Recreation
DTC	Desert Training Center
DTCCL	Desert Training Center California-Arizona Maneuver Area Cultural Landscape
EIC	Eastern Information Center

FDRP	feature data recovery plan
FS	Field Specimen
HCl	hydrochloric acid
kV	kilovolt(s)
LORS	laws, ordinances, regulations, and standards
MCR	Monthly Compliance Report
MEC	munitions and explosives of concern
mm	millimeter(s)
MW	megawatt(s)
NRHP	National Register of Historic Places
OHP	California Office of Historic Preservation
PHA	Project Historical Archaeologist
PRM	Paleontological Resources Monitor
PSSC	Palm Springs-South Coast
Rice AAF	Rice Army Air Field
ROW	right-of-way
RSE	Rice Solar Energy, LLC
RSEP	Rice Solar Energy Project
SA	Staff Assessment
SHPO	State Historic Preservation Officer
SPRR	Southern Pacific Railroad
STG	steam turbine generator
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
UXO	unexploded ordnance
WEAP	Worker Environmental Awareness Program
Western	Western Area Power Administration

SECTION 1

Introduction

Rice Solar Energy, LLC (RSE) has prepared this Cultural Resources Mitigation and Monitoring Plan (CRMMP) in compliance with Condition of Certification CUL-4 as set forth in the California Energy Commission's Final Decision for the Rice Solar Energy Project (RSEP). The CRMMP explains how the project owner will comply with and how the Cultural Resources Specialist (CRS) will implement the U.S. Bureau of Land Management (BLM) and California Energy Commission's (CEC) cultural resources conditions of certification (COCs) as set forth in both the CEC Final Decision and the Final Environmental Impact Report prepared and issued jointly by Western Area Power Administration and the BLM.

The purpose of the CRMMP is to lay out a detailed program of mitigation for direct and indirect impacts on cultural resources during all ground-disturbing phases (including but not limited to preconstruction site mobilization; construction ground disturbance; construction grading, boring, and trenching; construction; and landscaping and maintenance) of the Rice Solar Energy Project (RSEP or project) by providing for the identification, evaluation, treatment, and protection of any cultural resources that are affected by or may be discovered during the construction of the power plant and the associated linear facilities (Figure 1-1). Cultural resources are defined as anything made or affected by human beings or the remains thereof, as well as human remains. For the purposes of this CRMMP the terms "finds," "cultural resource," "cultural material," "discovery," and "cultural resource materials" are used interchangeably. Types of cultural resources will be consistent with California Code of Regulations, Title 14, Chapter 11.5, section 4852(a), including archaeological and historical objects, sites and districts, historic buildings and structures, cultural landscapes, and sites and resources of concern to local Native American or other ethnic groups.

The CRMMP provides procedures to be followed to ensure that impacts on cultural resources will not occur without mitigation that would reduce the impacts to less than significant. The measures that would be implemented include:

- Training workers to recognize cultural resources
- Specific measures to avoid or minimize impacts to cultural resources (flagging, monitoring, etc.)
- Prescribed actions to be taken in the event that unanticipated cultural materials are discovered during construction, or known resources are impacted in an unanticipated manner
- Treatment protocols for Rice Army Air Field (Rice AAF) and Camp Rice features
- Treatment protocols for any cultural resources that may be exposed during project construction
- Treatment of any discovered human remains in accordance with state law

Although this CRMMP discusses all of the Cultural Resources COCs, the research plan for additional feature recording at Rice AAF/Camp Rice required under COC CUL-9 will be provided in a stand-alone document.

Appendix A of the CRMMP includes the final Conditions of Certification related to cultural resources. Appendix B contains resumes for the cultural resources team, consisting of the CRS, the Alternate CRS and the Project Historical Archaeologist (PHA). The daily monitoring log form and certification of completion of Worker Environmental Awareness Program (WEAP) training form are provided as Appendix C and Appendix D, respectively. The CRMMP also includes:

- A description of the RSEP, associated linear routes, adjacent areas, and ancillary areas
- A brief summary of known cultural resources in and immediately adjacent to the project or cultural resources that might be affected by the project, including all cultural resources that CEC staff identified in the Staff Assessment (SA) and CD, and a map showing the cultural resources in relation to the project and appurtenant facilities
- A research design tailored to the local environment, prehistory, and history, pursuant to the *Guidelines for Archaeological Research Designs* (California Office of Historic Preservation [OHP], 1991)
- A monitoring plan to be employed throughout the subsurface construction and landscaping phases of the project, including protocols to be followed during routine monitoring and during discovery situations, where and when Native American observers may be required, and agency reporting requirements (reductions in planned monitoring to be subject to Compliance Project Manager [CPM] approval)
- A description of all avoidance measures such as flagging or fencing, and the time frames during which these measures would be required to protect cultural resources
- A statement of recording procedures for newly discovered cultural resources
- A statement of policy for the collection, retention, and disposal of cultural materials and archaeological records
- A statement that all cultural materials retained will be prepared in accordance with the requirements of an identified, qualified curatorial facility and that the project owner will encumber all associated expenses for the curation of the materials at San Bernardino County Museum (760) 291-0370) and is approved as Appendix E.
- A statement that the CRS and PHA have access to or ability to provide equipment and supplies necessary for mapping, photography, and recovery of any cultural resources that may be discovered
- Reporting requirements if cultural materials are discovered

Any discussion, summary, or paraphrasing of the COCs in this CRMMP is intended as general guidance and as an aid to the user in understanding the COCs and their implementation. The COCs, as written in the CEC Final Decision, shall supersede any summarization, description, or interpretation of the COCs in the CRMMP. The Cultural Resources COCs, set forth in the CD, are contained in Appendix A.

Insert Figure 1-1

SECTION 2

Project and Area Description

Rice Solar Energy, LLC (Applicant) proposes to construct a solar energy project in southern California's Mojave and Colorado Desert transitional zone, in an unincorporated area of eastern Riverside County, immediately south of SR 62 at milepost 109 about 1 mile east of the junction with Blythe-Midland Road. The nearest active residence and permanent settlement is Vidal Junction, approximately 15 miles northeast, at the junction of SR 62 and US Route 95. To the west, the nearest residences and permanent settlement is approximately 17 miles away at the Metropolitan Water District's Iron Mountain Pumping Plant. The nearest town offering significant services is Parker, Arizona, approximately 32 road miles east. Blythe, California is 40 miles south via Blythe-Midland Road. Twentynine Palms, California, is 75 miles west. In addition to SR 62, nearby infrastructure includes the Arizona-California Railroad and the Colorado River Aqueduct (CRA), both of which run east-west just north of SR 62 and just north of and within 600 feet of the northern boundary of the RSEP.

The RSEP is located within a larger, private holding that is 3,324 acres (the ownership property). This holding includes portions of Section 24 and 25, Township 1 South, Range 20 East, and all of Sections 19, 20, 29 and 30, Township 1 South, Range 21 East, San Bernardino Base and Meridian. There are six assessor's parcel numbers that make up the ownership property: 801-042-004, 801-062-012, 801-070-003, 801-070-004, 801-100-005; and 801-100-006.

The RSEP proposes to construct a 150-megawatt (MW) concentrating solar thermal power project with a central receiver tower, sun-tracking heliostat field and an integral thermal storage system using liquid salt as the heat transfer and storage medium. When electricity is to be generated, the heated salt will be routed to a steam generation system, which generates steam for use in a high-efficiency reheat steam turbine cycle. The RSEP has elected to use dry cooling technology for the steam turbine cycle using an air-cooled condenser (ACC). RSEP's maximum total project water consumption will be approximately 180 acre-feet per year.

The RSEP includes the following principal design elements:

- Up to 17,500, solar-tracking heliostats, or mirrors, each 672 square feet in area, in a circular array that will reflect solar energy to the solar receiver tower. The heliostats will be approximately 24 by 28 feet in size, and each will be mounted on a 12-foot-tall pedestal.
- A 538-foot-high concrete solar receiver tower with a 100-foot-tall solar receiver and 15-foot crane (for a total height of 653 feet).
- A liquid salt circulation and storage system featuring hot (approximately 1,050°F) and "cold" (approximately 550°F) salt storage tanks, capable of storing 70 million pounds (4.4 million gallons) of liquid salt (sodium nitrate/potassium nitrate mixture).

- A net 150-MW single condensing steam turbine generator (STG) system and associated equipment.
- A 20-cell ACC for cooling of the steam turbine exhaust.
- A 10.0-mile-long generation tie-line that will connect with the Western Area Power Administration's (Western) Parker-Blythe transmission line. The new facilities will be constructed to design standards that allow operation at 230 kilovolts (kV) (the design rating of Western's existing system). The new facilities will be operated at the voltage level of Western's system, currently 161 kV, which may be upgraded to 230 kV in the future. The generation tie-line will be constructed partly on federal land and partly on private land, and will require construction of 4.6 miles of new unpaved access road and use of 5.4 miles of existing dirt roads.
- A new interconnection substation (currently estimated to be approximately 300 feet by 400 feet) located at the point of interconnection with Western's existing transmission line.
- An onsite switchyard to step up power from the STG for transmittal on the generator tie-line to the interconnection substation.
- Two new onsite wells for industrial water use and a water treatment system to provide water that will be treated for both domestic and process use.
- Three evaporation ponds, approximately 5 acres each, to process wastewater discharge from the water treatment system and oil/water separator.
- A 30-acre stormwater detention pond basin area consisting of the portion of the heliostat field along its southern boundary and the southern boundary road berm.
- Two diesel fire-water pumps and two emergency diesel generator sets for backup emergency power supply.

The RSEP cultural resources survey was conducted in September 2009 (Fergusson, 2009). The study area included a block survey of a 3,324-acre parcel of ownership property, a 200-foot-wide buffer around the property (226 acres), a 400-foot-wide by 10.0-mile-long generator tie-line corridor survey area (of which 9.2 miles, or 446 acres, are located outside the project parcel), and a 300-foot x 400-foot electrical substation survey area, including a 100′ buffer (5.7 acres). The project parcel survey is entirely on private land while the generator-tie line crosses land managed by the BLM (Palm Springs-South Coast [PSSC] Field Office) and two small private holdings.

The cultural resources investigations were conducted in support of an Application for Certification (AFC) for submittal to the CEC. The AFC process is equivalent to a California Environmental Quality Act (CEQA) process, but requires a more rigorous review of the potential impacts. Following the initial filing of the AFC, some project components were reconfigured or moved, necessitating additional pedestrian inventories as per Appendix B of the CEC's Siting Regulations (Title 20 California Code of Regulations). A detailed description of the project features can be found in the project's Final Decision.

SECTION 3

Project Implementation Sequence and Schedule

This chapter describes the sequence of project-related tasks as they relate to cultural resources. Table 3-1 provides a schedule of tasks for the pre-construction, construction, and post-construction phases of the project.. The tasks listed in Table 3-1 are in the approximate sequence in which they will occur and give approximate times needed to complete each task, where known. A discussion of construction sequences follows, and methods for accomplishing tasks are further discussed in subsequent sections.

3.1 Pre-construction Phase Tasks

Pre-construction phase tasks related to cultural resources include designating and obtaining approval of a production company for the Historic Interpretive Documentary; identifying and submitting resumes for the CRS, alternate CRS, PHA, and Cultural Monitors; submitting and obtaining BLM and CEC approval for a project CRMMP; preparing a data recovery plan for Rice AAF and Camp Rice; preparing and obtaining approval of the WEAP; submittal of a conceptual plan for a historic interpretive roadside stop; and contribution to the Desert Training Center California-Arizona Maneuver Area Cultural Landscape (DTCCL) Program.

3.2 Construction Phase Tasks

Construction phase tasks include providing onsite cultural resources awareness training to all new employees during their first week of employment, keeping current with the project schedule, monitoring for cultural resources when necessary, evaluating any cultural resources discovered during construction, and mitigating any impacts on cultural resources if avoidance is not possible. Additional construction phase tasks include providing daily statements to the BLM's Authorized Officer and CEC CPM that "no cultural resources over 50 years were discovered" (assuming there were no discoveries); notifying the BLM's Authorized Officer and CPM within 24 hours of any discoveries not subject to prescriptive treatment; video production of a historic interpretive documentary; maintaining daily logs, weekly summaries; and preparation of monthly compliance reports of all cultural resources monitoring and mitigation activities at the project site.

3.3 Post-construction Phase Tasks

Post-construction phase tasks include completing test investigation or data recovery analysis and reports if buried sites are discovered during construction, preparing artifacts and other cultural materials for curation, transferring these materials to the approved curation facility, and preparing the final Cultural Resources Report (CRR) as a final report on all cultural resources management activities for the project.

After the completion of construction, non-routine ground-disturbing activities would trigger the construction requirements identified in Table 3-1. Routine ground-disturbing activities would include the excavation of an existing project feature (for the purpose of repair or replacement in-kind) where soils were previously disturbed. Non-routine ground-disturbing activities that involve a change in the project design would require the project owner to request approval for these activities, consistent with Condition of Certification COMPLIANCE-15 by submitting an amendment petition request. This request would require an analysis by CEC staff to determine impacts and the appropriateness of any proposed mitigation. Staff also could recommend additional mitigation. In the unlikely event that an amendment petition is required, the Applicant would propose implementing the existing Cultural Resource COCs (CUL-1 through CUL-14) for any ground-disturbing activity that would occur in culturally sensitive soils. It is only under these circumstances that Cultural Resources COCs CUL-1 through CUL-10 and CUL-12 would continue to apply during the operations phase of the RSEP's life; CUL-11 stipulates that is shall be upheld throughout the commercial life of the project.

At the end of the RSEP's useful life or for any plant closure (planned, unplanned, or temporary), the Applicant would submit a closure plan consistent with Condition COMPLIANCE-12, COMPLIANCE-13, or COMPLIANCE-14, as applicable. The Applicant would propose to implement the existing Cultural Resource COCs (CUL-1 to CUL-14) for any closure ground-disturbing activity that would occur in culturally sensitive soils. It is only under these circumstances that Cultural Resources COCs CUL-1 through CUL-10 and CUL-12 would continue to apply during the closure phase of the RSEP's life. Cultural Resource COC CUL-11 will be upheld throughout the commercial life of the project and CUL-13 and CUL-14 will have been satisfied during completion of construction of the project.

TABLE 3-1
Schedule of Pre-construction, Construction Phase, and Post-construction Tasks

Timing	Task
Pre-mobilization Phase Tasks	
14 days after receipt of invoice from the Energy Commission or BLM	Project owner shall contribute to the DTCCL Program (CUL-1).
15 days prior to filming	Project owner shall provide qualifications to the Executive Director of the General Patton Memorial Museum of the proposed production; a copy of the of the scope of work shall be submitted to the CPM along with the resume of the proposed production adviser, for review and approval (CUl-13).
90-30 days before start of site mobilization	Provide CRMMP to CPM for approval (CUL-4).
30 days before start of site mobilization	Provide a copy of an agreement with a qualified curation facility to accept cultural materials from the project (CUL-4).
20 days before start of site mobilization	Letter to the CPM indicating the project owner will pay curation fees (CUL-4).
Prior to site mobilization	Previously recorded resources along Western's Parker Dam-Blythe Transmission Line No. 2, near the northwestern project boundary, shall be flagged and given a 10-meter-wide protective buffer (CUL-12).
Prior to site mobilization	Initial footage shall be taken of the remains of the Rice AAF and Camp Rice facilities, by the CPM-approved production company (CUL-13).

TABLE 3-1
Schedule of Pre-construction, Construction Phase, and Post-construction Tasks

Timing	Task
Pre-construction Phase Tasks	
120-75 days before ground disturbance	Designate a CRS and alternate CRS and obtain CPM approval (CUL-2).
65 days before start of data recovery (prior to ground disturbance)	Confirm that CRS and PHA will be available for onsite work and will implement the conditions of certification (CUL-2).
115-60 days before ground disturbance	Project owner to provide Staff Assessment, CD, project documents, maps, and drawings of final footprint of the power plant and linears to the CRS and CRMs in consultation with the CPM (CUL-3).
90 days before ground disturbance	Project owner shall notify CPM that mapping and upgraded in-field artifact analysis has ensued for Rice AAF and Camp Rice features (CUL-9).
60 days before ground disturbance	Project owner shall submit to the CPM for review and approval feature records and a letter report with evaluation results of Rice AAF and Camp Rice features. Ground disturbance can begin after the CPM approvals (CUL-9).
30 days before ground disturbance	The CPM will provide an electronic copy of the daily monitoring log form to the CRS (CUL-7).
30 days before ground disturbance	Project owner shall submit conceptual plans for the Roadside Stop to Western, BLM, and Riverside County for review and comment, and to the CPM for review and approval. (CUL-11).
20 days before data recovery (prior to ground disturbance)	Designate and obtain CPM approvals for field crew (CUL-2).
30 days before ground disturbance	Provide CPM with documentation of CRS's, PHA,'s and CRM's authority to halt construction if previously unknown cultural resources are encountered during construction. The CRS is to notify the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday (CUL-8).
30 days before ground disturbance	Prepare the text and graphics for the WEAP training video and brochure, submit to the CPM for approval (CUL-6).
20 days before ground disturbance	Designate the CRMs, document their qualifications, and provide a letter to the CPM, signed by the CRS naming the CRMs and stating that they meet the qualifications stated by CUL-2 (CUL-2).
15 days before ground disturbance	Provide to the project owner a WEAP Training Acknowledgement form for each WEAP trained worker to sign (CUL-6).
Construction Phase Tasks	
15 days before ground disturbance for the phase	If the project is a phased project, provide maps and drawings for subsequent phases of work, if they have not already been provided, and written notification identifying proposed schedule for each project phase to the CRS, PHA and CPMs (CUL-3).
15 days before ground disturbance for a change	Provide maps and drawings for changes to the project to the CRS, PHA and CRMs (CUL-3).
10 days in advance	Designate a new CRS if replacement is necessary and submit qualifications to the CPM for approval (CUL-2).
5 days before a new CRM starts work	Identify replacement CRMs and provide their names and a letter signed by the CRS stating that the CRMs meet the qualifications identified in CUL-2, and send to the CPM (CUL-2).

TABLE 3-1
Schedule of Pre-construction, Construction Phase, and Post-construction Tasks

Timing	Task
Monthly	Provide in the MCR the WEAP Training Acknowledgement forms of workers who have completed the training in the prior month and a running total of all persons who have completed the training to date (CUL-7).
Monthly	While construction monitoring is ongoing, include in the MCR any new DPR 523A forms completed for finds treated prescriptively (CUL-7).
Weekly	Provide a schedule of construction activity to the CRS (CUL-3).
Daily	Provide a statement via email to the CPM indicating that no cultural resources older than 50 years have been found that day (CUL-7).
Ongoing during construction	Maintain daily monitoring logs and prepare weekly summaries of monitoring and mitigation activities for inclusion in the MCR (CUL-7).
24 hours before implementing a change in monitoring level	Provide documentation justifying any change in the monitoring level. No reduction in the monitoring level may occur without approval from the CPM (CUL-7).
24 hours prior to reducing or ending daily reporting	Submit to the CPM, for review and approval, documentation detailing the justification for reducing or ending daily reporting (CUL-7).
Within 24 hours of a discovery	Halt construction in the vicinity of the find and notify the CPM. The CRS is to notify the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday (CUL-8).
24 hours following an incident of non-compliance	CRS and/or project owner shall notify the CPM and recommend corrective action to resolve the problem. When resolved, CRS shall write a report for the next MCR (CUL-7).
24 hours following notification of a cultural resources find or 48 hours following the completion of data recording or data recovery, as determined by the CPM	Submit a DPR 523 primary form for a new cultural resources find to the CPM (CUL-8).
48 hours after a Native American cultural material discovery	CRS is to notify consulting Native American groups who expressed interest of notification (CUL-8).
Within 15 days of Native American response	Submit to the CPM copies of any comments or information received from Native American consultants (CUL-7).
Within 30 days of a Native American cultural material discovery	Submit to CPM copies of information transmittal letters sent to consulting Chairpersons of the Native American (CUL-7).
30 days prior to start of production editing	Project owner shall submit first draft script, storyboard, and description of other project related elements to the DTCCL PI-Historian, production advisor, and Executive Director of the General Patton Memorial Museum for review and approval (CUL-13).
Within one year from start of construction	Project owner shall submit final plans for the Roadside Stop to Western, BLM, and Riverside County for review and comment, and to the CPM for review and approval (CUL-11).
90 days before construction is completed	Draft design proofs of the Interpretive Materials brochure shall be submitted to the Executive Director of the General Patton Memorial Museum for review and comment, and to the CPM for review and approval (CUL-14).

TABLE 3-1
Schedule of Pre-construction, Construction Phase, and Post-construction Tasks

Timing	Task
Post-construction Tasks	
180 days after completion of ground disturbance (including landscaping)	Prepare and submit the final CRR to CPM for approval (CUL-5).
90 days prior to start of commercial operation	Project owner shall submit the final cut of the Historic Interpretive Documentary to the DTCCL PI-Historian, production advisor, and Executive Director of the General Patton Memorial Museum (CUL-13).
30 days prior to start of commercial operation	Project owner shall submit final design proofs of the interpretive materials brochure to the Executive Director of the General Patton Memorial Museum for review and comment, and to the CPM for review and approval (CUL-14).
30 days prior to start of commercial operation	Roadside Stop construction shall be completed and photographic proof of completion sent to the CPM for review and approval (CUL-11).
30 days after requesting suspension of construction activities, if construction is to be suspended	Submit the draft CRR to the CPM for review and approval (CUL-5).
10 days prior to start of commercial operation	Roadside Stop shall be made accessible to the public and shall be maintained by the project owner for the life of the project (CUL-11).
Concurrent with start of commercial plant operations	The final approved documentary shall be provided to the General Patton Memorial Museum in a high definition format, along 500 DVD copies and 100 BluRay copies, along with a letter confirming that the Museum shall exclusively retain all reproduction and sales rights. Ten DVD copies and five BluRay copies shall be provided to the BLM, Western, and the CPM (CUL-13).
30 days from start of commercial plant operation	Project owner shall submit the final digital/electronic template of the interpretive materials brochure along with 1,000 copes for public distribution, to the Executive Director of the General Patton Memorial Museum. The BLM, CPM, and Western shall also receive the digital/electronic template of the brochure (CUL-14).
10 days after CPM approval of CRR	Provide documentation to the CPM that copies of the CRR were provided to SHPO, CHRIS, curation facility, and Tribal Chairpersons (CUL-5).
Annually from the start of RSEP commercial operation to present	Project owner shall include in the Annual Compliance Report a summary of estimated public visitation, operating and maintenance issues, proposed maintenance and improvements with schedule of completion, a log of all completed maintenance and improvements to the Roadside Stop (CUL-11).

Notes:
CHRIS = California Historical Resources Information System
CRM = Cultural Resources Monitor
DPR = Department of Parks and Recreation
MCR = Monthly Compliance Report
SHPO = State Historic Preservation Officer

SECTION 4

Previous Research and Cultural Resources Identified within the Project Area

A cultural resource archival literature search for the RSEP site was performed on April 23, 2009, at the California Historical Resources Information System (CHRIS) Archaeological Information Center. The data repositories for this project area are housed at the Eastern Information Center (EIC), located in the Department of Anthropology, University of California, Riverside and the San Bernardino Archaeological Information Center located at the San Bernardino County Museum. The CHRIS literature and records review was conducted for the entire RSEP area and included a review of all recorded archaeological sites and all known cultural resource survey and excavation reports. This search included a review of previously recorded sites and cultural resource surveys within a 1-mile radius of the project and a 0.5-mile radius around the generator tie-line and substation area of potential effect. CH2M HILL also examined the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), California Historical Landmarks, California Points of Historical Interest, and historic maps. The following historic maps were reviewed: War Department, Corps of Engineers, US Army, Rice, California 1944, 1:62,500; U.S. Geological Survey (USGS) Rice, California 1954, 1:62,500; USGS Rice, California 1983 1:24,000; and USGS Big Maria Mts. Quadrangle, California-Arizona 1951, 1:24,000. Additionally, inquiries were made to the PSSC and Needles BLM field offices for relevant background data for the survey area.

The CHRIS literature search indicated that seven cultural resource investigations have been conducted within the APE or 1-mile radius of the project area; the majority of the RSEP area had not been previously surveyed for cultural resources as only three of the seven studies had been conducted within the APE. Five resources were documented within the 1-mile radius; Camp Rice (P-36-10526), a historic site that falls within the Camp Rice boundaries (P-36-16932, CRA (P-36-10521), State Route 62 (P-36-10525), and the Atchinson, Topeka, and Santa Fe Railroad (P-36-9853).

Additional research included a resource specific study at the General Patton Memorial Museum on July 30, 2009, by CH2M HILL. Further archival searches were conducted by the CEC Staff which provided additional findings (CEC. 2010a).

CH2M HILL contacted the California Native American Heritage Commission (NAHC) on August 31, 2009, to request that the NAHC search its Sacred Lands File to determine whether there were any reported Native American cultural resources in the project area of analysis, and to request that the NAHC provide a list of Native American contacts that may have knowledge of cultural resources in that area. The NAHC responded on September 9, 2009, and provided a list of Native American contacts for the project area. A search of the Sacred Lands File failed to indicate the presence of Native American cultural resources within the proposed project area. All the groups and individuals on the list provided by the NAHC were contacted regarding the project and invited to comment on the project.

Western Area Power Administration and BLM PSSC Field Office staff sent out letters initiating consultation with potentially affected tribes on January 26, 2010.

4.1 Previously Known Resources

According to the information available in the CHRIS files, three previous cultural resource studies, which are primarily cultural resource survey reports, have been prepared within the RSEP APE; four additional studies have been prepared within a 1-mile radius of the project area and within 0.5 mile of the proposed linears. Three resources were found to be within the 1-mile radius and one resource is located within the APE. The resources documented in the study area are discussed in further detail following the resource summary table found below.

TABLE 4-1
Literature Search Result for Known Sites Within the Study Area

Site Era	Site Type	Primary No.
Outside of the APE but Within a One-mile Radius		
Historic	Colorado River Aqueduct	P-36-10521
	State Route 62	P-36-10525
	The Atchinson, Topeka, and Santa Fe Railway	P-36-9853
Within the APE		
Historic	Camp Rice	P-36-10526
Historic	Rice AAF	

4.1.1 P-36-10526 Camp Rice (within APE)

Camp Rice was a U.S. Army Divisional Camp associated with the Desert Training Center/California-Arizona Maneuver Area (DTC/CAMA). In addition to Camp Rice, one small historic site was recorded as a component of Camp Rice, and is actually within the boundaries of Camp Rice although it was given a separate site number (P-36-16932). This was apparently the result of the same site being recorded in two different counties (Riverside and San Bernardino) and reported to different CHRIS Information Centers. Camp Rice partially extends into the eastern edge of the RSEP project parcel, but outside of the RSEP project fence line.

4.1.2 Rice Army Air Field (within APE)

Rice AAF is within the RSEP project fence line and is discussed at great detail below. The Rice AAF had not been previously recorded and as part of the RSEP cultural resources survey, it was recorded as a separate site from Camp Rice, although a Primary number or Trinomial has not yet been assigned.

4.1.3 P-36-10521 Colorado River Aqueduct (outside of APE)

The CRA, which remains in use, runs from Lake Havasu on the Colorado River to Lake Mathews south of Riverside. It was a Works Progress Administration project with initial land surveys conducted as early as 1928, and which first delivered water to Los Angeles in 1941.

4.1.4 P-36-10525 State Route 62 (outside of APE)

SR 62 runs parallel with the CRA from Parker, Arizona, to Palm Springs, California. The road was likely in use during construction of the CRA, but the first indication that the road became a permanent route was in 1943, during the Army's use of the DTC/CAMA.

4.1.5 P-36-9853 The Atchinson, Topeka, and Santa Fe Railway Parker Cutoff (outside of APE)

The Atchinson, Topeka, and Santa Fe (ATSF) Railway Parker Cutoff (now the Arizona-California Railroad) runs in the same corridor as SR 62 and the CRA. The ATSF was one of the first transcontinental railroads in America, was chartered in Kansas in February 1859 and broke ground in Topeka in October 1868. The ATSF's first section of track was opened on April 1869 and it was constructed to Colorado by March 1876. The ATSF extended west into San Diego by the 1880s. The line that was to run from Parker, Arizona, through Rice (then called Blythe Junction) was completed in 1907.

4.2 Newly Recorded or Updated Resources

4.2.1 Archaeological Field Survey

A cultural resources survey of the originally proposed RSEP APE was conducted between August 31 and September 16 2009, by CH2M HILL CRS Aaron Fergusson, M.A., RPA and an independent contractor historic archaeologist Matt Bischoff; these two staff meet the qualifications for Principal Investigator stated in the Secretary of the Interior's standards and guidelines for archaeology and historic preservation (USNPS, 1983). Additional field crew included Humphrey Calicher, Dan Ewers, Ken Hazlett and Ryan Rolston.

The survey was a non-collection survey; all artifacts were mapped and photographed in place. No artifacts were collected by CH2M HILL. Due to the known use of the area for live-fire military training, ordnance materials and unidentifiable military items were avoided during the survey when observed, for crew safety. The survey crew was escorted by a trained UXO technician during surveys within areas determined to be sensitive for unexploded ordnance (UXO), including the southern portion of the generator tie-line located in the Rice Valley Training Area, a known live-fire range used during World War II and the 1960s. Some ordnance items were observed in this area, including 75-mm shell cases, ordnance fragments, 105-mm mechanical timers, and .30- and .50-caliber cartridge cases and projectiles. For safety, these materials were not approached or recorded. For further information on UXO management, please refer to the UXO Identification, Training, and Report Plan prepared for Condition of Certification WASTE-4.

The field survey included the RESP site and the area that encompasses the rights-of-way for the new generator tie-line that will interconnect the project to Western's 161/230-kV

Parker-Blythe transmission line approximately 10 miles southeast of the proposed solar site. The new tie-line will be located primarily on BLM land and will require construction of 4.6 miles of new unpaved access road and use of 5.4 miles of existing dirt roads to provide construction and maintenance access. In addition, a new 300-foot by 400-foot substation will be constructed at the point of interconnection. In total, the field survey was comprised of an inventory of the 3,324-acre project ownership property, a 200-foot-wide buffer around the ownership boundary (an additional 226 acres), the 9.2-mile long portion of the 10.0-mile and 400 foot-wide generator tie-line survey area that lies outside the ownership property boundary (446 acres), and a 500-foot by 500-foot area for the interconnection substation and its 100-foot-wide buffer (three sides only; the fourth side is in the generator tie-line survey area) (9.6 acres). The total area surveyed for the RSEP was 4,005.6 acres.

The field efforts to identify the cultural resources in the proposed project area of analysis included a geoarchaeology study and one intensive survey. Two new cultural resources were found in the project area of analysis: the Rice AAF and a historic road segment. During this investigation, Camp Rice DPR records were updated. On the basis of background research and the results of the field efforts, the total cultural resources inventory for the project area of analysis included three built-environment resources.

The survey for prehistoric and historic archaeological resources was conducted using pedestrian transects spaced no more than 15 meters apart. Much of the ground surface within the solar collector field consists of the eroded remains of concrete and asphalt or oil runways and roads of the former Rice AAF. Subsurface exposures, including rodent burrows and cut banks, were examined. Transect spacing, observation strategies, and sparse vegetation allowed for the detection of small sites (fewer than five artifacts or features).

Because there are no longer any standing structures associated with the former Rice AAF, the survey focused on existing structural remains that include building foundations and features. Further interpretation of these features will emphasize literature review, archival records and photographs, and other sources of historical information to develop a historic context within which the Rice AAF can be thoroughly documented and evaluated. The BLM's developed context for the DTC/CAMA (Bischoff, 2000) played an integral role in directing the research, as did the direct participation of Matt Bischoff, author of the BLM context statement, in assessing existing conditions and evaluating historical archaeological deposits, and assisting with the recording of the Rice AAF and Camp Rice features and artifacts.

The remains of the Rice AAF were newly recorded on DPR 523 forms with appropriate supporting forms as needed. The previously prepared DPR form for Camp Rice (P-36-10526) was updated to reflect artifact concentrations and features that could be associated with Camp Rice. The *Handbook for Completing an Archaeological Site Record* (OHP, 1989) and *Instructions for Completing the California Historic Resources Inventory Form* (OHP, 1990a) were followed in preparation of the DPR forms.

Surface visibility for the overall project area was excellent (90 to 100 percent), depending on amount of surface vegetation. Small amounts of modern trash dating from the 1960s were noted during the survey, including plastic, glass, and aluminum cans, which increased in frequency near SR 62. Onsite soils consist of sandy loams with basalt rock clasts of varying sizes. Even with the intensive use of this area for training during World War II, the desert

has seemingly mostly reclaimed this area. Oiled roads and concrete have eroded, and the roads, runways, taxiways, and concrete dispersal pads are covered in places with sand and sediments, where the vegetation (mostly bursage and creosote bush) has returned and is growing quite well. The runways appear obvious from the aerial photos, but on the ground they are barely distinguishable from the surrounding desert due to the recolonization by the normal native mix of creosote bush and bursage. The runway areas are densely regrown to the lighter-colored bursage and only sparsely to the darker-colored creosote bush.

The results of the survey are perfectly consistent with the historical records of World War II-era training use from 1942-1944. In fact, there is no evidence of any earlier occupation, and most of the later debris post-dates 1962 as evidenced from the aluminum pull top cans. Much of the historic debris consists of Army ration food containers including soldered evaporated/condensed milk cans, C-ration cans, clear glass quart-sized food jars, or bottle glass.

As stated earlier, the field team recorded Rice AAF as a previously unrecorded site and updated the existing Camp Rice DPR form with additional information regarding features and concentrations. The features recorded at Camp Rice lie outside the proposed RSEP fence line, but are within the boundary of the larger project parcel. All of the archaeological remains found are clearly associated with the Army's occupation of the area during World War II, so all finds were included in the DPR forms for either Rice AAF or Camp Rice. In total, 141 features and 98 artifact concentrations were recorded. Features and material observed included debris burn pits, building foundations, rock features, and earthen pits or berms, while concentrations included can dumps, can and glass dumps, and debris dumps.

No prehistoric resources of any kind were observed during the survey.

4.2.2 Field Survey Results

4.2.2.1 Rice Army Air Field

The Rice AAF parcel boundary will cover approximately 4 square miles (~2,500 acres) and measures roughly 2 miles north-south, by 2 miles east-west (Figure 1-1). The entire site is located within the ownership property boundary and most of it is within the project parcel. The RSEP fence line will encompass much, but not all, of the site. The Rice AAF site consists of three major areas: (1) the administration area, (2) runways, and (3) dispersal pads. The administration area is located at the north end of the site, just south of SR 62 and consists of a small road network, with the remains of former buildings, now restricted to concrete slabs and footings. Interpretation has led to their identification as the Administration Building, Base Operations Building, Barracks and Mess buildings, etc. At the lower center of the administration area, just north of the runway area, is a well-preserved concrete pad 800 feet long and 300 feet wide. It is likely (based partly on discussions with World War II veterans) that this served as a parade ground or deck for mustering and reviewing troops and equipment.

There are two runways at Rice AAF that are at right angles to one another and that are oriented northeast-southwest and northwest-southeast, respectively. The runways themselves are to be 5,000 feet long and 150 feet wide. The broader, formerly cleared areas adjacent to and surrounding the runways create a giant V-shaped, cleared area with two legs, each 545 feet wide. Where the legs meet at the 'V', they are 1.07 miles long (short

or inner edge) and 1.17 miles long (long or outer edge). As stated above, lighter-colored bursage has recolonized the runways to a density similar with that of the surrounding desert. Darker creosote bush, however, has recolonized only sparsely such that the runways are clearly visible on aerial photographs.

Each runway has a taxiway that parallels it to the south at a distance of about 700 feet. The taxiways are about 60 feet wide. Branching off of the taxiways are taxiway lanes that lead to 30 dispersal pads or "hard stands," 15 on each taxiway, that are about 50 feet square. The access lanes are of variable length, between 150 and 1,000 feet long, likely to prevent propwash from aircraft on adjacent stands from affecting activities or increasing maintenance problems, due to propeller-blown dirt and dust at neighboring stands. The distance between the lanes varies between 150 and 500 feet. Six of the dispersal pad lanes intersect other lanes at an angle, rather than branching directly from and perpendicular to, the main taxiways.

4.2.2.1.1 Features

The project field team recorded 128 features associated with the Rice AAF, including concrete building foundations, stone aerial markers, rock alignments, rock-lined pits, and other various pits. Detailed maps showing the feature locations and tables indicating their content are provided in the cultural resources technical report, which was provided during the licensing process and was submitted to the CEC, BLM, and Western separately under a request for confidentiality to protect the site from vandalism and unauthorized collecting.

The following is a summary of the most numerous types of features:

- **Pits**: There are 48 pit features on the Rice site. These include a large number of rock-lined pits and rock-lined trenches, wood-lined pits, septic pits, and burned debris pits. Many of the buildings have small (2-foot by 4-foot), wood-lined pits located just outside the building.
- **Concrete pads**: There are 27 concrete slabs or pads at the site, representing former buildings (most of the slabs) and a large parade ground. Some of these have anchor bolts or pipes sticking up out of the slabs. The largest concrete pad measures 870 feet by 300 feet and probably served as a parade ground or deck. From the size and features associated with the building foundations, the following building types were identified:
  - Base headquarters
  - Airfield Operations Building
  - Mess hall
  - Lavatories
  - 700 Series temporary buildings serving as barracks
  - Pump motor foundations and fuel storage tanks
  - Shower buildings
  - Storehouses
  - Officer's lavatory and shower building
  - Power or pump house
- **Rock piles:** There are six rock pile features at Rice AAF. These are up to 3-meter-diameter piles of the basalt rocks that are commonly available onsite and nearby.

- **Emplacements**: There are seven features recorded as emplacements. These are generally shallow pits with low embankments from 1 to 14 meters in length and width. Some are square, and open in one direction.
- **Rock alignments**: There are four features recorded as isolated rock alignments at Rice AAF. Many of the buildings also have rock-lined pathways leading from the road to the building, a common practice on military installations. The rocks used are locally obtained basalt. There are two areas of rock alignments that seem to delineate tent areas, likely for unit tents with possible insignias out of rock.
- **Airfield marker:** Near both runways are large, stone Xs made from basalt rocks, likely as an indication that the runways are closed.
- **Firing butt**: One of the airfield's dispersal pads faces directly into a large mound of dirt and likely served as a firing butt used for light testing of aircraft guns without having to take off. This particular dispersal pad faces away from the dispersal pad network.
- **Concrete footings**: One feature consists of an array of 33 small concrete footings in three rows of eleven footings each; these were probably footings for a barracks structure.

4.2.2.1.2 Artifact Concentrations

The field team recorded 39 artifact concentrations within the Rice AAF site boundary. These concentrations include Army ration can and glass dumps, dumps of burned ration debris, and construction debris. All of these are classified as debris scatter, can scatter, or burned debris scatter, except for two, which are classed as "construction debris" and consist of lumber, wire, plumbing, and plaster debris. All of the debris and can scatters contain cans. A few also contain glass debris, batteries, sheet metal, hardware cloth, or other metal debris. Detailed maps showing the artifact concentration locations and tables indicating their content are provided in the cultural resources technical report, was provided during the licensing process and was submitted to the CEC, BLM, and Western separately under a request for confidentiality to protect the site from vandalism and unauthorized collecting.

The following are artifact types that are present in the artifact concentrations:

- **Cans**: Types include key-opened meat and fish, C-ration, fuel, brake fluid, paint, hole-in-top condensed milk, sardine, beverage, coffee, fruit and vegetable cans, ammo box lid, and tobacco tins.
- **Glass**: Debris includes clear glass jars and jar fragments, melted glass, amber-colored and green-colored bottles and fragments, ketchup bottles, and Coca-Cola bottles and fragments.
- **Metal (other than cans)**: Debris includes metal strapping, nails, sheet metal, hardware cloth, metal poles, buckets, galvanized steel pipe, padlock, light bulb base, automotive leaf spring, wire spool, and hose clamp.
- **Other debris**: Includes batteries, rubber hose, ceramic plate fragments, charcoal, and plaster.

4.2.2.2 Camp Rice

Parts of Camp Rice are located within the RSEP project parcel (though not within the fenced project area). This area represents only a small portion of the entirety of Camp Rice, which is 3 miles long and just under a mile wide. The portion recorded for the RSEP survey, is an area at the west-southwest portion of Camp Rice, measuring at the widest, about 1,500 feet east to west and about 4,500 feet north to south. As can be seen on aerial photos, Camp Rice was a long, narrow, orderly layout of 20-foot-wide streets, in the peculiar pattern characteristic of most, if not all of the DTC/CAMA camps, of pairs of streets 100 feet apart, separated by larger gaps of about 800 feet (at Camp Rice). Based on historical photos, the larger open areas between the streets were spaces for rows of tents cities occupied by the troops. At Camp Rice, like the other camps (including nearby camps Granite and Iron Mountain), there is a central roadway that forms a semi-circle around a headquarters flagpole circle. The portion of Camp Rice on the RESP property is the extreme western end of the camp. There is no evidence of permanent structures or other significant features, other than roads. Along the roads, however, are debris scatters, dumps, and trash burning pits. In all, 13 features were recorded as part of Camp Rice. Detailed maps showing the feature locations and tables indicating their content are provided in the cultural resources technical report, which was provided during the licensing process and was submitted to the CEC, BLM, and Western separately under a request for confidentiality to protect the site from vandalism and unauthorized collecting.

All but two of the features are pits filled with debris, either burned or buried. The largest is 30 by 5 meters. The smallest is 0.2 by 0.5 meters. These pits have varying amounts of debris in them, mostly cans (hole-in-top, paint, milk, Army ration) and glass (ketchup, mason jars, Coca Cola bottles, amber, green, and clear fragments), with little other debris. The two features that are not pits include a capped well and an excavation interpreted as an emplacement about 30 feet in diameter, with a 50-centimeter (cm) high berm surrounding it (and 200 or so Army ration cans inside of it).

There are an additional 59 artifact concentrations in the portion of Camp Rice located within the RSEP boundary. Detailed maps showing the artifact concentration locations and tables indicating their content are provided in the cultural resources technical report, which was provided during the licensing process and was submitted to the CEC, BLM, and Western separately under a request for confidentiality to protect the site from vandalism and unauthorized collecting.

Some of the concentrations contain burned debris that has been dumped; however, most are simply locations where ration containers were dumped, often just off the side of roads. These vary in quantity from a few cans to more than 200, with many moderate-sized dumps of 10 to 50 cans, and contain the following:

- **Cans**: Types include square or rectangular meat (including cans marked “roast beef”), C-ration, paint bucket cans, hole-in-top condensed milk, tobacco tin, coffee, and fruit and vegetable cans.
- **Glass**: Debris includes clear glass jars and jar fragments, melted glass, amber-colored and green-colored bottles and fragments, and Coca-Cola bottles and fragments.

- **Metal (other than cans)**: Debris includes vehicle parts, metal strapping, steel cable, nails, wire, .50-caliber shell casings and their ammunition links, metal fragments, hacksaw blade, and hardware cloth rolls.
- **Other debris**: Includes batteries, fuse, shoe heel, yellow ceramic plate fragments, and charcoal.

4.2.2.3 Site Evaluation—Rice AAF and Camp Rice

Rice AAF and Camp Rice are long-abandoned facilities, with no remaining standing structures. Only dilapidated portions of the original runways, taxiways, dispersal pads, some concrete foundations, trash scatters, and dumps are still visible.

The DTC/CAMA was deactivated April 30, 1944, when the War Department dismantled the camps, gathered supplies, materials, and equipment, and shipped them to other military depots (BLM, 1986). Currently there are no buildings or structures remaining on any of the training camps, headquarters, or airfields. There are a limited number of artifacts remaining at these locations. The most notable of these include the altar of the camp chapel (Camp Young), rocks that outlined walkways and roads (various camps), and monuments erected during the training period to soldiers who died at the camps.

When the Army abandoned the Rice AAF and Camp Rice, they removed all salvageable buildings and materials, and anything that was not able to be moved or re-used elsewhere was either burned or buried. There are numerous indications of the burning of materials on site, including trash and construction materials. According to local residents, much of the area has been picked over by treasure hunters hoping to dig up and find materials buried by the Army. The looting of the site is evident, with indications of modern digging across both Camp Rice and the Rice AAF. Modern aluminum cans are frequently found in pits that also include historic debris, a likely indication that the pits are a result of modern digging.

The BLM recommended seven of the original eleven Army camps for listing in the NRHP in 1986. The only remnants of the camps are the roads and walkways, most covered by vegetation or washed away by water and wind. The interpretative plan developed to protect the camps describes plans to close areas to vehicular traffic, stabilize areas that have eroded, close areas to artifact collectors, clear away vegetation, erect interpretive plaques and prepare brochures for self-guided tours.

None of the airfields are included in this designation. Of the three airfields, only Rice is abandoned. Shavers Summit AAF has been renamed Chiriaco Summit Airfield and operates as a small local airfield. Desert Center AAF is also an active airfield; however, only one of its two air strips is being used. The other has been abandoned and is in disrepair.

To determine the NRHP eligibility of Rice AAF, both its historic significance and integrity must be assessed. Rice AAF is significant to our military history because it played an important role in training U.S. Army troops for World War II in North Africa. The combined training of air and land forces was a valuable tool for the men that would help win World War II. It would be eligible for the NRHP and the CRHR under Criterion A for its association with CAMA and Criterion B for its association with a significant historical figure, General Patton.

The historic significance of Rice AAF, and Camp Rice, is high. However, based on the field investigations, the physical remains of Rice AAF are well on their way to being completely

reclaimed by the desert and have been impacted by fire and looting, leaving the integrity of these sites damaged. There is little left of the Rice Air Field. The footprint and plan of the runways is visible from the air, but at ground level, the elements are not clear and are covered with vegetation. For comparison sake, of the three airfields used for desert training, Shavers Summit AAF (now Chiriaco Summit) retains a high degree of its original design and is still used as an airfield. While one of the two air strips at the Desert Center AAF has been abandoned, the other is still in use.

This said, despite historic and modern disturbance and the ongoing erosion and deposition taking place through natural and cultural processes at these sites, Rice AAF and Camp Rice do contain some additional data potential. Rice AAF and Camp Rice are important components to the NRHP-eligible DTC/CAMA cultural landscape district. A draft multiple property submission for this district was previously prepared and submitted, and is awaiting edits for final approval. Rice AAF and Camp Rice are likely to be designated as contributing elements to this overall submission for the DTC/CAMA district. Integrity considerations for these types of sites are very different from traditional sites. As stated above, construction of permanent facilities for the DTC/CAMA was very limited, which reflects war time urgency as well as the commander's desire for spartan conditions. Further, when viewed as an important component of the whole, Rice AAF and Camp Rice both help to convey the significance of this broader DTC/CAMA district. The integrity of location, design, and setting are generally still able to convey the significance of both Camp Rice and Rice AAF. As a result, Rice AAF and Camp Rice should be considered eligible for listing on the NRHP (and the CRHR) under Criteria A and B.

Until a more detailed evaluation of the large number of artifact concentrations and refuse features at these sites is completed, it is not possible to address the Rice AAF's potential to achieve significance under Criterion D ("have yielded, or may be likely to yield, information important in prehistory or history"). There is a large quantity of historic debris (39 artifact concentrations) dating from the period of significance for Rice AAF (1942-1944). In only the small portion of Camp Rice that is within the RSEP parcel boundary, there are 59 artifact concentrations.

Although this large number of individual refuse features has been recorded in terms of their location and general context, this study has not included a more detailed analysis of the context and integrity of the refuse deposits, nor has it examined whether or not they have the potential to answer important questions regarding the history of DTC/CAMA and the Army's World War II training programs that could not be answered in another way, such as by consulting historical records. In other words, more consideration of the recording work and preliminary analysis will determine whether or not the properties are also eligible for NRHP listing under Criterion D.

4.2.3 Architectural Survey

The CEC's Siting Regulations require that historic architecture be addressed in the AFC:

> New historic architecture field surveys in rural areas shall be conducted inclusive of the project site and the project linear facility routes, extending no less than 0.5 mile out from the proposed plant site and from the routes of all above-ground linear facilities (Appendix B [g][2][C]).

In the case of the RSEP, the only buildings or structures located within 0.5-mile of the site that are greater than 45 years in age are SR 62, the CRA, and Arizona-California Railroad. None of these features is located within the boundaries of the RSEP or its off-site transmission line or would be affected by it.

Because the architecture of the Rice AAF is no longer present, the architectural history portion of the assessment focused on existing conditions, with a strong emphasis on the literature review, archival records and photographs, and other sources of historical information to develop a historic context within which the Rice AAF can be thoroughly documented and evaluated. Although some features, such as the runways and dispersal pads remain in outline, Rice AAF has become more of an archaeological site than an architectural site, as the structural remains have deteriorated. A multidisciplinary approach was therefore taken to this assessment, and included contributions by architectural historian Elizabeth Calvit and historic archaeologist Matt Bischoff. The developed context for the DTC/CAMA (Bischoff, 2000) played an integral role in directing the research, as did the participation of Mr. Bischoff in assessing existing conditions, evaluating archaeological deposits, refining the historic context, and reviewing NRHP eligibility statements.

4.2.4 Geoarchaeological Investigation

Geoarchaeological investigations of the RSEP project site were conducted on August 5, 2009, in conjunction with geotechnical studies of the site. The full geotechnical report (Terracon Consultants, 2009) was provided in the AFC during the licensing process. Geoarchaeologist Dr. W. Geof Spaulding accompanied a geotechnical investigation crew to the site to observe the excavation of two backhoe trenches on the site and record and interpret their stratigraphy to make an assessment of the sensitivity at this location for subsurface prehistoric archaeological deposits.

Each trench was initially excavated to a depth exceeding 10 feet and then, after geotechnical sampling, backfilled to a depth of approximately 5 feet to allow safe access by the investigating geoarchaeologist. Strata and stratigraphic boundaries were then described and identified, and summarized in a stratigraphic column for each of the two trenches. Examination of the deeper portions of the trenches (>6 feet) from the surface suggested that stratigraphic variability is muted with increasing depth in the area.

Of the two trenches, only Trench 1 provided a complete stratigraphic sequence. Grading during the development of the Rice AAF affected the area where Trench 2 was located, and the upper portion of the stratigraphic sequence here was removed and replaced by 16 to 30 cm of recompacted fill and rubble. Nevertheless, the preserved portion of the stratigraphy of Trench 2 accords well with observations of Trench 1 strata.

The general stratigraphy exposed by the geotechnical trenching is consistent with current understanding of alluvial fan sequences in the Mojave and Colorado Deserts where deposition occurs primarily as a consequence of hillslope instability during episodes of major environmental change (it is thought usually during deglaciations). Slopes that were relatively well vegetated during glacial periods accumulated a relatively thick colluvial mantle over the span of approximately 50 to 70 thousand years, only to shed that mantle in response to postglacial aridity. The last episode of widespread hillslope erosion occurred at

the close of the last glacial age, approximately 10,000 to 15,000 B.P. (Ponti, 1985; Dohrenwend et al., 1991).

Two alluvial units were exposed by the geotechnical trenching, although the unit itself possessed several different horizons chiefly as a result of pedogenic processes. The following summarizes the features of the stratigraphy from top to bottom:

0 – 55 cm: Unit I. Horizontally, coarsely bedded, weakly indurated alluvial sand with gravel stringers; silty sand to coarse sand; generally poorly sorted. Moderate to weak reaction to hydrochloric acid (HCl) in top 15 cm, to *no* reaction to HCl below 36 cm.

0 – 20 cm: Eolian sands mixed with alluvium, fining upward to sandy silts to silts in the top 5 cm. Weak reaction to HCl. Separated by a gradational transition over 20 cm from the underlying alluvial sand:

36 - 55 cm: Distinct argyllic horizon; clays present and reddening evident Well indurated. Stringers of carbonate increasing with depth.

55 cm - >3 m: Unit II. Poorly sorted silty, sandy alluvial gravel; coarsely bedded; Stage 2 to 3 carbonate morphology with a *strong* reaction to HCl.

The silts of the top 5 cm of this section are frequently thought to be of late Holocene in age, while the top approximately 20 cm of section likely encompass the entire Holocene. This upper unit is indistinctly separated from the rest of Unit I below. The clay-rich argyllic horizon at the base of Unit I is typical of Late Pleistocene alluvial units (Dohrenwend et al., 1991). Unit II is likely to be Middle Pleistocene or older in age.

Thus the Holocene (the last 10,000 years) appears to be restricted to at most the top 20 cm of the stratigraphic column and, based on the results of Trench 2 and an overview of the project area, the Holocene section may have been obliterated by World War II-era activities. No artifacts or ecofacts were observed during trench excavation, and no ecofacts would be expected to be preserved in this type of well-oxidized alluvial soil. Given the low-productivity desert scrub ecosystem in the vicinity and the waterless landscape, an assessment of low subsurface archaeological potential would be consistent with the setting as well as the stratigraphy.

4.3 Post-certification, Pre-construction Surveys

Before the start of ground disturbance, the project owner shall ensure that historic period features for Rice AAF and Camp Rice features have been recorded to the satisfaction of the CPM per CUL-9. Per CUL-2, the project owner will obtain the services of a PHA who will manage implementation of the data recovery required by CUL-9. Results of data recovery including feature records and a letter report of findings and eligibility status shall be submitted to the CEC as required by CUL-9.

SECTION 5

Research Design

This section includes a generalized research design for archaeological cultural resources that could be found in the project APE during construction. The purpose of the research design is to provide a theoretical framework to guide the evaluation for eligibility to the NRHP (or CRHR) of any previously undiscovered cultural resources. NRHP or CRHR evaluation is not possible without some form of theoretical orientation and a series of research domains or larger questions by which to judge an archaeological site's scientific value. This is particularly true for prehistoric and historic archaeological sites. Because the project APE has been surveyed for cultural resources, it is most likely any cultural resources to be found during construction would be buried archaeological sites. Treatment and mitigation of known resources within the APE will be described in a separate document fulfilling the requirements of CUL-9.

Archaeological sites most often attain significance for the potential they have to contain valuable information about the past, rather than other significance criteria having more to do with historical events and persons (e.g., association with historical events, trends, or persons, example of a type or the work of a master). That is, previously undiscovered archaeological deposits would be most likely to be found eligible under NRHP Criterion D for properties that "have yielded, or may be likely to yield, information important in prehistory or history" (36 CFR 60), if they are found eligible. Similarly, a site found to qualify for listing in the CRHR would be most likely to be significant under criterion 4 for a property has "yielded, or has the potential to yield, information important prehistory or history of the local area, California, or the nation" (California Public Resource Code 5024.1). If buried archaeological sites are most likely, then, to be found significant for their information value, it is necessary to have a theoretical framework for interpreting the information. Lacking a framework, it is impossible to tell if the information is important and if a site is significant and worthy of protection.

Because the nature of the sites, if any, that might be encountered during RSEP construction is not yet known, it is not presently possible to assess the specific research potential of such sites. However, based on the ample background research conducted on the types, material content, age, and distribution of archaeological site types in and adjacent to the project, with the results provided in the Cultural Resources sections of the Staff Assessment (CEC, 2010a) and Commissions Decision (CEC, 2010b), it is possible to establish a framework to consider the value of any sites that might be encountered. Preliminary research designs for prehistoric and historic sites that might be encountered at the RSEP can help in planning archaeological test investigations, and if testing does not exhaust the site's research potential, then the research design can help plan data recovery excavations. The research design also can help plan the analysis of materials recovered from test investigations and/or data recovery excavations. A more focused research design with additional research questions also may be appropriate based on the testing and excavation of an unanticipated site.

The proposed research design is guided by the Cultural Resources section of the CD (CEC, 2010b). The goal of the research questions presented is to identify changes of subsistence, settlement, and exchange systems over space and time. Of particular interest is when and why did the Mojave/Colorado Desert residents change from a mobile foraging system to a semi-sedentary collecting system. Of regional interest, is to trace the presence of the Native American groups that used the RSEP area during the Historic Period back in time and associate them with different settlement, subsistence, and exchange patterns that can be observed via the archaeological record. The project area and regional background research has aided in the construction of resource distribution models, which could predict potential site types in the project area. If these models are indeed applicable to the project area, research questions can be designed to aid in further understanding the region via the archaeological record.

Questions that may be answered through analysis of newly discovered sites are: Do diagnostic artifacts such as ceramics, shell beads, projectile points found within the project area date to the same cultural periods in the other parts of the Mojave and/or Colorado Desert as they do in neighboring regions? How does this area's chronology differ or compare to California Coastal or Great Basin chronologies? Does the paucity of complex assemblages indicate a solely transitory use of the Mojave Desert and western Colorado Desert as a whole both in prehistoric and historic times? Does the paucity of varied assemblages indicate a sole use for specific resource procurement of the area? Established trade routes are documented throughout the region, do sites found in the project area and general desert region reflect an increase of imported materials amongst the traditional use cultures compared with neighboring groups? Is there a decrease in exploitation of domestic materials as trade increases? With the introduction of the bow and arrow technology, is there a shift in resource procurement and subsistence strategies not associated with hunting?

Based on geomorphological data studies, conducted by CH2M HILL geoarchaeologist, Dr. Geof Spaulding on August 5, 2009, soil deposition occurs primarily as a consequence of hillslope instability during episodes of major environmental change, and current thought is that this occurs during deglaciations (Terracon Consultants, 2009). This is consistent with the understanding of alluvial fan sequences in the Mojave and Colorado Deserts. Based on understood dates of last glaciations, buried sites would be potentially discovered in the bajadas and would date no earlier than the beginning of the Lake Mojave period (8,000-6,000 B.C.). This testable hypothesis would be supported by the presence of temporally diagnostic artifacts associated with the cultural periods and carbon samples dating before 8,000 B.C. Concluded from these same studies, surface deposits would consists of sites dating no earlier than 7,000 B.C.; results would be supported by temporally diagnostic artifacts and carbon samples dating no earlier than the Pinto Period (7,000-3,000 B.C.).

This research design would be implemented if an archaeological site were discovered during construction or if a newly discovered site needs evaluation to determine significance or data recovery as a mitigation measure if it is found significant. Making a judgment about the need for additional testing or full-scale data recovery requires the collection of certain basic information about the site's contents and structure and evaluating it in the context of the state of scientific knowledge about project regional prehistory. The most basic facts about a site for site evaluation include, but are not limited to:

- What is the potential for diagnostic artifacts or other datable material?

- What is the potential for preservation of bone and other materials?
- Are the deposits relatively intact?
- What is the extent of the site (boundaries, depth of deposit, and depth below surface)?
- What is the artifact density and the density of various cultural materials within the deposit? What classes of materials are within the deposit?
- Are there materials that assist in identifying the age of the site? If so, what is the age of the deposit or the age range of the deposit?
- Is this a single component or multi-component site? Does the deposit appear to be disturbed?
- Is it possible to examine the extent of the deposit (i.e., is it accessible)?

Once information is gathered to address these questions, it is possible to examine the site's potential to contribute to regional archaeological research by assessing the value of the materials and artifacts it contains in relation to basic questions, problems, or research domains outlined in a research design. A research design identifies topics or questions that could be addressed, given the kinds of data that a particular property type is likely to contain, and evaluates whether that information can yield or is likely to yield additional knowledge of the prehistory and history of the local areas, California, or the nation. A research design first establishes a structure of inquiry and identifies data requirements for answering a series of research questions within that structure, and then assesses the potential of identified sites to provide the required data.

5.1 Context Statement for Archaeological Resources

5.1.1 Prehistory

The RSEP is located within the transitional zones of the Mojave and Colorado Desert and archaeological sites in this area are represented by Mojave Desert chronologies. For Southern California, this Mojave/Colorado transitional zone included, synthesized cultural evolution models have been attempted numerous times, but an overall accepted model does not exist. The lack of an unchallenged and accepted chronology is due to various problems dealing with gaps in the archaeological record, such as the unavailability of continuous datable materials, inconsistencies in the data and its recordation, and a lack of cultural elements that are definitive of a temporal period or a specific cultural group. In order to obtain prehistoric chronologies, group territories, and hallmarks of cultural periods, adaptations from other regions, cultures, and studies have been synthesized to create a chronological overview for the Mojave Desert. Most chronological adaptations for prehistoric Southern California, including this region, have been adapted from two primary regional syntheses commonly used for the southern California deserts: Wallace (1955, 1978) and Warren (1968, 1984). The first, advanced by Wallace in 1955 and then refined in 1978, uses major cultural developments to define four cultural horizons, each with characteristic local variations: Early Period (Early Man Horizon), Milling Stone, Intermediate, and Late Period. In 1962, Wallace modified this chronology specifically for the high deserts of

southern California (Wallace, 1962). Warren (1968, 1984) defines five periods in southern California prehistory: Lake Mojave, Pinto, Gypsum, Saratoga Springs, and Protohistoric.

In 2007, however, a new synthesis of cultural prehistory in the Mojave was presented by Sutton et al. (2007), which includes results from 20 years of extensive fieldwork conducted in the Mojave Desert by various individuals and groups. Sutton et al. (2007) divides the Mojave Desert prehistory into four periods: Pleistocene, Early Holocene, Middle Holocene, and Late Holocene. Although the project area is on the margins of the Mojave Desert proper, these four periods apply. Sutton further subdivides each period into complexes generally based on Warren (1984). Although the discussion below includes Wallace's work as well as Warren's chronology, it is based largely on the new work conducted after 1984 and Sutton's revised chronology (Sutton et al., 2007). See Table 5-1 for a brief comparison of these three chronologies.

Neither Warren's nor Wallace's chronologies mentioned above begin prior to Terminal Pleistocene ca. 12, 000 BP. More sites in North and South America are beginning to be accepted as dating to earlier times and, although the Sutton et al. chronology acknowledges this fact by the inclusion of the hypothetical Pre-Clovis Complex, no sites from this period are currently documented in the Mojave Desert. A small faction of the archaeological community has proposed Pre-Clovis sites within the Mojave Desert, but much of this data remains currently unpublished and not substantiated (Sutton et al., 2007).

TABLE 5-1
Cultural Chronologies Proposed for the Mojave Desert

Approximate Date	Temporal Period[a]	Cultural Complex[a]	Cultural Period[b]	Cultural Horizons[c]	Associated Artifacts
A.D. 1100-Contact	Late Holocene	Late Prehistoric	Protohistoric	Late Prehistoric	Desert Series points, ceramics
A.D. 200-1100		Rose Spring	Saratoga Springs	Intermediate	Rose Spring and Eastgate Series points
2000 B.C. to A.D. 200		Gypsum	Gypsum		Gypsum and Elko Series points
7000-3000 B.C.	Middle Holocene	Deadman Lake (currently 29 Palms only)	Pinto	Millingstone	Contracting stem and leaf shaped points
		Pinto			Pinto points
8000-6000 B.C.	Early Holocene	Lake Mojave	Lake Mojave		Stemmed points
10,000-8000 B.C.	Pleistocene	Paleo-Indian	Clovis	Early Man	Fluted points
Up to 10,000 B.C.		Pre-Clovis (Hypothetical)			Unknown

[a]Sutton et al. (2007)
[b]Warren (1984)
[c]Wallace (1962)

5.1.2 Paleo-Indian Period (10,000 to 8,000 cal B.C.)

The Paleo-Indian Period covers the interval from the first accepted presence of humans in southern California in the late Pleistocene until approximately 8,000 cal B.C. Artifacts and cultural activities from this period represent a predominantly hunting culture; diagnostic artifacts include extremely large, often fluted bifaces associated with use of the spear and the atlatl. Populations appeared to have been relatively small and highly mobile, living in temporary camps near readily available water. Evidence for Clovis occupation in the Mojave Desert is currently limited to scattered sparse surface deposits and only a few known sites located at China Lake, Lake Mojave, and the Pinto Basin (CEC, 2010b:6.3-10) which is presumed to be an occupation site (Sutton et. al, 2007).

5.1.3 Lake Mojave Complex (8,000 to 6,000 cal B.C.)

In the deserts of southern California, the earliest substantive remains of human occupation are found along the shoreline of ancient Lake Mojave in the Mojave Desert of San Bernardino County. The Lake Mojave Period (approximately 8,000 to 6,000 cal B.C.) is associated with now-dry pluvial lakes found throughout the Mojave Desert. Artifacts observed at Lake Mojave Period sites include stylized dart points of the Lake Mojave and Silver Lake series, well-made bifacial knives and other cutting tools, large domed scrapers or scraping planes, crescents, occasional cobble core tools, and ground stone implements (Wallace, 1962; Sutton el. al, 2007). Flaked stone artifacts, which make up the largest part of the toolkit, are often formal tools made of non-local materials, while ground stone tools, present in far smaller numbers, generally show ephemeral wear, thus suggesting long-term curation of more easily ported items and less reliance on floral resources. Site types include extensive habitation sites, small camps, and workshops (Sutton et. al, 2007). In addition to sites known in the Lake Mojave area, a goodly density of Lake Mojave Period artifact assemblages are known at Fort Irwin, Twentynine Palms, and China Lake.

5.1.4 Pinto Complex (7,000 to 3,000 cal B.C.)

The Pinto Complex is the mostly widely distributed of the early complexes in the Mojave Desert and occurs in a wide variety of topographic and environmental zones, including near remnant pluvial lake basins, near fossil stream channels, close to springs or seeps, as well as in upland areas. Large Pinto Complex sites with deep middens and a wide range of artifact types appear to correlate with stable water sources. In some parts of the Mojave Desert, a temporal overlap is noted between the Lake Mojave Complex and the Pinto Complex. Recent radiocarbon dates from Fort Irwin, Twentynine Palms, and the Garlock Fault site in Kern County range from 8340 B.C. to 6300 B.C., indicating the development of the Pinto Complex in the early Holocene and corresponding to the end of the Lake Mojave Complex. There appears to be good continuity of flaked stone technologies from one complex to the next, including the material selection of locally available stone as well as use of bifacial and unifacial tool forms. The main distinction between the two periods appears to be the number of ground stone tools found at Pinto sites in comparison to the relative paucity of ground stone tools found at Lake Mojave sites. High levels of ground stone found at Pinto sites indicates that the emergence of intensive plant exploitation began by approximately 7000 cal B.C., before the Altithermal, as previously proposed (Sutton et. al, 2007).

Pinto sites are found in a wide range of environments and the flourishing of new economies including greater plant exploitation, is seen both in the desert as well as on the coast during the Pinto Complex. *Olivella* shell beads have been found with Pinto sites, indicating the beginnings of trade with the coast. Diagnostic artifacts recovered from Pinto Period archaeological sites include heavy keeled scrapers, flat millingstones, manos, and Pinto series projectile points, which are large, coarsely made points, indicating the continued use of darts and atlatls (Warren, 1984). By the end of the middle Holocene, conditions in the Mojave Desert became much hotter and much drier. Currently, few sites are known to date to the period between 3000 and 2000 cal. B.C. and it appears that parts of the Mojave may have been abandoned (Sutton et al., 2007).

An additional chronological period has been introduced in recent times, it is confined to the Twentynine Palms area, called the Deadman Lake Complex. This period dates from 7500 B.C. to 5200 B.C., it is suggested that the Deadman Lake Complex is a component of the Pinto complex or that it may be indicative of two human populations (CEC, 2010b: 6.3-11). Hallmarks of this period are stemmed points, core tools, bifaces, flake tools and ground stone. The artifact assemblages are suggestive of plant processing (CEC, 2010b: 6.3-11).

5.1.5 Gypsum Complex (2,000 cal B.C. to A.D. 200)

The start of the Gypsum Complex coincides with the beginning of the Little Pluvial at approximately 4,000 BP and continues into the dry period following the Little Pluvial. Despite the paucity of sites dating to this period, the first good evidence for contact between the Mojave desert groups and the coast dates to the Gypsum Period and Southwestern influence in the California deserts is observed, as well (Warren, 1984; Sutton et al., 2007). *Olivella* shell beads and *Haliotis* rings from the coast and split twig figures from the Southwest are found at Gypsum sites. Anasazi type ceramics make their way into the Mojave towards the end of this period, indicating commerce was in practice with outside groups, not just neighboring tribes. Gypsum Complex toolkits include the diagnostic Elko and Elko-eared points, leaf-shaped points, rectangular-based knives, flake scrapers, T-shaped drills, the occasional large scraper plane, and hammerstones. Elko series points are generally associated with the spread of Uto-Aztecan speakers throughout the Mojave during this period (Moratto, 1984). A shift in food procurement strategies marks this period. Grinding implements, including manos and millingstones, became common and mortars and pestles were introduced (Warren, 1984).

People living in the deserts had adapted to the more arid conditions of the southern California deserts by the end of the Gypsum Complex. New procurement strategies and regular trade contact with peoples living on the coast provided stability to desert dwellers and despite the return to a warmer drier climate at the end of the Little Pluvial, populations did not decrease in the deserts at the end of the Gypsum Complex as they had at the end of the Pinto Complex (Sutton et al., 2007). Analysis of site types and site distribution within the Mojave have indicated that site locations during this period tend to be found in lowland areas where plant resources are available and are in proximity to water resources such as streams and lake basins.

5.1.6 Rose Spring Complex (A.D. 200 to 1100)

During this period, a strong coastal influence extends into the western Mojave Desert (Warren, 1984) and the Mojave experiences an influx from Colorado River groups. The bow and arrow moved into the Mojave Desert at this time. Evidence for a significant population increase and rather dramatic changes in artifact assemblages characterize the Rose Spring Complex in the Mojave (Sutton et al., 2007). Generally, the Rose Spring Complex appears to be in strong continuity with the Gypsum Complex. Similar artifacts, such as millingstones, manos, mortars, pestles, and incised stones are still used. Desert populations continued a successful hunting and gathering adaptation to the desert environment through increasingly complex subsistence strategies, including the development of the bow and arrow. These sites contain a variety of trade items, including southern California shell beads, steatite items, and other coastal artifacts. Eastgate and Rose Spring projectile points are the diagnostic artifacts (Sutton et al., 2007). Ceramics were not widely used in the Mojave during this period and the lack of pottery at the large villages in the region could indicate a negligible Hakataya influence for most of the Mojave Desert (Warren, 1984). In the Mojave, however, probable Virgin Branch Anasazi grayware ceramics are found entering from the lower Virgin River in Nevada into California. A high frequency of obsidian at Rose Spring sites, particularly a high frequency of specifically Coso obsidian, indicates either active trade between populations in the Mojave and populations near the Coso source or frequent travel between the Coso source and the Mojave Desert (Sutton et al., 2007).

Rose Spring sites are found near springs, washes, and occasionally lakeshores. Architectural evidence of pit houses, wickiups, and other types of structures indicate an increase in sedentism during this period; however, the Medieval Climatic Anomaly began during the Rose Springs Complex. The resulting desiccation of lakes and other water sources in the Mojave Desert appears to have significantly changed settlement patterns, resulting in a shift in dependence upon permanent water sources to more ephemeral ones. The Rose Springs Complex ended by about A.D. 1100.

5.1.7 Late Prehistoric Complexes (A.D. 1100 to Historic Times)

During this period, there was a strong reliance on plant food gathering and hunting of small game, and a decreased reliance on large game (Warren, 1984). Separate complexes emerged that appear to represent the ethnographic groups. Anasazi turquoise mining, Hakatayan influence from the Colorado River, and the spread of the Numic Paiute and Shoshone culture spread from the east into the Mojave Desert. Seasonal movement was common and resulted in a diverse array of site types. For the populations in the Mojave, large village sites remain marked by a paucity of pottery. Characteristic artifacts include Desert series and Cottonwood projectile points, buffware and brownware ceramics, shell and steatite beads, and milling tools. Trade continues to develop and expand with groups on the coast. Late during the Late Prehistoric Complex, there appears to be an abandonment of large village sites in the desert region.

5.1.8 Ethnography

5.1.8.1 Chemehuevi

The Chemehuevi, and Southern Paiute peoples, a closely related people, belong to the Southern Numic branch of the Uto-Aztecan language family. The Chemehuevi are

documented to have lived near the project are and are most likely the Native American Group who occupied the region prehistorically (CEC, 2010a). The first historic observations of the Chemehuevi were made by fathers Escalante and Dominguez in 1776. The fathers observed homesteads and farms along the Colorado, as well as small maize fields watered with river water that flowed through irrigation ditches. Subsequent expeditions through the area made similar observations regarding Paiute agriculture, adding that melon and squash was also cultivated (Stoffle and Zedeno, 2001).

The Southern Paiute-Chemehuevi are classified as belonging to the Southern Numic branch of the Uto-Aztecan linguistic family. Sixteen identifiable groups of the Southern Paiute, sometimes called "bands," formerly occupied a broad strip of territory from southern Utah and southern Nevada and along the west side of the Colorado River into southern California. The Southern Paiute are very similar culturally and linguistically to the adjacent Western and Southern Ute except that the Ute took on some superficial Plains Indians traits during the Protohistoric period. The Chemehuevi were strongly influenced culturally by the Mojave, who lived to the east across the Colorado River (Kelly and Fowler, 1986:368). The nineteenth-century territories of the Southern Paiute and Chemehuevi groups reflect the adaptation of each to their unique physical and political environments subsequent to the apparent entry of Numic speakers into the region in approximately AD 1200. Overall, the Chemehuevi territory was one of the largest areas in California with a uniform dialect (Kroeber, 1925). The Chemehuevi recognized local divisions among themselves. Within the Rice Valley, the Chemehuevi were known as the Hokwaits. The sociopolitical organization of the Southern Paiute groups, including the Chemehuevi, did not include organs of central political control. The boundary for each group appears to have been relatively fluid and permeable. Groups were essentially clusters of individual households that variously coalesced and dispersed during the year to facilitate different economic pursuits. Favored residence locations adjacent to springs or agricultural plots were held as private property and subject to inheritance. Large household clusters often had a headman, whose authority was more advisory than authoritative (Kelly and Fowler, 1986:380).

The Chemehuevi appeared to be in the process of moving or expanding their territory in the early Historic period, and apparently without the influence or pressure from white incursions (Kroeber, 1925:594), which is not surprising considering the great expanse and inhospitality of the territory attributed to them.

Chemehuevi beliefs were closer to those of groups found east of Chemehuevi territory, rather than those of the geographically closer southern or central California groups. Many Chemehuevi songs are similar, if not the same as Mojave songs, including their Shaman and Doctoring songs (Kroeber, 1925).

Although many of the 16 Southern Paiute groups visited, hunted, and gathered on each other's territories and, around 1900, almost all of them gathered together for the annual Mourning Ceremony, there also were intergroup feuds involving alleged kidnappings of women and children for slavery. They had external relationships with the Mojave, Navajo, and Utes that were sometimes friendly and sometimes hostile. The Southern Paiutes often accused the Ute and Navajo of kidnapping raids. Relations with the Western Shoshone to the north and northwest were generally friendly and often involved intermarriage. The Paiutes also had generally amicable relations with other Mojave Desert groups including the Serrano and Vanyume, Kawaiisu, Cahuilla, and Diegueño. The Chemehuevi borrowed

heavily from Mojave culture (Kelly and Fowler, 1986:369-370). Kroeber (1925:596) asserted that the Chemehuevi generally tried to avoid the frequent warfare that involved many of their more powerful and populous regional neighbors to the east.

Both the Chemehuevi and the southern Paiute practiced some limited agriculture. They also practiced a hunting and gathering subsistence. Small game, such as rabbits, rodents, birds, chuckwallas, and tortoises, were important to subsistence in this part of the desert; larger game such as deer, bear, and elk, which were more prevalent in the uplands, were not significant. Pine nuts, seeds, berries, and roots were basic staples. They were thought to cultivate corn, squash and gourds, pumpkins, sunflowers, and winter wheat wherever feasible, particularly on floodplains. The adoption of farming did not appear to have significantly altered the seasonally mobile way of life; the elderly generally stayed to tend crops while most of the population undertook its seasonal hunting and gathering forays (Kelly and Fowler, 1986:371).

Contact with the Spanish occurred relatively late, but by the early nineteenth century, Southern Paiutes were enslaved in Santa Fe. The Utes may have served as agents to the Spanish for capturing slaves. Slave raiding and communicable diseases introduced by Europeans depleted the Paiute population and left some ecologically favorable localities depopulated.

Eventually, survivors of white contact were confined to reservations on largely marginal lands in the late nineteenth and early twentieth centuries. Termination of the reservations by the federal government in the 1950s left most of the Southern Paiutes in worse-than-ever conditions. Subsequent settlements of suits for compensating the Indians for their lands provided little more than temporary windfalls. Some reservations were restored and have established various business enterprises with mixed success. Some vestiges of aboriginal culture have survived, but the language has largely died out. In 1980, 124 Chemehuevi survived in California (Kelly and Fowler, 1986:391-392).

5.1.8.2 Mojave

The Mojave are known as a river group, occupying regions alongside the Colorado River straddling the Arizona and California border, with primary territories to the east reaching Needles and Black Canyon. The Mojave are classified as speaking a Yuman branch of the Hokan linguistic family (Native Languages, 2009). The Mojave neighbored the Chemehuevi in the east and likely had territories abutting into the Rice Region.

During the Late Prehistoric and into the Historic era, the Mojave became agriculturists, having learned to exploit alluvial plains and the inundation of the Colorado River to grow crops of wheat, beans, corn, and pumpkins. This knowledge appears to have been learned from southern and eastern groups, with which the wandering Mojave had contact (Schneider, 1995). Two crops were planted yearly: wheat was planted during winter and gathered in the spring; and corn, pumpkins, beans, and melons were planted in the summer for a fall harvest. Hunting was not the predominant food source and there was a preference toward fishing and seed gathering, such as mesquite bean and grass seed, to supplement their diet (Stratton, 1859; Kroeber, 1902).

The Mojave were primarily sedentary, with their settlements kept small and dispersed; location was determined by water resources and the proximity to their fields (Kroeber,

1971). Their homes were constructed low with four upright posts covered by brush and sand on all sides (Kelly and Fowler, 1986; Kroeber, 1902). Other structures found in settlements were cylindrical granaries, and unlike their neighbors, both in California and Arizona, the Mojave lacked enclosed ceremonial rooms such as kivas or sweat lodges (Kroeber, 1902; 1971).

The Mojave frequently left their sedentary villages, however, for travel between the southern California coast and the banks of the Colorado River. Mojave travelers also appeared to travel among other Native American groups frequently on their trips to the coast. Both oral stories and some archaeological evidence suggest the Mojave had a short-lived settlement within the eastern Mojave Desert (Schneider et al., 1995). The settlement was rumored to have been destroyed by a massacre during the Late Prehistoric or early Historic.

The Mojave are thought to have been composed of approximately 5,000 members prior to Spanish exploration (Kroeber, 1971). A warring culture known for their military proficiencies (Kelly and Fowler, 1986; Kroeber, 1971), the Mohave dominated their territory, often forcing groups such as the Halchidoma out of nearby lands (Stewart, 1971).

Neighboring groups of the Mojave were the Halchidoma to the south, Yuma in the south-southeast, Chemehuevi to the west, and Southern Piute in the northwest. Modern-day Mojave occupy the Fort Mojave Indian Reservation, located near the Colorado River in their traditional territory. The reservation was established in 1870. There are more than 1,000 Mojave registered at this reservation; however, much of the reservation is leased to cotton, corn, and soybean farming companies. The tribe operates two casinos, an RV park, and its own tribal farm (Northern Arizona University, n.d.).

5.1.9 History

5.1.9.1 Historic Era (1769 AD – present)

In 1542, Juan Rodriguez Cabrillo explored the California coast by ship, entering San Diego Bay and claiming Alta California for Spain. Sixty years later, Sebastian Vizcaino sailed into the San Diego Bay. Exploration of the land was slower to come. Don Gaspar de Portola searched Alta California for suitable mission sites in 1769. Captain Juan Bautista de Anza, traveled a desert route to the Mission San Gabriel Arcangel from Mexico in 1774.

In California, the historic era is generally divided into three periods: the Spanish or Mission Period (1769 to 1821), the Mexican or Rancho Period (1821 to 1848), and the American Period (1848 to present).

5.1.9.2 Spanish/Mission Period

The historic period in California began with the establishment of Spanish Colonial military outposts, the first of which was Mission San Diego de Alcalá, built in 1769. The 1770s saw a number of expeditions and surveys travel across the desert areas of southern California, including that of Pedro Fages, who led a group across the area while pursuing deserters from the San Diego Presidio (Beattie and Beattie, 1939). The second mission in southern California, the Mission San Gabriel Arcángel, was established by Franciscan fathers in the San Fernando Valley in 1771. The fathers also set up 27 outlying *estancias* (ranchos) to

supply this mission with meat, hay, grain, vegetables, and fruits. In 1774, the first Juan Bautista de Anza expedition crossed the Colorado River and entered California. His expedition crossed through the Coahuila Valley in the southern Colorado Desert, following the route of the historic Southern Pacific Railroad (SPRR) through Coachella Valley and into the San Gorgonio Pass (Bancroft, 1886: 262).

By 1823, the San Gabriel Mission Fathers (Padres) had established an outpost of the San Gabriel Mission at the highest point in the San Gorgonio Pass, along the foothills northwest of Banning, where they raised cattle and sheep and grew crops. The Padres named it San Gorgonio Rancho. These were the easternmost extent of the lands claimed by the Mission San Gabriel and the location of the Rancho along the San Gorgonio Pass placed it along the yearly journey for salt. Each spring, Padres sent Indians and Spaniards down into the Coachella Valley to the Salton Sea where they gathered enough salt to supply the mission and pueblo for the coming year (Lech, 2004).

5.1.9.3 Rancho Period

The Decree of Secularization, passed in 1834, ended the Mission Period in California. The ranchos of San Bernardino and San Gorgonio were abandoned. The following years were marked by the proliferation of cattle ranching throughout the region, as the Mexican governor granted vast tracts of land to Mexican (and some American) settlers. The mission lands were then opened for grants by the Mexican government to citizens who would colonize the area and develop the land, generally for grazing cattle and sheep (Lech, 2004). The project site is not located within the boundaries of any Mexican-period rancho.

5.1.9.4 American Period

Following the signing of the Treaty of Guadalupe Hidalgo in 1848, the United States took possession of California. The treaty bound the United States to honor the legitimate land claims of Mexican citizens residing in captured territories. The Land Act of 1851 established a board of Land Commissioners to review these records and adjudicate claims, and charged the Surveyor General with surveying confirmed land grants. In order to investigate and confirm titles of California, American officials acquired the provincial records of the Spanish and Mexican governments that were located in Monterey. Those records, most of which were transferred to the U.S. Surveyor General's Office in San Francisco, included land deeds and sketch maps (Gutierrez et al., 1998).

From 1852 to 1856, a board of Land Commissioners determined the validity of grant claims. The commissioners rejected many of the original rancho claims which then became public domain and fair game for squatters. Ranch titles represented little as collateral. Although the claims of some owners were eventually substantiated, many of the owners lost their land through bankruptcy or the inability to meet the exorbitant interest on their legal debts. Many of the original rancho owners eventually lost their land to the United States. Unsurveyed land boundaries created a loophole through which squatters could occupy plots on the fringes of land grants and eventually come to own those plots through squatters' rights (Gutierrez et al., 1998).

5.1.9.5 Railroads

With the beginnings of European exploration and the first travels of Father Graces through the Mojave Desert, travel through this territory and road construction was initiated, and this once unexplored region became connected to the rest of Southern California. Following prehistoric trail systems, such as the Mojave Trail and later the historic the Santa Fe and Mormon Trails, the network of historic roads was begun in the area. As travel along the Santa Fe Trail during the American Period brought more settlers, a pattern of settlement developed along the Santa Ana and San Jacinto waterways. The SPRR completed its line from Los Angeles through San Gorgonio Pass in 1876, reaching the coast in 1877. Government policy decreed that every odd section of land, on either side of the railroad, would be property of the SPRR. Construction of the railroad fostered a period of agricultural and land development, ultimately resulting in the creation of Riverside County in 1893. Transportation, agriculture, and the control of water have continued to be central themes in the settlement, development, and growth of the County (Robinson, 1979).

The ATSF, one of the first transcontinental railroads in America, was chartered in Kansas in February 1859 and broke ground in Topeka in October 1868. The ATSF's first section of track was opened on April 1869 and it was constructed to Colorado by March 1876. The ATSF extended west into San Diego by the 1880s.

Both the SPRR and the ATSF are located in the north of the RSEP APE.

5.1.9.6 Irrigation and the Colorado River Aqueduct

The railroad fostered the development of agriculture in the region, but the lack of water in the arid Mojave and Colorado deserts in turn fostered the need for construction of water conveyance canals. In the early 1880s, Thomas Blythe invested in the construction of the Palo Verde Valley Canal, for which construction came to a halt after his death in 1883; it was believed agricultural development would follow suit, with few water resources available. Two decades later the Palo Verde Land and Water Company purchased the Blyth holdings; new canals were constructed and the level of expansion called into action the incorporation of the Palo Verde Irrigation District.

The increasing population in the Los Angeles area had the superintendent of the Los Angeles City Water Company, William Mulholland, looking for additional water sources, following the successful pass of the Owens River Project, which would become the source for the Los Angeles Aqueduct (Mulholland, 2002). An engineering plan was established to dam the Colorado River and harness its resource. Ultimately the CRA would lead from Parker Dam in Lake Havasu through Riverside County, passing by RSEP on the north side of highway 62 (CEC, 2010a). Construction was completed in 1939.

5.1.9.7 Desert Training Center

The DTC in southeast California and western Arizona was created in 1942 in response to the war in North Africa, when the Nazi Germans recaptured the Libyan port of Benghazi in January. Field Marshal Erwin Rommel commanded troops to push toward Egypt, which threatened the safety and future of the Suez Canal. British troops had great difficulty stopping Rommel's fast-moving troops. As a result, the U.S. War Department determined that American soldiers needed to be trained quickly in desert combat techniques to support

this mission. General George S. Patton, Jr. was appointed to locate, establish, and command a center to train soldiers in desert fighting (Porter, 2009).

In February 1942, General Patton established the DTC for the U.S. Army. The center was operational for 2 years and during this time, the U.S. Army acquired approximately 18,000 acres in southern California, Nevada, and western Arizona for the training center. For optimum training, General Patton decided that everyone, including Headquarters personnel, would operate and live under simulated war conditions. Troops experienced the harsh conditions of the desert, living in tents and enduring snakes, scorpions, and tarantulas and sand and dust everywhere and in everything. Units assigned to the DTC were housed in temporary facilities, generally in what were termed divisional camps, which were designed to accommodate a full division of troops (roughly 15,000 men). These divisional camps were spread out across the expanse of the DTC, far from population centers, though generally close to railroad lines. From these camps, the soldiers spent the majority of their time training in the harsh desert environment. A strict 14-week training schedule went from small unit (platoon) activities all the way up through full division exercises. Finally, units would take part in large-scale maneuvers. As a part of preparing units for combat situations, maneuvers were a key aspect of the DTC. They were the final phase, and were intended to put the finishing touches on a division's fighting ability. Generally, an entire division would operate against another division, with one on the defensive and the other on the offensive. Maneuvers, like everything at the DTC, were designed to be as realistic as possible, forcing the soldiers to live, move, and fight under the same conditions that they would encounter in North African combat. In addition, the maneuvers were designed to extend personnel and equipment to the limit of their capabilities. Paved roads were not used during movements, and units were forced to make their own roads in many places. The men were generally allowed only one canteen of water per day, with rations consisting of nonperishable canned foods (C-rations) (Bischoff, 2000; Martin, 1991).

Demolition and sabotage were also used extensively, as they would be in a combat situation. Land mines were placed, tear gas was dropped from the air, and smoke pots were used as screens. Other exercises consisted of troop movements designed to simulate a campaign. These exercises lasted up to 11 days, and tested the ability of units to act in unison. All aspects of a real campaign were incorporated, and all units were included in these maneuvers, from armor to service units including administration, supply, maintenance, and evacuation (Meller, 1946).

The training program paid special attention to several specific areas such as cross-country movement; reconnaissance; dispersion of vehicles during marches, halts, and bivouacs; aggressive action by dismounted units; antiaircraft defense; camouflage; night operations; battlefield recovery and evacuation of armored vehicles and other heavy equipment; driver training; and hygiene, sanitation, and first aid in the desert (Headquarters Desert Training Center, 1943).

In January 1943, the DTC began to function as a theater of operations in a combat setting in order to allow for the most realistic training possible. This provided for a communications zone and a combat zone. All service and supply units were placed within the communication zone, separated from combat units, as they would be in real war. The combat zone was the location of the live-fire exercises and maneuvers. Divisional camps essentially became the equivalent of a rear area (Bischoff, 2000).

By early 1943, the training center had expanded greatly, with numerous additional facilities and camps established. In October, the center was renamed the California-Arizona Maneuver Area (CAMA). The name change reflected how the center had shifted its focus from desert warfare training to a large-scale facility that afforded tough, realistic training. By the time CAMA was closed in 1944, almost 1,000,000 men and women, roughly 10 percent of those who served in World War II, had gone through desert combat training there. Of the total of 85 army divisions that served in World War II, 23 trained at the DTC/CAMA. The DTC/CAMA was the largest army post and largest training maneuver area in U.S. military history (Bischoff, 2000).

Though it was the U.S. Army's first attempt at desert-warfare training, the DTC/CAMA proved useful in a variety of ways. The vast expanses of the desert allowed the Army to move across long distances, in realistic preparation for what they would have to accomplish in Europe. Because of the isolation of the area, movements were unencumbered by towns or civilians, and live-fire exercises could be conducted without fear of harming nearby citizens. The terrain permitted varied training, and almost no obstacles interfered with freedom of maneuvers. Units went cross-country, climbed and defended and attacked positions in mountains, with few constraints. Highways were placed off limits for tactical movements, except when moving troops through narrow defiles (Meller, 1946). According to the War Department, the DTC/CAMA "offered the very best training possible for the various units of the United States Armed Forces" (as quoted in BLM, 1998). The soldiers were taught how to survive the elements, which often were their worst enemies in combat, and several commanders remarked that the men at the DTC/CAMA were in top physical condition.

Although General Patton's legacy and contribution is well publicized, many other top commanders from World War II served at the facility. Patton himself left the facility in summer 1942, to lead a portion of the Allied invasion of North Africa known as Operation Torch. Following Patton's departure, several successive Armored Corps as well as individual divisions and smaller units cycled through the DTC.

5.1.9.8 Army Air Forces in World War II

Because of lessons learned from combat overseas, the commanders of the DTC/CAMA wanted to make sure that air power was included in the training. They knew that close coordination with air units was critical in winning on the ground. Beyond tactical training in the support of ground units, however, airplanes were used from virtually the beginning of the DTC. The Army Air Force itself went through an incredible expansion during the life of the DTC/CAMA. In a few short years, the service dramatically changed its role in the U. S. military.

At the beginning of the war, the U.S. Army Air Corps was a "second-tier air service," which operated solely to provide support to Army ground forces (AGF). By the end of the war, however, it had become the "premiere air power of the world" in the form of the U.S. Air Force (Pedrotty et al., 1999). This change all took place within a relatively short 6-year time span, with the requisite expansion in aircraft, command structure, and ground facilities needed to support such massive expansion. By the end of the war, the U.S. Air Force had developed training bases, airfields, depots, and other facilities that still form the basis of its infrastructure today. It was during the peak of this expansion and change that the DTC/CAMA was in operation.

Expansion began in early 1939 as the German military swept through Poland. Plans for expansion continued rapidly over the next few months as the German blitzkrieg quickly overran large swathes of Europe. Military leaders in America noted the deadly effectiveness of air power when combined with fast-moving ground forces. They also began to realize the possibilities of strategic air power through the bombing campaigns of the Luftwaffe over Britain (Pedrotty et al., 1999). In response, Congress passed several acts, appropriating $2.5 billion for the Air Corps (beyond even what President Roosevelt requested) for exponential increases in aircraft, personnel, and facilities. To construct all these new facilities, the Corps of Engineers was placed in charge of Air Corps projects in early 1941. Like other wartime, military construction, the Corps of Engineers followed standardized plans. Many new tactical fields were established by acquiring and expanding former Civil Aeronautics Administration fields. A variety of other new fields were also established, including training fields, gunnery schools, cadet reception centers, depots, among others. Construction was to be a theater of operations type, allowing for speed and ease of construction, with minimal expense (Pedrotty et al., 1999).

In June 1941, the U.S. Army Air Forces was created as a sub-service of the Army, though acting as a separate service branch, with its own Undersecretary of War and equal representation on the General Staff. The new service would struggle with its ability to operate independently and strategically for the next few years, though by the end of the war this goal would be largely realized.

With the Japanese attack on Pearl Harbor in December 1941 came additional impetus for expansion of the American air forces. Further expansion of the capability of the Army Air Forces was needed, and was undertaken rapidly. Perhaps foremost in this expansion of capability was the training of air crews. By the end of 1943, the Army Air Force contained 345 main bases, 116 sub-bases, and 332 auxiliary airfields. The build-up in air forces, however, peaked in the latter half of 1943, as the majority of air units were already overseas or in the process of being transferred overseas. Continental defense was also less of a concern, and as a result there was little reason for further expansion stateside (Pedrotty et al., 1999).

5.1.9.9 Air Power at the DTC/CAMA

As part of the process of training for combat, the Army Air Force and the Army Service Force were trained to serve as support to Army ground forces. The initial Army Air Force groups to train at DTC/CAMA included one combat squadron, one medium observation squadron, and an air ambulance. As with the harsh conditions for ground troops, the Army Air Force operated on desert-constructed fields instead of flying in from neighboring established airbases or civilian airports (Meller, 1946).

An official air support command was first established at Camp Young, followed by four other divisional camps receiving air support commands (Meller, 1946). Unfortunately, like every other type of equipment at the DTC/CAMA, airplanes were in short supply. Air units initially assigned to the DTC consisted of one squadron of combat aviation, one medium observation squadron, and one air ambulance, all under the operational control of the DTC. Later, an entire bombardier group was assigned. Smaller units were assigned for shorter periods of time. In June 1942, the Second Air Force assumed responsibility for air operations at the DTC. Headquartered at Camp Young, the Second Air Force also assumed

responsibility for the many airfields throughout the DTC area (U.S. Air Force Historical Division, n.d.a). Air units, however, were under the direct command of the AGF, and were not allowed to act in their usually autonomous roles.

The DTC included four airfields: Rice AAF, Shaver Summit AAF, Thermal AAF, and Desert Center AAF constructed specifically for training, several other municipal airports (for example, Blythe and Needles), that participated in DTC/CAMA training activities, and up to 27 gravel-surfaced landing strips. The goal of including the Army Air Forces in training at CAMA was to improve air-ground cooperation. The joint training was for both combat and aviation commanders as well as combat troops. Using these airfields, the Army Air Forces contributed 92 planes providing air support to more than 100,000 ground troops during training operations over the 2 years CAMA was operational. Army Air Forces training in support of ground troops over 2 years included 22 liaison-type planes and 70 combat-type planes flying a total of 2,600 hours on 460 tactical missions.

The air-ground training conducted in CAMA, according to the AGF, was the most satisfactory training being conducted in the United States (Meller, 1946). While the AGF thought the training of combat troops in conjunction with air support was valuable, Army Air Force Headquarters was not interested in combined training. Airplanes were scarce and General Hap Arnold believed that any airplanes that could fly should be in combat (Meller, 1946).

Nevertheless, air squadrons were primarily assigned supporting roles to the ground units, providing tactical support and generally creating a realistic combat environment (Blake, 1996). During maneuvers and other training operations, planes flew low over the troops in order to prepare them for strafing in actual combat. Air crews also practiced bombing and gunnery on several ranges spaced throughout the DTC/CAMA. For the most part, air-to-ground gunnery practice was focused on the toes of nearby mountains (Hazenbush, 1944). The low-flying, twin-engine A-20 Havoc attack airplane was perhaps the most frequently encountered by ground troops. Because of the presence of these aircraft, small units learned the importance of camouflage, dispersion, and the digging of slit trenches.

A variety of airplanes were used, particularly L-1 and L-4 Piper Cubs for surveillance. During the war, these planes proved invaluable in spotting enemy units and directing artillery fire more effectively. Patton himself used his own private plane, a Stinson "Voyager," or "flying jeep" as the planes were known. In several instances, C-50 cargo planes were used, including for troop supply during maneuvers. Supplies, including ammunition, were parachuted to waiting troops by the C-50s, with mixed results. Light bomber–ground attack A-20 Havocs were stationed at Rice AAF, Blythe AAF, as well as at Camp Essex. Douglas C-47 Skytrains were common sights in many places in the DTC/CAMA. The P-39 Airacobra, P-40 Warhawk, and P-38 Lightning were also known to have been used at the DTC/CAMA.

During the maneuvers of February and March 1943, the IV Air Support Command, which was headquartered at Thermal AAF, oversaw all air units and supplied air support to all the divisions and some of the smaller units. By April of the same year, an Air Forces Service Command was established at the DTC and assigned to the IV Air Support Command (Meller, 1946).

Airdrome detachments were stationed at various airfields and were under the command of the III Tactical Air Division at Camp Young. The III Tactical Air Division was given the responsibility of assisting in the training of tactical air units. In addition to training, however, each unit was in charge of maintaining their airfield and had little time for anything else. The 475th Base Headquarters and Air Base Squadron operated the Thermal AAF as a part of the III Tactical Air Division. Beneath the umbrella of the 475th Base Headquarters and Air Base Squadron, several airdrome detachments were formed to operate air bases. According to the 3rd Airdrome Detachment, their policy was: "…anything and everything for the training units, to render every possible aid to units undergoing their final phase of training so that more and better trained units may be sent into combat as they are needed" (Speck, 1944). Truly, these units were performing a vital function: that of keeping these bases running smoothly, so that air units could focus on training for war. The 2nd Airdrome Detachment was activated on August 1, 1943, at Rice AAF. It is not known which unit operated the base prior to that time. The detachment initially consisted of four officers and fifty enlisted men. Eventually the unit would contain five officers and 186 enlisted men, which included quartermaster, medical, weather, communication, signal, and guard personnel (Speck, 1944).

In many other locations, the Army used preexisting civilian facilities, such as the airport in Boulder City, Nevada. In other cases, the Army established facilities that were subsequently taken over for civilian use after the end of the war. Most of the airfields and facilities were constructed by aviation engineer units (often battalions), some of which were attached to larger divisions, while others were not. The skills learned by the engineer units in building these facilities proved invaluable in service overseas during the war. In addition to the more permanent airfields, landing strips were created throughout the facility. Most divisional camps had some type of airfield or landing strip, which were also temporary in nature. Experimental airstrips, consisting of the mixing of cement with sand, were built in several places. These airstrips were also designed to handle small planes only. Their construction was recalled by one of the men who helped build them: "… we mixed furrows with road graders; then took the cement and spread the cement with trucks over the top of that; then mixed it in with the road graders; bladed it out smooth; sprinkled it with water tanks to compact it; and then rolled it" (Krege, 1944).

At the height of DTC/CAMA operations, when total personnel reached 190,000, 4,000 of these troops were from the Army Air Forces. Beginning on December 1, 1943, all air units and installations in the CAMA were taken over by the commanding General of the Army Air Forces, under the Third Air Force. The III Tactical Air Division, which had overseen the air operations, came under the control of the Third Air Force. From the AGF's perspective, this was not a welcome change. The Army's position was that the headquarters of the DTC/CAMA must command the entire facility, including all air activities; if not, a great deal of realism was lost. For the Army Air Forces, however, this was likely viewed as a welcome change, as it allowed the air units greater autonomy in training. It may have been a moot point in any case, as air support became almost nonexistent by 1944 (Meller, 1946).

By August 1944, following closure of the CAMA, most of the airfields were assigned to March Field as sub-bases, and the number of personnel stationed at them decreased (U.S. Air Force Historical Division, n.d.b). Most of the smaller airfields were simply abandoned in place.

5.1.9.10 Rice AAF

Rice AAF began as a municipal airport for Rice, a small town in the Mojave Desert in southeast California. Its original date of construction is unknown, but a review of 1932 Los Angeles Airways Chart determined that Rice AAF was not constructed until after 1932 (Abandoned & Little-Known Airfields). Though no exact date of activation for Rice AAF is known, Rice Municipal Airport was acquired by the IV Air Support Command on September 29, 1942, and was reportedly operational by October 26, 1942 (U.S. Air Force Historical Division, n.d.a).

Rice AAF was constructed in a triangular plan, consisting of two 5,000 foot runways and numerous dispersal pads extending off the runways to the south (Bischoff, 2000). It is not certain if the airfield was originally constructed in a triangular plan or if this was a subsequent modification. The Desert Center AAF was also constructed in a triangular plan, while Shavers Summit AAF was a single air strip.

Rice AAF, like Desert Center, was a sub-base of Thermal AAF. The facility was in the heart of DTC/CAMA operations, close to camps Iron Mountain, Coxcomb, and Granite. Exact numbers of personnel stationed at Rice AAF are not known. As mentioned above, however, by late 1943 there were approximately 4,000 from the Army Air Forces in the DTC/CAMA, many of which were likely stationed at Rice AAF. By August of that year, the nearby Blythe AAF housed 6,025 personnel. Rice AAF was built using largely standard plan, theater of operations-type buildings. These were similar to those found at other airfields of the time, including Desert Center. Barracks, recreation and mess halls, power houses, along with various other support facilities were constructed, reportedly designed to house 3,000 men. The base also contained an electrical generating facility, water system, communications systems including control tower, base weather office, post exchange, and base headquarters. The airfield was located adjacent to the small railroad town of Rice, which consisted of a small cafe and store (Eberling, 1997; U.S. Air Force Historical Division, n.d.a).

The isolated location of Rice AAF made life difficult for the men assigned there. Supplies were difficult to come by, no recreational facilities were available, there was little chance of advancement for those stationed there, the weather was difficult, and rations were unsatisfactory. According to the unit's history, the 2nd Airdrome detachment experienced untold hardships in operating the base:

> During the 7 months the 2nd Airdrome Detachment has been in existence, it has experienced great and continuous difficulty in obtaining supplies of all types, particular difficulty in obtaining engineering supplies absolutely essential in order to maintain mechanical and other fixed installations. Whether the Service Groups, the sections of the III Tactical Air Division, nor the sections at Headquarters at Thermal Army Airfield after Rice AAF became a sub-base of Thermal Army Airfield have at any time provided what in the opinion of the undersigned would constitute adequate sources of supply (Costigan, 1944:3).

The morale of the 2nd Airdrome Detachment was not helped by the fact that there were no recreational facilities provided at the base. The detachment, however, purchased a motion picture projection machine, constructed an outdoor open top theater, and rented films from Los Angeles. The material for the theater was taken from "odds and ends" of other buildings. The

U.S. Army Corps of Engineers (USACE) provided benches taken from a Japanese-American Internment/Relocation Center 40 miles away on the Colorado River (Costigan, 1944).

In addition to the airdrome detachment, Rice AAF was the home to several air units during the war. Most of the time, one tactical air unit was assigned to the base, although occasionally there were two. The 85th Bomb Group was transferred to Rice AAF from Blythe Army Airfield in December 1942. From Rice, the group used several bombing and gunnery ranges nearby. The 85th Bomb Group remained at Rice until April 1943 (Hazenbush, 1944). Following the 85th, the 312th Bomb Group was assigned to Rice AAF in the spring and summer of 1943. The 312th apparently trained in Douglas A-20 Havocs while at Rice. The A-20s had conducted some of the first strikes against Nazi targets in July of 1942, so their value was recognized early.

Later, the 339th Fighter Group was assigned to the field in September 1943. The 339th had actually been designated a Fighter Bomber Group in August of that year (following the end of the use of dive bombing, which the unit had been designated formerly), made up of three squadrons: the 503rd, 504th, and 505th Fighter Squadrons. While at Rice AAF, pilots in the 339th trained in the Bell P-39 Airacobra. Like other units trained there, the 339th experienced largely unencumbered training due to good weather and absence of civilian populations. Also, similar to other air units at the DTC/CAMA, the 339th trained in providing close air support for ground units. The 339th participated in the large-scale maneuvers that were such an integral part of the training offered by the DTC/CAMA. The unit apparently spent 8 months at Rice AAF before being sent to the port of embarkation for shipment overseas. In one of many ironic twists in the war, the unit eventually flew P-51 Mustangs, a much different aircraft with a completely different role than those they had trained in while at Rice AAF (Stephenson, 1998). The 339th may have been the last air unit stationed at Rice.

On April 30, 1944, after approximately 2 years of operation, the U.S. Army closed CAMA and abandoned the 14 camps and airfields. By the following month, Rice AAF was assigned to March Field as a sub-base, and the 2nd Airdrome Detachment was disbanded. The airfield was closed on August 2, 1944, and declared surplus in October. It was maintained for a while after this by a detachment of Squadron H from Thermal AAF (U.S. Air Force Historical Division, n.d.a). It operated as a civilian airport beginning in 1949. A 1954 USGS topographic map depicted Rice AAF as having two paved runways, taxiways, and a ramp. Between 1952 and 1955 Rice AAF became a private airfield; however, by 1958, it was abandoned (Freeman, 2009). Aerial photography and site visits by private citizens documented the airfield's condition between 1996 and 2009. The runways, ramp, and pads were discernable from the surrounding desert landscape. There were no structures or buildings on the site.

5.1.9.11 Camp Rice

This short-lived divisional camp was constructed adjacent to Rice AAF in early 1942. The camp was occupied by the 5th Armored Division between August and October of that year, followed by the 6th Armored Division. The 6th detrained at Freda, and made their home at Camp Rice for the next five months. The 6th Armored Division's training began with field exercises, including training in night movement, and the use of maps and compasses. Firing ranges were constructed soon after the division's arrival, and soldiers were trained in anti-aircraft firing, and first learned to use their anti-tank weapons. Division field problems gave excellent training to the 146th Armored Signal Company, which used radio, wire, and

messenger communications. Charles Barbour, who was with the 86th Cavalry Reconnaissance Squadron, described the arrival of his unit:

> Open space was quickly transformed into the usual orderly, military array of canvas. Sand, of course, was everywhere. After some weeks truckload after truckload of plasterboard materialized from a gypsum processing plant some miles away; laid on smooth-out sand, it floored the tents after a fashion. Troops got into the habit of shaking out their boots in the evening to evict possible desert denizens, and to secure small belongings from larcenous desert rats (Barbour, n.d.).

Barbour went on provided a description of some of Camp Rice's facilities:

> It was hot when we arrived, and for a few weeks thereafter, and the burlap-screened Quartermaster-serviced open air shower facility a few miles from camp enjoyed great patronage — but only for a few weeks. October, we found, brought its own brand of dry but freezing weather. A No. 10 can of water set on top of a stove sufficed for washcloth bath. Canvas water bags hung on a peg outside the tent became solid ice overnight. It was a wise practice to start the day in multiple layers of clothing and shed gradually as the sun climbed higher. The knit, tiny-visored skull caps designed to be worn under the helmet liner were cozy, with the ear flaps turned down.
>
> Hissing gasoline lanterns provided light for friendly card games or private reading during the night hours. Or, beer bottles in hand, one could squat on the hard sand and watch a movie shown on a fabric screen that billowed in the wind, producing a funhouse mirror-like image of the heroes and heroines, villains and villainesses.
>
> We learned to punch nail holes in empty cartridge cans, set them in holes scooped in the desert's surface, pour a little gasoline into the hole and light a flickering fire that would warm a can of C-ration (the K was yet to come) or brew a canteen full of instant coffee on the home-made stove (Barbour, n.d.).

From Camp Rice, the reconnaissance squadron traveled across the desert perfecting its movement, extending as far south as Yuma, across the river into Arizona. The 6th Armored then took part in maneuvers against the 4th Armored Division in early 1943. Following the maneuvers, the division moved to Camp Coxcomb, which had more amenities, including closed showers and latrines.

Photographs of the camp indicate the presence of a relief map, approximately 50 by 40 feet. Like other, larger relief maps found in other camps, the one at Rice was used to plan out maneuvers and other large-scale exercises. Its location was re-discovered in 1996 (Blake), though little of it remained.

The 836th Engineer Aviation Battalion was stationed at Camp Rice (or at Rice AAF) in December 1942, presumably to assist in the construction (or improvement) of Rice AAF. In February 1943, the unit was transferred to Camp Young, which was considered a vast improvement over Camp Rice. The tents at the camp had floors and half walls, and were equipped with stoves. In addition, showers were available and the battalion had its own PX furnished with beer (Merz, n.d.).

5.1.9.12 Ranges

Both air and ground units used the surrounding desert to train. Several areas have been identified as known maneuver or training areas, with substantial ordnance found.

The Big Maria Mountains, south of Rice, were used extensively for live-fire activities (USACE, 1998). These activities likely relate to the training activities of the two divisions at Camp Rice. An aerial gunnery range was established in the mountains immediately north of Rice AAF, as depicted on a map of the CAMA from 1943. Approximately 5,000 acres of the Rice Valley Sand Dunes were set aside as bombing and strafing ranges for the Rice AAF. It also appears that troops from Camp Rice also used the area for live-fire exercises. Several clearance efforts have been conducted in the area following the closure of the CAMA, with 105-millimeter (mm) and 75-mm projectiles recovered, along with one 37-mm round (USACE, 1996).

5.2 Research Questions and Data Sources for Prehistoric Resources

5.2.1 Cultural Chronology

The general trend throughout California prehistory has been an increase in population density over time, coupled with greater sedentism and the use of a greater diversity of food resources. Chartkoff and Chartkoff (1984) identified three major periods of prehistory observed throughout California: Pre-Archaic, Archaic, and Pacific. These changes nevertheless followed a broad pattern, and are outlined in the Cultural Resources section of the RSEP AFC. Table 5-2 summarizes the process.

TABLE 5-2
Chronological Summary

Time Period	Site Type	Chronological Markers
Late Period AD 500-AD 1769	Increase in sedentary populations; permanent settlements; and full exploitation of natural resources, stored staple foods, long trade networks, and complex political systems	Bow and arrow replaced atl-atl, small projectile points, well-developed midden deposits, cremated and intact human burials, residential features, bedrock mortar milling stations, smaller milling stone use, *olivella* and clamshell disc beads
Intermediate Period 3,000 B.C.-AD 500	Continuity of site types from earlier and later periods, with addition of mortar and pestle and smaller arrow projectile points	Change in projectile point typology with introduction of bow and arrow, mortar and pestle, and circular shell fish hooks
Milling Stone Period 6,000-3,000 years B.C.	Increase in population densities with sedentism and use of ecological zones, i.e., coastal littoral	Use of milling stones
Early Period prior to 6,000 years B.C.	Small mobile populations hunting big game	Large, fluted lanceolate projectile points or spear/atlatl/dart points

Temporal placement of prehistoric sites is essential for developing a chronological sequence pattern for regional archaeology. If an unanticipated archaeological site is identified as a result of RSEP construction, information from that site, when compared to existing data, may contribute to additional regional understanding. Data recovered from the

archaeological site (e.g., diagnostic artifacts, features, and organic debris), would assist in establishing an interpretation of the occupational time period and the chronological sequence of the site for comparison to regional information. Standard approaches to stratigraphic interpretation include radiocarbon assay, source-specific obsidian hydration, and cross-dating temporally diagnostic artifacts with those recovered from surrounding areas to determine the habitation era of the site and functionality, and to compare it to regional sequences.

Chronological research questions have to do with relationships (similarities and differences) between the Rice Valley and other regions, various topics relating to temporally diagnostic artifacts, and the first occupation of the Rice Valley. Particularly interesting questions have to do with attempting to identify site type signatures based on lithic reduction technology, and artifact (projectile points, shell beads, etc.) typology and chronology. Key research questions that are applicable to the types of sites in the area might include the following:

- What are the precise chronological ranges of diagnostic projectile points such as Mojave, Gypsum, Elko and Eastgate?
- What are the precise chronological ranges of diagnostic shell bead types and does design differ from Mojave and Coastal cultural groups?
- Do diagnostic artifacts such as ceramics, shell beads, projectile points found within the project area date to the same cultural periods in the Mojave as they do in neighboring regions?
- How does the Mojave chronology differ or compare to California Coastal or Great Basin? Is the Mojave chronology applicable to the entire Mojave Desert cultural groups?
- Can predictive models for site formation be formulated for the cultural groups in the Mojave and Colorado deserts based on known site distributions and use of resources?
- Were the site and its loci occupied for a single short or long episode, or were they occupied episodically during multiple habitation episodes?
- Does the era of site occupancy relate to the cultural sequences developed for the region and from that seen in other sites in the area?
- What significant changes in subsistence patterns and patterns of technological use validate the chronological schemes that archaeologists have devised for prehistory?

5.2.1.1 Data Sources

Data requirements for defining a cultural chronological sequence and temporal dating would include the recovery of diagnostic formed tools, beads and ornaments, and artifacts that qualify for cross-dating typologies and radiocarbon dating of archaeologically organic remains (i.e., shell, bone, and or charcoal) associated with the archaeological deposits. Obsidian could be utilized to develop hydration chronologies, and paleoecological data from permanently wet sites or well-preserved sediments could address problems of paleoclimatic variability and how coastal adapted cultures responded to such variations through time.

Examples of testable hypotheses and expected results:

- Hypothesis: The site was occupied from the Gypsum Period through the Post-Saratoga Springs/Late Period.
- Test Implications: Carbon samples recovered from the site will date to the Gypsum Period, Saratoga Springs Period, and/or the Post-Saratoga Springs/Late Period.
- Hypothesis: Projectile points are accurate chronological indicators in the Mojave.
- Test Implications: Humbolt, Cottonwood Triangular, and Desert Side-Notched projectile points were found on site. If radiocarbon data indicate that site dates to the Gypsum Period, Saratoga Springs Period, and/or the Post- Saratoga Springs/Late Periods, and no projectile points considered to date to other time periods by standard Great Basin projectile point typologies are found on these sites, projectile points will be considered accurate chronological indicators on this site.

If there is a discovery, site treatment and mitigation will proceed as directed by the CPM pursuant to CUL-8. Formed tools will be collected for analysis from the surface and subsurface matrix, and placed in clear polyethylene zip-lock bags. Charcoal and soil samples will be taken from subsurface hearth features, charcoal and ash lenses, or other in situ contexts. Sample materials will be collected with clean metal tools and wrapped in aluminum foil and placed in clean zip-lock polyethylene bags. Shell and bone will be collected from the surface and subsurface matrix and placed in clean plastic vials, or large or wet bones will be placed in clean paper bags, if necessary. Delicate items, such as obsidian artifacts or shell beads, will be carefully collected and wrapped in non-acidic tissue paper if necessary to prevent damage.

All items recovered from an excavation will be clearly labeled with the site number, unit number, level, associated feature, date, and collector's initials. Perishable artifacts, if found and recovered from wet contexts, will be kept wet until appropriate long-term conservation measures are applied to ensure their stability in a repository or museum collection.

If there is a discovery, the following field methods are recommended. No fieldwork will be allowed to proceed without direction from the CPM pursuant to COC CUL-8.

Field methods for the collection of artifacts from a newly discovered prehistoric archaeological deposit will include the excavation of 1-meter by 1-meter units or expanded unit blocks. Matrix will be dry or wet screened (as appropriate) through 1/4-inch (and 1/8-inch screen inserts when deemed necessary to recover fish bone, very small lithic material, and shell beads in areas where these items are likely to occur). Shell, lithics, ground stone, bone fragments, and fire broken/affected rock will be sorted, bagged, and labeled. If required, residue material in the 1/8-inch mesh screen will be double-bagged, labeled, and retained for water screening. From water screens, all lithics, bone, modified shell, the hinges of bivalve mollusks, and the apices of gastropod shells will be saved. Each material type from dry or water screening will be bagged separately in clear zip-lock, polyurethane bags, and labeled.

A unit level record form that includes a sketch of the surface at the base of the level, features, and in situ cultural materials; tallies of recovered items; and a description of

sediments and other items of interest will be filled out for each 10 cm level of each 1 meter by 1 meter unit.

The types of features that may be excavated include hearths, house floors, cache pits, artifact concentrations, and so forth. The excavation and recordation of these features will follow industry standards, including documentation and recording of data such as provenience, description, depth, and collecting soil and charcoal samples. Each feature encountered in a site will be given a feature designation sequential number. Feature forms also will be used for recording data and observations and for mapping each feature. Photographs will be taken throughout the excavation process. Field methods are discussed further in Section 5.4 of this document.

Artifacts and ecofacts to be collected and curated can provide information regarding a cultural chronological sequence and temporal dating and may include, if present, formal tools, beads and ornaments, and organic remains such as shell, bone, and charcoal. Obsidian, if found, will be collected because it can be utilized to develop hydration chronologies. Charcoal and soil samples will be taken from any subsurface hearth features, charcoal and ash lenses, or other in situ contexts, if possible, as such samples can be used to temporally place site occupation in local or regional chronologies. Some proposed analyses are destructive, but when possible, artifacts and ecofacts that are analyzed to provide information regarding this research question will be curated after analysis is complete. Many dating techniques continue to improve in precision and accuracy and new developments and improvements in these techniques and technologies could provide additional information at a later time. Curation methods are discussed further in Section 6.12 of this document.

5.2.2 Subsistence Economics and Prehistoric Settlement Patterns

Archaeology in the western United States has become—to a large extent—the study of settlement systems and subsistence economics (land use) of hunter-gatherer peoples. Though there are many topics of archaeological interest that do not touch directly on these areas, the most compelling research problems and issues are directly or indirectly related to them. Archaeologists have addressed these issues through what may be called the bipolar models of settlement systems and subsistence economics. These models develop and correlate postulates on hunter-gatherer residential mobility, subsistence logistics and foraging patterns, the energetics and temporal costs and benefits of food getting, seasonality, and food storage patterns. They are based on analyses, both global and local, of ecological energetics, resource distribution, and resource accessibility. The models include postulates regarding the archaeological correlates of various economic and settlement patterns. These models approach a general theory of hunter-gatherer settlement systems and subsistence economics and can provide a framework for any work done on prehistoric sites discovered at the RSEP facility.

Bipolar models of settlement systems have a long history in archaeological theory. Archaeologists have often thought of hunter-gatherer settlement and subsistence systems as capable of being placed on a bipolar continuum with “intensive” systems or strategies on one end and “extensive” ones on the other (Cleland, 1966; Cleland, 1976). More recently, they have used the terms “traveler” and “processor” (Bettinger and Baumhoff, 1982) or “forager” and “collector” (Binford, 1980; Kelly, 1983) to refer to different versions of the

same general continuum. The terms forager and collector are the most commonly used. In the simplest form of this dichotomy, foragers move their residential bases frequently to track resources that are evenly dispersed in time and space. Collectors move out to special activity camps on logistical trips from more stable residential bases to resources whose production is patchy in space and seasonally restricted in time.

Bettinger and Baumhoff's (1982) traveler-processor dichotomy contrasts subsistence settlement strategies under which people spend time to travel to high-quality resources, versus those under which they spend time processing a broader spectrum of resources that includes lower-quality resources. They explain the spread of Numic-speaking peoples in the Great Basin as the displacement of a "traveler" society by a "processor" one.

Kelly's (1983) ethnographic study of hunter-gatherer mobility worldwide focuses on the spatial and temporal structure of resources in determining a settlement and land use pattern. He found that a hunter-gatherer band's number of residential moves per year is correlated with its territory's effective temperature (a measure of seasonality that takes into account the amount and annual distribution of solar radiation), and that the average distance of residential moves is inversely correlated with effective temperature. In other words, tropical hunters move residential bases more often but in lesser distances. This pattern holds because in tropical forests, food resources are both evenly distributed and poorly accessible (because much is in the tree canopy or well protected by adaptation from predation). Conversely, Binford (1980) nominated the Nunamiut Eskimo as a quintessential "collector" society. The Nunamiut response to high seasonal and spatial variation in resource productivity in the arctic environment was to take "logistical" forays to special activity sites from residential bases that were infrequently (less than 10 times per year) moved. Binford (1982) also found that the Nunamiut rotated their annual range every 5 years or so between five subranges within a very large extended territory that they continually monitored on forays from the currently active range.

Population density and food production intensity are also important variables that determine some aspects of hunter-gatherer residential mobility. According to foraging theory, people will add additional resources to their diet as population densities increase (Christenson, 1980). These additional resources are usually less preferred because they offer lower return on labor. Certain kinds of subsistence economic transformations (such as agriculture) involve very large labor commitments but cause a sudden jump in productivity. People have no choice but to reduce mobility when they are more densely packed in a given land area. This mobility reduction lessens their access to a wide diversity of resources, particularly scarce ones such as lithic raw material and some food resources. One response to this reduced access is increased intergroup trading.

The archaeological correlates of residential mobility and land use patterns are also considered in the bipolar model. Binford (1980) proposed a simple standard typology of site types based on assemblage diversity. For example, assemblage diversity should be high at residential bases, particularly those occupied for long duration (such as during winter) because numerous tasks are carried out there (Shott, 1986). Logistical camps, special extraction locations such as wood gathering spots, and information gathering stations, such as lookouts (Binford, 1980), should have low assemblage diversity or be archaeologically invisible. Also, as mobility decreases and there is less need to care for specialized tool kits used on long-distance task forays for specialized resource procurement purposes, tool use

becomes more expedient in general. Kelly (1983) suggested that tool technology under these conditions (particularly with agricultural societies) becomes less dependent upon bifacial reduction techniques. Archaeological assemblages should show a lower frequency of bifacial reduction and thinning flakes, a higher percentage of unprepared percussion cores and cortical flakes.

Property types important to research in the RSEP study area include the long-term residential base, the short-term occupation site, the resource procurement site, and the resource processing site. The archaeological resources of the RSEP study area will be analyzed relative to these property types. Important factors include the frequency of each property type by chronological period, the size of each property, and the location of the property type on the landscape. The four primary property types are discussed in some detail in the subsequent paragraphs.

5.2.2.1 Long-term Residential Base

The long-term residential base is the main residence for a specific portion of the aboriginal population, similar in concept to the hamlet, town, or village in Euro-American history. People residing in these property types tend to form communities with considerable face-to-face interaction over an appreciable span of years.

In general, this property type is expected to contain a broad range of tool types because more activities are undertaken at the property and some of the leisure time available at the home base would be used for tool finishing and rejuvenation activities. Projectile point bases, diagnostic of culture and chronology, are likely to be present in higher frequencies than other sites because hunters have removed them from the kill and brought them home for repair or alternate use. Artifacts reflecting status and prestige are expected to be present if status and prestige segregation are operant in the society. Sites of this type are expected to be large and deep, to contain more features, and to reflect the internal organization of specific activities (Binford, 1980).

In summary, the long-term residential base property type displays a greater range and quantity of research values than other site types characteristic of the cultural system (Andrefsky, 1998). Features and diagnostic artifacts are more abundant. Site depth and midden deposits are characteristic and property visibility on the landscape is likely to be high because considerable “living,” and the residue that such activity produces, has been undertaken at these locales. Cemeteries or isolated burials are likely to be nearby. These properties are integral in research schemes because they form the basis for integrating other, more focused purpose sites into a single operating cultural system.

5.2.2.2 Short-term Occupation Site

The short-term occupation site is the second property type important for understanding human adaptations in the project area. This property type is a key element because these sites have the potential for demonstrating a subsistence behavior shift with definable chronological limits as aboriginal Americans exploited available riparian communities. In other words, field camps or seasonal camps and resource processing sites would proliferate near riparian resources, and these sites would cluster temporally because increased exploitation would occur when the wetland was present (Binford, 1980).

Short-term occupation sites are especially useful for investigating human adaptation to riparian and upland communities because they possess the classic characteristics of "small sites" with the potential for chronological control. These sites are discrete, relatively easy to define reflections of human behavior that are not confused by subsequent occupation for different purposes. They are expected to be relatively shallow and to contain a narrow range of tool types that reflect the specific activity undertaken at the site. They are smaller in size than long-term residential bases and have less abundant and more uniform types of features. The reason for this is that the camps were formed by only a segment of the population of the residential base as a specific task was undertaken at a specific point in time. A narrower range of floral and faunal remains is also expected and may reflect subsistence focus and seasonality of use. As Murdock (1968) has stated, "it has long been recognized that the form, size and fixity of human settlement bear a direct relationship to the modes of exploiting the natural environment to provide subsistence."

5.2.2.3 Resource Procurement and Resource Processing Sites

The last two property types important in understanding and researching the historic contexts are the resource procurement site and the resource processing site. These site types are generated with respect to specific types of target resources. Task groups seek specific foods or other economic resources in specific contexts (Binford, 1980). The use, exhaustion, and abandonment of tools at resource procurement and, secondarily, at resource processing sites would occur at a very low rate, yielding property types characterized by diffuse, low-density remains. Tools, if present, are expected to represent only a single function or a narrow range of functions reflecting the specific activity undertaken at the site. In addition, a narrow range of artifact classes is expected. These property types tend to have low visibility on the archaeological landscape, and also tend to be classified as "isolated finds." One exception to this is bedrock milling stations. These remain visible on the landscape because of their typical association with bedrock exposures, which stand out from the surrounding areas by their starkness.

Key research questions are:

- What was the relative importance of various food resources in the RSEP area and how have they changed through time? Early subsistence may have focused mainly on large terrestrial game animals, as might be indicated by lack of ground stone and assemblages of low diversity, whereas later subsistence regimes may have focused mainly on fishing, shellfish collecting, and hunting of sea mammals.

- Are Mojave/Colorado site occupants foragers or collectors? Do settlement patterns change through time? Property type, and the tool, feature, and faunal assemblages are the important data categories needed for addressing these questions. If a foraging subsistence strategy is employed, sites have much the same content because the full range of activities is undertaken by the population base. If a collecting strategy is active, the settlement system comprises residential bases and smaller specialized collection sites where specific tasks are undertaken by a subgroup of the residential base, possibly only adults of one gender.

- Does the paucity of varied assemblages indicate a sole use for specific resource procurement of the Mojave, or is the region used primarily to transverse from other locales?
- In terms of subsistence systems, is diversification in the subsistence base evident between different occupation periods within the RSEP study area? Taxonomic and statistical analyses of archaeobotanical and faunal data are the primary sources for defining diet breadth and the relative importance of vegetal foods, marine resources, and small and large game in the aboriginal diet. Another source of information is an analysis of formal and informal tools.
- Do changes in the technological subsystems occur that would indicate subsistence diversification? For example, an increased frequency of milling equipment could indicate an increased reliance on plant or small mammal resources. Conversely, a decrease in milling equipment could indicate a reliance on other food sources.

5.2.2.4 Data Sources

Data requirements for these questions would include preserved food remains (fish bone and other faunal remains) in stratified sites. Equally important would be an extensive representation of artifacts used in the hunting, gathering, and fishing for important local food resources and evidence of their manufacture. The surfaces of projectile points and knives could yield identifiable blood residues of sea or land mammals.

Examples of testable hypotheses and expected results:

- Hypothesis: The site was a satellite campsite, utilized for harvesting plant resources by small groups.
- Test Implications: The artifact assemblage will lack complexity with ground stone artifacts discovered in greater number than chipped stoned tools. Faunal remains will be minimal or non-existent with no middens present.
- Hypothesis: Occupants had adopted a lacustrine exploitation system with repeated site occupation over long periods of time.
- Test Implications: Faunal remains would be comprised of water fowl and fish. Carbon samples would support the multi occupation period use by providing results that covered multiple, sequential time periods.
- Hypothesis: The sites in the project area are not special-purpose sites for processing a particular type of animal resource.
- Test Implications: The animal resources represented on the sites will be available at other locations. For example, these animals are ubiquitous in the Mojave/Colorado today, and they are represented on other archaeological sites dating to the same periods as sites being tested.
- Hypothesis: The sites each represent only one episode of occupation.
- Test Implementations: Only one artifact or ecofact concentration will be identified within each site. If more than one artifact or ecofact concentration is present on each site,

geomorphology will indicate that the concentrations were deposited during the same period. If the assemblages from different concentrations appear to have the same function, they will resemble each other.

- Hypothesis: Sites each represent more than one episode of occupation and/or usage.
- Test Implementations: Each temporary camp or hearth site will contain more than one artifact concentration. Geomorphology and chronometric data will indicate that at least some of the concentrations were deposited during different periods, and if assemblages from different concentrations appear to have the same function, they will not resemble each other.

Artifacts and ecofacts to be collected and curated will provide information regarding settlement patterns and subsistence strategies and will include representative samples of all major artifact types such as flaked and ground stone, animal bone, shell, beads, charcoal, and seeds. Shell remains and fish bones can provide information related to seasonal occupation. Other faunal remains can provide information about subsistence strategies. These remains would be curated after analysis. Charcoal and soil samples taken from any subsurface hearth features, charcoal and ash lenses, or other in situ contexts can be used to establish ranges of site occupation. One-liter samples of midden and soil samples from subsurface hearth features, charcoal and ash lenses, or other in situ contexts, will be collected. Fire-modified rock will be weighed, counted, and discarded in the field and not collected or curated. Some proposed analyses are destructive, but when possible, artifacts and ecofacts that are analyzed to provide information regarding this research question, will be curated after analysis is complete. Many techniques continue to improve in precision and accuracy and new developments and improvements in these technologies could provide additional information at a later time. Curation methods are discussed further in Section 6.12 of this document.

5.2.3 Technology

Particularly interesting questions about technology have to do with associations between technology (lithic and bone) and mobility patterns, and the association between lithic and bone tool assemblage diversity and the distribution of stone tool or bone tool waste by type and the site's function. Questions to ask to determine level of technology for a given period of time include:

- What was the timing of the advent of the bow and arrow? Was it a sudden introduction (ca. 1500 BP) or was it used concurrently with the atlatl and dart for a period of time before the introduction of the bow and arrow? How did bow and arrow hunting change hunting patterns and hunting tactics?
- What raw materials were selected for use in biface tool trajectories and uniface tool trajectories during the various chronological periods represented in the RSEP study area? Are differences noted in the archaeological assemblages across cultural periods? Can raw material selection be used as a blunt instrument for chronological (and cultural) implications? How does the pattern defined for the RSEP study area compare with other documented assemblages in the region? Biface and uniface tools, implements broken during production, and debitage are the appropriate data classes for addressing these

questions. Quantitative and statistical analyses can be used to provide summary data and reliability of conclusions.

- Do the tools reflect a core-based strategy, a flake-based strategy, or a split cobble-based technology? The introduction of the bow and arrow around A.D. 500 may have favored a flake-based tool production strategy for arrow points as compared with the larger, earlier dart points.
- Do sites found in the Mojave and Colorado reflect an increase of imported materials amongst the traditional use cultures compared with neighboring groups in the same chronological sequences?

5.2.3.1 Data Sources

Data requirements for these questions would include large samples of debitage, stone tools, and bone (or wood) tools. Such samples might comprise more than 500 pieces of debitage and more than 50 bone (or wood) tools)—all well dated and correlated with other key cultural traits.

Examples of testable hypotheses and expected results:

- Hypothesis: Imported materials were used to make formal, rather than informal, tools.
- Test Implications: All the formal tools (shaped artifacts such as bifaces) on the sites will be made of imported materials and all informal tools (plain flakes with no retouching) will be made of local materials.
- Hypothesis: The flaked stone tools in the artifact assemblages of the sites are generic tools that can be adapted to many uses, not specialized tools for processing a single type of resource.
- Test Implications: The tools in the sites' assemblages will appear on other sites in the region with different vegetation communities, soil types, and geology.
- Hypothesis: The majority of the lithic materials used on the tested sites are made from local materials.
- Test Implications: The majority of the flaked stone artifacts recovered will be made from local chert, chalcedony, jasper, basalt, rhyolite, and quartz. Only a minority of the flaked and groundstone artifacts will be made of imported obsidian, or other nonlocal stone.

Artifacts and ecofacts to be collected and curated will provide information regarding technology and will include formal and informal tools, cores, and the waste produced during the manufacture, maintenance, and use of the aforementioned tools. If the sample of debitage is large (more than 500 pieces), all formal tools and a representative sample of informal tools and waste flakes and shatter would be curated. Smaller collections will be curated in their entirety. Additionally, beads and worked shell, if found, would provide information regarding technological strategies. Some proposed analyses are destructive, but when possible, artifacts and ecofacts that are analyzed to provide information regarding this research question will be curated after analysis is complete. Many techniques continue to improve in precision and accuracy and new developments and improvements in these

technologies could provide additional information at a later time. Curation methods are discussed further in Section 6.12 of this document.

5.2.4 Cultural Affiliation and Exchange

Regional and interregional trade patterns have at least two primary levels of influence on native cultures. First, there is the exchange of commodities necessary for subsistence such as food items and toolstone materials, among others. Also to be considered are the societal effects engendered by face-to-face contact and intermarriage. Settlements included within a networked exchange system retain greater flexibility for withstanding local shortages in food or other supplies through the redistribution of locally abundant commodities along the network. In addition, an overabundance of a resource such as acorns, pinyon nuts, fish, or domesticated crops in one area could be used to ameliorate food shortages in another locale, facilitating stability in settlement systems, the exchange to be repaid at some other time when circumstances are different. The societal value of this type of exchange system, therefore, is to optimize the productivity of the environment across an ethnic region to provide stability in settlement and other cultural systems, and maintain access both to critical subsistence resources that may not be dependable on a regular annual basis and to other resources or locales of importance to the ethnic group (Chartkoff, 1987).

A second influence of trade on native cultures focuses on the exchange of exotic items and the concomitant interfacing of peoples of different ethnic backgrounds, traditions, and religious beliefs. Peoples or settlements brokering exchange on the perimeters of ethnic regions are more likely to be influenced by intercultural contact, and to be the source of influence in their separate ethnic spheres.

Items of interregional trade may be valuable because of their limited quantities and the investments of time and labor involved in delivery, and may be more likely found in specialized contexts associated with long-term residence. Burial or cemetery locales, ceremonial and religious sites (e.g., rock art), and residential areas such as those found on the RSEP study area are the property types most likely to contain items important to the resolution of research questions in this context. Key research questions are:

- How did trade patterns of lithics, beads, and other non-perishable materials change during the transition from different prehistoric periods?
- Ethnographic accounts tell of long-distance trade between coastal groups and inland peoples. Coastal shell bead money was traded as far inland as the Great Basin of Nevada and Utah. Items of Sierra Nevada or Great Basin origin (obsidian) may have ended their exchange travels at sites on the coast. Is there material evidence in archaeological sites of these contacts?
- Is there a decrease or change in the exploitation of domestic materials as trade increases? Is there a notable change in imports and trade affiliations with outside groups that can be detected in the archaeological record?
- Does the paucity of complex assemblages indicate a solely transitory use of the Mojave Desert as a whole both in prehistoric and historic times?

5.2.4.1 Data Sources

Trail systems and artifacts found along them provide data on the route, direction, and period of interregional contact and exchange. Trade items found in datable context are also useful indicators. Obsidian source analysis can identify most sources in California, Oregon, and Nevada. Shell beads and other ornaments can be speciated and traced to specific freshwater and saltwater sources.

Examples of testable hypotheses and expected results:

- Hypothesis: The people who lived at the sites participated in exchange systems with both the Great Basin and the California coast.
- Test Implications: Both Great Basin resources, such as Coso obsidian, and coastal resources, such as shells, will be equally represented in the assemblages at each site.
- Hypothesis: Imported materials were not readily available to the residents of sites.
- Test Implications: Imported artifacts will demonstrate a higher incidence of repair and recycling than artifacts made from locally available materials. Unmodified imported materials such as cores and complete shells will not be present on the site; or, if cores of imported stone are present, they will be used more completely than cores of local stone.

Debitage from artifacts to be collected and curated will provide information regarding cultural affiliation and trade and will include items such as those listed above. Shell beads and other ornaments, if found, will be collected and curated. Obsidian will be collected, if found, as it can be sourced to determine its point of origin. Some proposed analyses are destructive, but when possible, artifacts that are analyzed to provide information regarding this research question will be curated after analysis is complete. Many techniques continue to improve in precision and accuracy and new developments and improvements in these technologies could provide additional information at a later time. Curation methods are discussed further in Section 6.12 of this document.

5.3 Research Questions and Data Sources for Historic Archaeological Resources

Previous historical archaeological work has contributed to the development of a series of research issues that provide a context for evaluating historic sites, and reflect current trends in historic archaeology. Research issues pertinent to the project area include limited settlement, mining and prospecting, construction and maintenance of railroads and irrigation networks, and the military occupation of the DTC. At present, it is anticipated that only cultural materials related to the occupation of Rice AAF will be recovered. If an unanticipated historic site is identified during construction, the following general research questions and methods presented below can guide the final research design. Additional research issues pertaining to military themes will be refined in forthcoming plans, and will continue to be developed over the duration of data recovery, monitoring, and analysis.

5.3.1 Household Structure, Consumer Behavior, and Socioeconomic Status

This theme involves the study of individual households and the response of each to economic and social conditions of the time. Whereas no historic civilian resources are currently known to occupy the project area, it is recognized that the unanticipated discovery of pre-Rice historic sites may be possible. Additionally, it is recognized that evidence of labor camps associated with railroad construction and maintenance, aqueduct construction and maintenance, or mineral exploration could be encountered. If encountered, such materials would likely be dominated by domestic refuse associated with the occupation of temporary camps. If determined significant, the materials may be approached from the perspective of household studies.

Concepts relevant to household studies include household composition, life cycle, income strategy, and status. Consumer behavior and social and economic status at domestic sites can be studied through the examination of refuse and refuse deposits associated with specific households.

Research questions related to household structures, consumer behavior, and social and economic status include:

- How does domestic debris from sites of the historic era help us gain an understanding of specific rural residential or remote area industrial lifeways in the middle and late nineteenth and early twentieth centuries?
- What does the domestic refuse reveal about the inhabitant's consumerism and economic status? What does the assemblage reflect about modes of economy, and distribution?
- Does the recovery of artifacts from the historic site provide information on social and economic status of a specific social, ethnic, or religious group?

5.3.1.1 Data Sources

Useful indicators of consumer behavior and economic status include materials amenable to subsistence-related activities, such as faunal remains, ceramics, and glass that reflect consumerism. Furthermore, domestic items such as ceramics, utensils, personal items, and luxury items may be indicative of economic status. Analysis of historic-era artifacts can allow the archaeologist to draw conclusions about the social class and ethnicity of the site inhabitants and their quality of life, compared with the remains from other sites. Other data sources include structural remains and historic records.

Examples of testable hypotheses and expected results:

- Hypothesis: The residents of the sites made a living as mobile laborers.
- Test Implications: There will be discrete concentrations of containers of portable foods, beverages, and very little else. These concentrations will reflect a homogenous socioeconomic class, and the content will be generally uniform.
- Hypothesis: Mobile labor appreciated access to a more geographically diverse market sphere than their sedentary counterparts.

- Test Implications: The assemblage will reflect distribution from a greater area than the assemblages of other, contemporaneous domestic sites in the region.
- Hypothesis: Mobile labor introduced visitors of diverse ethnicities to areas where their group may not have been demographically represented.
- Test Implications: The identification of indicators of ethnicity in the assemblage may provide information useful in understanding the role of interplay between mobile laborers and local markets.
- Hypothesis: Mobile labor may have interacted with military personnel in some level of exchange.
- Test Implications: The appearance of military artifacts comingled with those of an obvious, civilian context may suggest some degree of exchange.

If there is a discovery, the following field methods are recommended. No field work will proceed without direction from the CPM pursuant to COC CUL-8.

Site sampling plans will include the recovery and analysis of historic artifact materials such as subsistence-related artifacts including glass, ceramics, metal, and faunal remains. If structures or features are identified during test unit excavations, units will be expanded to expose the extent of the feature, recorded, mapped, and photographed. Artifact material (e.g., domestic refuse) will be collected. Field method procedures are discussed earlier and in Section 5.4 of this document.

5.3.2 Military Development Rice AAF and Camp Rice

The primary resources within the APE are related to the military development and use of Rice AAF and Camp Rice. Research themes related to military use of the APE include:

5.3.2.1 Socio-Economics/Ethnicity

The military included a variety of people from different socio-economic and ethnic backgrounds. The population in the project region may have included workers from the nearby towns or worker camps who were working on the railroad or the aqueduct.

Research questions related to socio-economics include:

- Is there evidence of civilians who worked at the desert camps?
- What was the nature of the interaction between the military personnel and the local population, if any?

5.3.2.1.1 Data Sources

Analysis of historic-era artifacts (e.g., faunal remains, ceramics, glass, metal, and cans) may allow the archaeologist to draw inferences about the social class and ethnicity and their quality of life, compared with the remains from other sites. Other data sources include historic records.

Hypothesis: Most of the soldiers where white from lower to middle-class families. During WW II African-Americans and Japanese-Americans served in segregated Battalions. The

remote location and the desire for the military to keep the training exercises a secret indicates that very few if any civilians were allowed access to the desert training camps.

Test Implication: The site will produce very little if any items indicating ethnicity or socio-economic status because the men were segregated and everything was standard military issued items. Small personal items, if found could indicate ethnicity or socio-economic status.

5.3.2.2 Recreation and Leisure

As stated earlier, the isolated location of Rice AAF made life difficult because supplies were difficult to come by. No recreational facilities were available, the weather was difficult, rations were unsatisfactory and the nearest towns were Needles, Blythe, Yuma and Indio which where only accessible by bus.

Research questions related to recreation and leisure include:

- What did the troops do when not training?
- Is there any evidence of temporary recreational areas, buildings or structures?
- Was there interaction with the locals and what was the nature of those interactions?
- Was alcohol consumption limited to special areas?

5.3.2.2.1 Data Sources

Data sources will include the recovery and analysis of historic materials such as recreational-related artifacts including physical remains of recreational areas or structures, game pieces, beer bottles etc. Written documents including personal accounts, military documents, newspaper stories etc. may also provide additional information.

Hypothesis: Training at the camp was short and rigorous so the troops probably did not have a lot of leisure time. If there were designated recreational areas they are probably not visible due to the temporary nature and purpose of the camp. Leisure time was probably spent mainly at the camp because transportation to the outlying towns was limited.

Test Implication: The site will produce very little if any recreational features or leisure items but historical research could provide more information.

5.3.2.3 Daily Activities

Camp Rice was a short-lived divisional camp occupied by the 5th Armored Division between August and October of 1942, followed by the 6th Armored Division who occupied Camp Rice for the next five months. Training included field exercises in night movement, orienteering, anti-aircraft firing, and anti-tank weapons training. Some detailed descriptions of daily life are described by Charles Barbour but additional archaeological data can confirm and compliment the historic information.

Research questions related to the daily activities include:

- What activities did a typical training day include?
- What was the daily life of an Army trainee like at Camp Rice?

- Did the actual conditions differ from the recorded conditions?
- Is the artifact assemblage uniformly military issue, or are personal items common?
- Are there patterns in the assemblage that reflect the dedicated use of certain areas for certain activities?

5.3.2.3.1 Data Sources

Data sources will include the recovery and analysis of historic materials such as recreational-related artifacts including physical remains of recreational areas or structures, game pieces, beer bottles etc. Written documents including personal accounts, military documents, oral histories, newspaper stories etc. may also provide additional information.

Hypothesis: The site has a large amount of historic-era military artifacts and features because it was a training facility.

Test Implication: The site will produce a variety of historic-era military artifacts that will provide information about the daily activities of the soldiers.

5.3.2.4 Training Tactics

The Desert Training Center (DTC) in was created in 1942 to train troops for combat in North Africa during WW II when Maj. Gen. George S. Patton recognized that in order to effectively train soldiers for desert combat the U.S. needed a place to develop new warfare tactics and train large quantities of men (Bischoff, 2000).

Research questions related to tactical training include:

- What new tactics were developed for the defense of North Africa during WWII and is it manifested in the organization and layout of the features?
- What criteria were used in selecting the training site locations?
- What new or innovative approaches or technologies were developed?
- How did field exercises get modified as a result of the unique desert environment?
- Does the archaeological record corroborate specific claims or statements in historical literature?
- What evidence exists, if any, of adaptive divergence from procedures?
- Does evidence exist in changes in specific practices over time?

5.3.2.4.1 Data Sources

Analysis of historic-era artifacts (e.g., faunal remains, ceramics, glass, metal, and cans) and features can allow the archaeologist to draw conclusions about field training compared with the remains from other sites. Other data sources include historic records.

Hypothesis: New tactics were developed because the terrain was so different than existing training facilities, which were primarily located in the eastern and southern United States.

Test Implication: The site may produce some historic-era military artifacts and features that were developed specifically for desert warfare. Historic documents and military records would also confirm and compliment the archaeological information.

Hypothesis: The DTC sites were chosen based on the following three criteria; terrain, access to a major transportation network (i.e., train) and availability of water.

Test Implication: The site locations were all selected using the above three criteria.

Hypothesis: Field exercises were modified mainly to accommodate the heat and the open terrain. Training exercises would have been modified to included new ways to deal with the heat. Large military maneuvers would have been highly visible in the desert terrain and were probably modified to reduce vulnerability.

Test Implication: Field exercises were modified mainly to accommodate the heat and the open terrain. Training exercises would have been modified to included new ways to deal with the heat. Large military maneuvers would have been highly visible in the desert terrain and were probably modified to reduce vulnerability.

5.3.2.5 Discussion

No field work will proceed without direction from the CPM pursuant to COC CUL-8 and -9. Field investigations shall include the recovery and analysis of historic artifact materials such as subsistence-related artifacts including glass, ceramics, metal, and faunal remains. Features or structures identified shall be recorded, mapped, and photographed. Artifact material (e.g., domestic refuse) will be collected. Field method procedures are discussed earlier and in Section 5.4 of this document.

Artifacts and ecofacts to be collected and curated will provide information about the military activities within the APE and will include historic artifacts such as glass, ceramics, metal, and faunal remains. Artifacts such as undifferentiated metal or glass fragments will be collected but may be discarded after analysis is complete. Specifically, unknown metal fragments that do not contain rivets or other fasteners or any defining features will not be curated. Glass fragments that do not exhibit any seams, embossing, or other features and are not either bases or rims will not be curated. Some proposed analyses are destructive, but when possible, artifacts that are analyzed to provide information regarding this research question will be curated after analysis is complete. Many techniques continue to improve in precision and accuracy, and new developments and improvements in these technologies could provide additional information at a later time. Curation methods are discussed further in Section 6.12 of this document.

5.4 Data Collection Procedures

If there is a discovery, the following data collection procedures and field methods are recommended. In the event of a discovery, the CPM will assess significance and identify mitigation pursuant to CUL-8. Necessary field work will proceed only after direction from the CPM.

All features, artifact bags, field records, and data sets will be assigned unique Field Specimen (FS) numbers. A central database will be established to track the assignment of FS

numbers to each item. In the event that an item is discarded or otherwise rejected as a component of the data, the item's corresponding FS number will not be reassigned.

GPS files will be downloaded daily, requiring that each day a new rover file will be corrected. Additionally, in the event of an unanticipated discovery, a new rover file will be created that is unique to that discovery. No two separate or potentially distinct cultural resource sites will be documented within the same rover file.

All photographs will be downloaded daily. A folder will be created for each day of fieldwork. Each file will contain a photograph of the completed photo log. The photo logs will be cataloged, each with a unique FS number.

Prehistoric artifacts may be identified as a result of this project. Prehistoric stone tools will be collected for analysis from the surface and subsurface matrix, and placed in clear polyethylene zip-lock bags. Shell and bone will be collected from the surface and subsurface matrix and placed in clean plastic vials, and large or wet bones will be placed in clean paper bags if necessary. All items recovered from an excavation will be clearly labeled with the site number, unit number, level, associated feature, date, and collector's initials.

Field methods for the collection of artifacts from a newly discovered prehistoric archaeological deposit will include the excavation of 1-meter by 1-meter units or expanded unit blocks. Matrix will be simultaneously screened through 1/4-inch (and 1/8-inch screen inserts when deemed necessary to recover shell beads, fish bone, and pressure flakes). Shell, lithics, ground stone, bone fragments, and fire broken/affected rock will be sorted, bagged and labeled. Residue material located in the 1/8-inch mesh screen will be double-bagged, labeled, and retained for water screening. From water screens, all lithics, bone, modified shell, the hinges of bivalve mollusks, and the apices of gastropod shells will be saved. Each material type from dry or water screening will be bagged separately in clear zip-lock, polyurethane bags and labeled.

Soil samples will be collected for pollen and phytolith analysis. Column samples will be collected in 10-by-10-cm samples from each unit. Each 1,000 cubic cm of matrix will be placed in a clean, clear, zip-lock, polyethylene bag and labeled. The samples will be transported to a laboratory for processing. A subset of these samples will be evaluated in the laboratory as part of the site analysis reporting process to determine if they produce any charcoal that can be used for macrobotanical analysis. If the sample contains preserved charred seeds, then additional soil samples will be analyzed to obtain a representative sample of charred seeds from the site. Specific sample sizes and analysis procedures will depend on the site-specific testing or mitigation plan developed at the time of site discovery.

The types of features to be excavated include hearths, house floors, cache pits, artifact concentrations, and so forth. The excavation and recordation of these features will follow industry standards, including documenting and recording data, such as provenience, description, depth, and collecting soil and charcoal samples. Each feature encountered in a site shall be given a feature designation sequential number. Feature forms also will be used for recording data, observations, and for mapping each feature. Photographs will be taken throughout the excavation process. Field methods are discussed further in Section 5.4 of this document.

Generally, artifacts and ecofacts to be collected and curated will provide information about each data set discussed above. The majority of the artifacts and ecofacts that are collected also will be curated. Fire-modified rock will be weighed, counted, and discarded in the field and not collected or curated. Historic artifacts such as undifferentiated metal and glass fragments will be collected but may be discarded after analysis and not curated. A representative sample of collections of debitage, which consist of more than 500 artifacts, may be curated rather than the entire collection. Smaller collections will be curated in their entirety. Artifacts or ecofacts that are submitted for non-destructive analyses will be curated when the analysis is completed; artifacts or ecofacts that are submitted for destructive analyses will by definition not be curated. Many techniques continue to improve in precision and accuracy and new developments in these technologies could provide additional information at a later time.

Historic artifacts will be encountered in great numbers. Bottles, cans, ceramics, and other mass-produced items are an excellent source of information in the field, but their curation is not conducive to future research.

Field methods for the collection of data from cans will include identification of type, method of opening, measurements to 1/32-inch in major dimensions and, if possible, function will be documented. This analysis will take place in the field, and these items will be left at their location of discovery.

Field methods for the collection of data from bottles will include identification of glass color, documentation of the maker's mark, photography of representative maker's marks, and, if possible, function will be documented. This analysis will take place in the field, and these items will be left at their location of discovery.

Field methods for the collection of data from ceramics will include form, function, material, and color. Maker's marks will be photographed in the field. Fragmented items will be left at the location of discovery, however intact ceramic items of unusual form, possessing military markings, or possessing strong interpretive value may be collected for future consideration as items for curation. These items will be placed in clear plastic bags or paper bags for delivery from the field.

In the event that paper items possessing legible, written text are encountered, these items will be laid flat between two pieces of acid-free paper. These items will be analyzed and documented in a controlled environment. If paper items worthy of curation are identified, their images will be scanned into a .pdf file, and the material item will be prepared to the standards of the curation facility.

SECTION 6

Avoidance, Monitoring, and Mitigation

Monitoring and mitigation measures are prescribed to ensure avoidance of resources or compensate for the loss of significant cultural resources because of unavoidable impacts resulting from a project's construction, operation, or decommissioning. Mitigation measures are imposed by means of COCs and are designed to minimize the impact on any kind of significant cultural resource, whether an element of the built environment, an ethnographic property, or an archaeological site. Projects whose design cannot be changed to avoid known significant cultural resources will have COCs that specify detailed mitigation activities. Mitigation measures for discoveries will be addressed under CUL-8.

6.1 Avoidance

Resources in the Western's Parker Dam-Blythe Transmission Line No. 2 are to be given a 10-meter-wide buffer, and are to be flagged in a conspicuous manner and avoided, per CUL-12. Western no longer plans to install a fiber-optic communication line on the Parker-Blythe Transmission line, however. For this reason, the avoidance provisions of CUL-12 will not need to be implemented. The CPM is to enforce avoidance of the flagged areas during RSEP construction and remove flagging upon construction completion in order to detract attention from potential vandalism. Within the APE, the following classes of features will be considered for avoidance through design and monitored avoidance:

- Pits
- Concrete pads
- Rock piles
- Emplacements
- Rock alignments
- Airfield marker
- Firing butt
- Concrete Footings
- Runways
- Roads

The feature classes above are subject to change regarding the need for avoidance as a result of the recordation and evaluation of individual features with respect to their contribution to the airfield and the camp. Recommendations regarding contribution are subject to review and acceptance by the CPM as part of the data recovery process outlined in Section 6.4 below.

6.2 Monitoring

The objectives of monitoring are to protect extant significant historic buildings, structures, sites, or objects from construction impacts; to identify at the time of discovery any

archaeological materials exposed during ground disturbance; and to protect such resources from damage while the CRS makes (and provides to the BLM's Authorized Officer and CPM for review and approval) recommendations of eligibility for the NRHP and/or CRHR.

For the purposes of this CRMMP, archaeological construction monitoring is defined as on-the-ground, close-up observation by a CRS, alternate CRS, PHA or CRM, meeting the qualifications prescribed in CUL-2. Construction monitoring will be initiated if archaeological material is discovered in the project area by construction personnel. The CRS, alternate CRS, PHA or CRM attempts to define and identify any discovered archaeological find, halts construction in the vicinity of a find, if necessary, in order to evaluate it, and keeps a daily log of construction activities observed and any archaeological finds made. The CRS, alternate CRS, PHA or CRM sets out flagging or fencing to create a buffer zone around known or discovered cultural resources signifying that ground-disturbing activities are not allowed in those locations. The monitor checks that the flagging and fencing remain a visible and effective barrier until project activities have been completed in the vicinity of the resource. Full-time archaeological monitoring is defined as careful observation of the ground-disturbing activities of all machines on a construction site for as long as the machines are being operated. Full-time archaeological monitoring, if deemed necessary, may require more than one monitor working at a time, depending on how many machines are working and how far apart they are. If one monitor cannot observe all ground disturbances at the same time, then additional monitors will be assigned so that all ground disturbance can be observed.

Cultural resources discovered during mobilization or construction may include, but are not limited to, the following types of physical remains:

- Prehistoric cultural resources are defined as isolated occurrences or clusters of artifacts, features, and human burials, which are evidence of the activities of Native American peoples in the past. Indicators of prehistoric and protohistoric occupation by Native Americans include, but are not limited to, artifacts of various natural materials, areas of soil discoloration, shell, animal bone, manuports, heat altered stone, and human bone. Occurrences of prehistoric materials may include, but are not limited to, the following:
  - Artifacts (e.g., projectile points, shell beads)
  - Habitations (e.g., house pit depressions, shell and/or midden deposits, fire-affected rock, heat-treated rock, manuports)
  - Features (e.g., hearths, stone features, artifact caches)
  - Human remains (burials or isolated bone fragments)
- Historic cultural resources are defined as isolated occurrences or clusters of artifacts, features, and structures (or their remains), at least 50 years of age (or exceptional, or having Native American religious significance) that are evidence of the activities of peoples of all ethnicities of the American historic period. Historic materials may include, but are not limited to, the following:
  - Buildings and structures or the remains thereof
  - Native American sacred sites or other significant ethnic sites (of any age)

- Trash pits, privies, wells, and associated artifacts, surface dumps, and artifact scatters
- Isolated artifacts or isolated clusters of artifacts (e.g., metal cans, glass bottles, ceramic vessels)

The resource specialists and onsite monitors for resources other than cultural resources, including the Paleontological Resources Specialist, the Designated Biologist, all Paleontological Resources Monitors (PRMs), and all Biological Monitors, will be informed that there are procedures they should follow if they observe cultural material while monitoring ground disturbance:

- PRMs and Biological Monitors should not pick up items that may be cultural.
- They should secure the area and inform the CRM immediately.

The CRMs will be instructed to reciprocate. If a CRM observes something a PRM or Biological Monitor should see, then the CRM should secure the area and inform the PRM or the Biological Monitor.

6.3 Native American Participation

During licensing, correspondence was sent to the NAHC with a project description and location map. The NAHC used this information to provide the project owner with a list of Native American tribes with traditional lands or cultural places located within the project region. For each listed tribe, the NAHC furnished the tribal representative's contact information. This list will be utilized by the CRS/CPM for coordination with Native American participants when necessary, which may include Native American monitoring of ground disturbance areas where archaeological resources or Native American remains have been discovered. Native American participation is in support of CUL-7 and -8 and could be initiated at the time archaeological resources are found by construction personnel or the project owner and assessed as Native American cultural resources by the CRS. If the need for a Native American monitor becomes necessary during project construction, a Native American monitor (s) shall be chosen from the list of local tribes affiliated with the project area, furnished and guided by the NAHC. The Native American consultation process, including what the NAHC is responsible for providing, is fully detailed in the *State of California Tribal Consultation Guidelines* (OPR, 2005).

6.4 Pre-construction Mitigation of Known Cultural Resources

Per CUL-9, Data Recovery for Rice AAF and Camp Rice Features, the project owner has hired a PHA with the qualifications described in **CUL-2** to supervise the fieldwork, including data recovery for the Rice AAF and Camp Rice Features. Prior to the start of ground disturbance, the feature forms for all historic-period features at Rice AAF and Camp Rice will be completed to the satisfaction of the CPM. The focus of the recordation is to recover any additional data associated with these features before they are destroyed during construction.

6.4.1 Rice Army Air Field and Camp Rice Features Data Recovery Plan

A feature data recovery plan (FDRP) will be prepared specifying in detail the location recordation equipment and methods to be used and describe any anticipated post-processing of the data. The plan will be provided to the CPM for review, and no field work will be implemented until the plan is approved. Additionally, no field work will commence until a safety plan is approved and the requisite explosive ordnance disposal personnel are present in areas designated as having the potential for munitions and explosives of concern (MEC). The CRS, the PHA, and/or archaeological team members will implement the plan, if allowed by the CPM, which will include, but is not limited to the following tasks:

6.4.1.1 Training

Prior to beginning the fieldwork, the PHA and all field crew members will be trained by the DTCCL Historical Archaeologist, or equivalent qualified person approved by the CPM and hired by the project owner should the DTCCL Historical Archaeologist not be available, in the identification, analysis and interpretation of the artifacts, environmental modifications, and trash disposal patterns associated with the early phases of WWII land-based U.S. Army activities, as researched and detailed by the DTCCL PI-Historian and the DTCCL Historical Archaeologist. Prior to beginning the fieldwork, the field crew members will also be trained in the consistent and accurate identification of the full range of late nineteenth and mid-twentieth-century can, bottle, and ceramic diagnostic traits.

6.4.1.2 Archival Research

Research is on-going and includes (but is not limited to) the following:

- General Patton Memorial Museum, Chiriaco Summit, California
- National Archives, Pacific Region, Laguna Niguel Office, Laguna Niguel, California
- National Archives, College Park, Maryland
- San Bernardino County Recorder's Office, San Bernardino, California
- San Bernardino County Library, Needles, California
- Riverside County Recorder's Office, Riverside, California
- Riverside County Library, Blythe, California
- Air Force Historical Research Agency, Maxwell Air Force Base, Montgomery Alabama
- U.S. Army Corps of Engineers, DERP-FUDS Program

Detachment, Group, Company, Squadron, and Division archives:

- 2nd Airdrome Detachment
- 85th Bomb Group
- the 312th Bomb Group
- 339th Fighter Group
- 5th Armored Division
- 6th Armored Division
- 146th Armored Signal Company
- 86th Cavalry Reconnaissance Squadron

The results of archival research will be provided in the comprehensive technical report described below.

6.4.1.3 Mapping

The original site map will be updated to include at a minimum: landform features such as small drainages, any man-made features, the limits of any artifact concentrations and features (previously known and newly found in the geophysical survey), using geographic positioning system recordation equipment with sub-meter accuracy capable of recording locational data in a standard georeference grid coordinate system (such as UTM 11 North or California Teale Albers). Additionally, georeferenced high resolution aerial photographs will be obtained to facilitate the accurate recordation of features, and their interrelationship. These data will be documented and processed as layers in the project GIS database. The FDRP will discuss the post-processing of data.

6.4.1.4 Documentation of the Historic Built Environment

Documentation will be prepared for the extant built environment, and will include the following:

- Digital photographic documentation of the concrete features
- Field mapping and measurements and scale drawings of the concrete features
- Reproduction and discussion of the available historic camp and airfield drawings/maps

6.4.1.5 Artifact Identification and Analysis

A detailed in-field analysis of a representative sample of diagnostic artifacts will be completed, documenting the measurements and the types of seams and closures for each bottle, and the measurements, seams, closure, and opening method for all cans. Photographs will be taken of maker's marks on bottles, any text or designs on bottles and cans, and of decorative patterns and maker's marks on ceramics. Artifacts will not be collected.

6.4.1.6 Near Surface Geophysical Study

A systematic geophysical survey of portions of the airfield within the project site will be completed with inclusive coverage of the northern end of the site, where most of the military activities occurred, to identify and map the distribution of buried materials/features. This survey will be conducted with a mobile electromagnetic instrument and high-resolution GPS unit, measuring both conductivity and magnetic susceptibility (metal detection). The FDRP will discuss the sampling design for this effort, and post-processing of data, including the recommendations for ground-truthing investigations.

6.4.1.7 Feature Excavation

Features having subsurface elements, including those identified in the geophysical survey, will be excavated by a qualified historical archaeologist. All features and contents will be mapped, measured, photographed, and fully described in writing. As safety is paramount, no excavation will take place where hazardous waste (including MEC may be present. If MEC (or any other hazardous waste) is encountered, all work will halt immediately, and will not resume until the hazard is removed. If archaeological resources are damaged as part of the detection and removal process, the disturbances will be documented post-hazard removal.

6.4.1.8 Reporting

6.4.1.8.1 Letter Report

The details of what is found at each Rice AAF feature or new site will be presented in a letter report from the CRS or PHA which will serve as a preliminary report, that details what was found at each feature, as follows:

- Letter reports may address one feature or multiple features depending on the needs of the CRS; and
- The letter report will be a concise document that provides a description of the schedule and methods used in the field effort, a preliminary tally of the numbers and types of features and deposits that were found, a discussion of the potential range of error for that tally, and a map showing the location of collection and/or excavation units, including topographic contours and the feature landforms.
- Based on application of the research design in Section 5, the letter report will make a recommendation on whether each feature is a contributor to the DTCCL.

6.4.1.8.2 Submission of Fieldwork Data

Data collected from the fieldwork will be provided to the DTCCL Historical Archaeologist along with recommendations by the PHA regarding which, if any, of the historic-period sites are contributing elements to the DTCCL. The recommendations will be based upon the themes presented in the research design in Section 5. Data provided will be provided in the preferred formats, including GIS shape files.

6.4.1.8.3 Comprehensive Technical Report

The PHA will analyze all recovered data and write or supervise the writing of a comprehensive final report that will be included in the CRR (**CUL-5**). Relevant portions of the information gathered may be included in the possible NRHP nomination for the DTCCL (funded by **CUL-1).** At minimum the report will present the following:

- Mapping data
- Results of geophysical study
- Artifact analysis
- Results (and discussion) of feature excavation
- A history of Rice AAF and Camp Rice, including as contributing elements to the DTC system, and a history of the military use of the landscape.

6.5 Monitoring Requirements for Project Components with No Known Cultural Resources

At the direction of the CPM, the applicant will ensure that full time cultural resources monitoring is conducted of ground disturbance activities in the RSEP where CRHP or NRHP eligible cultural resources have been discovered. Eligibility will be determined by the CPM.

Full-time archaeological monitoring will be the archaeological monitoring of all earth-moving activities. Full-time archaeological monitoring will require one monitor per active earthmoving machine working in the archaeologically sensitive areas, as determined by the CRS in consultation with the CPM. If an excavation area is too large for one monitor to effectively observe the soil removal, one or more additional monitors will be retained to observe the area.

In the event that there is an inadvertent discovery (Discovery) of archaeological materials, pursuant to CUL-8, the CRM will notify the CRS, who, in turn, shall notify the project owner and the CPM within 24 hours of discovery or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 Am on Sunday morning. The project owner will ensure that work is halted should there be a Discovery on the project site or linear facilities. Redirection of ground disturbance will be accomplished under the direction of the CRM, in a manner agreed to by the CRS.

In the event that the CRS determines that the current level of monitoring is not appropriate in certain locations, a letter or E-mail detailing the justification for changing the level of monitoring will be provided to the CPM for review and approval prior to any change in the level of monitoring.

Archaeological materials may include, but are not limited to, such items as whole or fragmentary flaked or ground stone tools; stone flaking debris; discolored, fire-altered rock; animal bone; charcoal; ash; discolored, burned earth; rocks and minerals not common to the project site; and fragments of ceramic, glass, or metal. In the event cultural resources more than 50 years of age or that may be considered NRHP- or CRHR-eligible are found, or impacts on such resources can be anticipated, construction will be halted or redirected in the immediate vicinity of the Discovery sufficient to ensure that the resource is protected from further impacts. The halting or redirection of construction will remain in effect until the CRS, a CRM, or appropriate cultural resources technical specialist has made evaluations of the historical significance of the Discovery (CUL-8). The recommendations of significance will be substantiated and reported to the CPM by the CRS.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS will be considered to be in non-compliance with the COC for this project.

6.6 Monitoring Personnel and Project Communications Procedures

Pursuant to COC CUL-2, the CPM has approved the resume(s) of the designated CRS, Aaron Fergusson, RPA, the alternates CRS, Gloriella Cardenas, the designated PHA, Roderic McLean, M.A., RPA. Gloriella Cardenas, Dmitra Zalarvis-Chase, Henry Davis, Erica Maier, and Jim Christensen are proposed as a CRM. Replacement of the CRS will be conducted according to condition CUL-2. If the CPM rescinds approval of a CRS, the project owner will replace the CRS in accordance with condition CUL-2.

The CRS has verified that the following designated CRMs meet the requirements of CUL-2. The designated CRMs for RSEP are Gloriella Cardenas, Dmitra Zalarvis-Chase, Henry Davis, Erica Maier, and Jim Christensen. The names of additional monitors, verified by the CRS pursuant to CUL-2, may be submitted during the course of the project with a statement that the additionally proposed CRM meets the qualifications in CUL-2. The CRS will submit the resume of any necessary specialist to the CPM for approval pursuant to CUL-2. If the CRS is replaced, the project owner will submit an addendum to the CRMMP indicating the name of the new CPM-approved CRS.

The CRS and or PHA will be responsible for overall implementation of the construction monitoring program. Pursuant to COC CUL-6**,** the CRS, the alternate CRS, PHA or CRMs will conduct onsite worker cultural resources awareness programs. Pursuant to COC CUL-2, the CRS will obtain appropriate specialists, as needed, to guide the evaluation of cultural resources that are discovered. Pursuant to COC CUL-8, the CRS/alternate CRS may be required to monitor construction following discovery of potential cultural resources during construction, but his/her primary functions will be to direct and coordinate the field activities of the CRMs, to provide recommendations of eligibility for discovered resources; to ensure that applicable laws, ordinances, regulations, and standards (LORS) are met; and to serve as a conduit between the project principals (the project owner and the construction supervisors) and the project cultural resources regulators (the CPM and the representatives of other interested parties, such as federal agencies and Native American tribes). Under CUL-7, each day that no discoveries are made, the CRS, under authority of the project owner, will provide a statement that "no cultural resources over 50 years of age were discovered" to the BLM's Authorized Officer and CPM as an email or in some other form acceptable to both parties. This notification will not be necessary during suspensions of construction or after the conclusion of construction. The CRS will also provide a weekly monitoring summary to the project owner, who will include this information in the MCR to the CPM, pursuant to COC CUL-7.

Pursuant to COC CUL-7, the CPM will be notified of any incidents of non-compliance with the Cultural Resources COCs. The project owner and the CRS will then recommend corrective action, and the CRS will report in writing to the CPM on the resolution of the issue no sooner than 2 weeks and no later than 1 month after it is resolved. If requested by BLM's Authorized Officer or the CPM, the project owner will meet with the BLM's Authorized Officer, CPM and CRS to review the non-compliance issue.

Cultural resources activities related to RSEP will meet any applicable standards and guidelines established by the OHP. The CRS will complete and submit to the BLM's Authorized Officer and the CPM a CRR that will follow contemporary archaeological standards as identified in the Archaeological Resource Management Report (ARMR) guidelines and the COC standards identified in CUL-5. Daily monitoring logs, daily status reports, weekly summary reports of the daily logs, interim monthly status reports, and final reports will be submitted as required by CUL-5 through CUL-8. Any site location information forwarded to the BLM and CPM must be sent under separate cover with a formal request (pursuant to CEC regulations) for confidentiality.

Pursuant to COC CUL-8, in the event of an archaeological discovery made during monitoring, the CRS or CRM will halt construction. The CRS will visit and evaluate the find, and the CRS will make a recommendation to the BLM's Authorized Officer and CPM

regarding the significance of the find and, if it is recommended as significant, propose mitigation measures. If BLM's Authorized Officer and the CPM agree that a find is not significant, the CRS will have the discovery recorded on a DPR 523 form (except for materials less than 50 years old) and allow construction to resume. If BLM's Authorized Officer and the CPM agrees that the find is significant or rejects the CRS's recommendation that the find is not significant, the CRS and project owner will then submit a treatment plan for the find to the BLM's Authorized Officer and CPM for review and approval (see Section 6.8, Work Curtailment Authority, for more detail).

6.7 Workforce Education

Pursuant to COC CUL-6, prior to the beginning of ground disturbance and during all periods of ground disturbance thereafter, the CRS, the alternate CRS, or the CRMs will provide cultural resources training to all new employees within their first week of employment on the proper procedures to follow in the event that cultural resources are uncovered during project excavations. Employees working in ground-disturbing activities will not begin job-related tasks until they have received this training. Training by CPM-approved video is acceptable. Employee education will focus on the following issues:

- The rationale for cultural resources monitoring
- Regulatory policies and laws protecting resources and penalties for violations
- Basic identification of cultural resources
- The procedures to follow in case of a discovery of such resources

6.8 Work Curtailment Authority and Discovery Treatment Procedures

The project owner has granted the CRS, the alternate CRS, and the CRMs the authority to halt ground-disturbing and construction activities near newly discovered cultural resource materials. (For the purposes of this CRMMP the terms "finds," "cultural resource," "cultural material," "discovery," and "cultural resource materials" are used interchangeably.) Pursuant to COC CUL-8, ground-disturbing activities and construction activities will be halted by construction personnel if there is a discovery of exceptional cultural material or cultural materials greater than 50 years of age, or if a known cultural resource would be affected in an unanticipated manner by the ground-disturbing or construction activities. A 100-foot buffer zone will be maintained, if possible, until the CRS has been able to evaluate the discovered cultural material. Only the project owner/construction supervisor, with the assurance from the CRS that all CPM-required mitigation has been completed, can authorize reinitiating ground-disturbing and construction activities. If construction workers discover cultural materials, they will immediately halt work in the area and inform the construction foreman or manager, who will immediately halt ground-disturbing activities in the area of the discovery and notify the CRS and CRM, if a CRM is present on the site.

The CRS acts as the responsible party for cultural resources issues. CRMs will report directly to the CRS or to the alternate CRS if the CRS is not available. Pursuant to COC CUL-8, the halting or redirection of construction will remain in effect until the CRS and the project owner/construction supervisor have conferred with BLM's Authorized Officer and

the CPM, and the CPM has determined the eligibility of the discovery and approved mitigation, if necessary. If mitigation is necessary, ground-disturbing activities and construction activities will remain halted near the discovery until the CPM-approved mitigation has been completed.

6.8.1 Treatment of Cultural Materials Considered Less Than 50 Years of Age

All the materials listed below are less than 50 years of age and, unless of exceptional significance, will not be considered cultural resources that merit consideration for recordation or mitigation. If there is any doubt regarding the age of a historic-period find, the project owner and CRS will discuss this with the CPM when giving notice of the find. The following materials **will not be reported** to the CPM under CUL-8 unless exceptional:

- Plastic products limited to Styrofoam® and other foamed polystyrene products, Velcro®, Teflon®-coated cookware, polyvinylchloride pipe, high-density polyethylene, polypropylene, polyimide, thermoplastic polyester, linear low density polyethylene, liquid crystal polymers, and products marked with resin codes
- Cans made from aluminum or bi-metal, or those with pull-tab or push-tab (metal or plastic) openings
- Aluminum foil containers
- Synthetic tires, car parts
- Modern electronics (CD players, VCRs, electronic appliances, personal electronics, computers, printers)
- Compact disks, floppy computer disks, magnetic tape media
- Unidentifiable metal fragments
- Rubberized metal
- Clothing or shoes made of plastic or synthetic materials

Monitors or other staff who are examining historical materials, especially plastic materials, should have sufficient familiarity to differentiate materials that are more than 50 years of age from more recent materials. Keep in mind that even though there is a perception that plastics are all of recent production, many plastics were invented and produced in the late nineteenth and early twentieth centuries.

Any materials less than 50 years old that are found with materials older than 50 years will be reported.

6.8.2 Prescribed Treatment of Archaeological Discoveries 50 Years of Age or Older

All cultural resources more than 50 years of age will be recorded on DPR 523 forms, mapped, and photographed. Not all cultural resources more than 50 years of age discovered during construction, however, are significant historical resources under CEQA. Non-significant cultural resources, ineligible for nomination to the CRHR because of lack of

integrity or information potential, may be treated prescriptively. The following section lists prescribed treatments for resources that are limited in value. Any resources not in this list cannot be so treated.

Prescribed treatment for the classes of resources more than 50 years of age listed in Sections 6.8.2.1 and 6.8.2.2 consists of:

- Construction is halted in the immediate vicinity of the find.
- The CRS/CRM records the find on a DPR 523A, including a location map and a photograph. Artifacts do not have to be collected or curated.
- The CRS or the project owner notifies the CPM of the find within 24 hours. The notification includes a description of the resource, a statement that it qualifies for prescribed treatment, and the information that the treatment has been completed.
- Construction can resume when the CPM acknowledges notification of the discovery and approves prescriptive treatment, and the information required for the DPR 523A form has been collected.
- The CRS submits the required DPR 523A form completed for the find to the CPM as an attachment to the next Cultural Resources Monthly Summary Report, required under CUL-8.

6.8.2.1 Classes of Prehistoric Archaeological Resources Eligible for Prescribed Treatment

- Small clusters (less than 1 meter x 1 meter in size) of unidentifiable shell (whole or fragmented). If artifacts, manuports, or other materials are found, the shell and associated deposit will be treated under protocols in Section 6.8.4.
- Non-diagnostic isolated (spatially and temporally) prehistoric artifacts (see Section 6.8.3 for treatment of certain isolated prehistoric finds).

6.8.2.2 Classes of Historic-period Archaeological Resources Eligible for Prescribed Treatment

- Small, isolated artifact concentrations (fewer than 20 artifacts or the fragments of fewer than three objects) with no potential for subsurface deposit.
- Concrete, brick, or other building materials that lack structural integrity and are part of a documented disturbed (redeposited) context.
- Non-diagnostic isolated historic artifacts (see Section 6.8.3 for treatment of certain isolated historic finds).

Any cultural resources deposits containing human remains cannot be treated prescriptively (see Section 6.8.5).

6.8.3 Treatment of Diagnostic and Exceptional Isolated Finds

Certain isolated finds are subject to special treatment. They include diagnostic prehistoric artifacts, intact, unusual historic-period artifacts greater than 50 years of age, and other exceptional artifacts (high quality, unique, or labeled examples such as mortars, pestles, projectile points, ornaments, embossed bottles, decorated or maker-marked ceramic vessels,

or dated/inscribed metal objects). Diagnostic artifacts are defined as items that are indicative of a particular time or cultural group.

Diagnostic artifacts will be treated as follows:

- Construction is halted in the immediate vicinity, while the CRS/CRM records the find on a DPR 523A, including a location map and a photograph.
- The isolate is collected and will be curated.
- The CRS notifies the CPM of the find within 24 hours. Notice to the CPM includes a description of the resource and a description of the steps taken to determine that it was truly spatially isolated.
- Construction can resume when the CPM receives notification of the discovery and the accompanying information required in the preceding bullet.
- A copy of the completed DPR 523 is submitted to the CPM within the time period specified in CUL-8.
- All isolates will be listed and described in the CRR.

Examples of diagnostic artifacts include:

- Prehistoric:
  - ceramics—decorated, rim, or basal sherds; lugs; figurines; ear spools; complete vessels
  - lithics—points, scrapers, drills, ground stone, and blanks; exotic (imported) raw material; worked bone
- Historic:
  - ceramics—decorated, rim, or basal sherds; maker's marks; complete vessels
  - glass—cut, pressed, or decorated; vessel bases and lips; labels; complete vessels
  - buttons, marbles, pipes, figurines, doll parts
  - identifiable metal—coins, tools, gun parts, machine parts, hinges, nails, buckles, flatware, wagon hardware, horse tack
  - identifiable plastic or rubber, and worked bone

6.8.4 Treatment of Archaeological Resources Not Eligible for Prescribed Treatment and Not Human Remains

Whether treated categorically, individually, or as special isolated finds, DPR 523 forms must be completed for all cultural resources over 50 years of age or of exceptional significance, if younger, when discovered during construction.

Except for the materials listed in Sections 6.8.1, 6.8.2, 6.8.3, and 6.8.5, all other discovered archaeological resources 50 years of age or older, or of exceptional significance if younger, must be treated individually, as significant or potentially significant discoveries. Individual treatment consists of the following steps.

1. In the event of a discovery, the project owner or construction personnel will halt construction activity near the find and contact the CRS. If deemed necessary by the CRS to protect the resource, excavation work or any other earth-moving activities within 100 feet or greater will be halted or redirected during the evaluation of the discovery for the NRHP and CRHR process.
2. If discovery occurs during archaeological monitoring, the CRM will notify the CRS and the site/area foreman or construction manager of the find, after securing the discovery with a 100 foot protective buffer.
3. If the CRS determines that the discovery qualifies for prescribed treatment, then the CRS/CRM will follow the procedures outlined in Section 6.8.2.
4. The CRS will notify the project owner of the Discovery. The CPM and the BLM's Authorized Officer will be notified of the find within 24 hours or on Monday if the discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday, per CUL-8. Included in this notification will be a description of the Discovery, the action taken, recommendations for eligibility, and recommendations for mitigation of any cultural resources.
5. The CRS will submit a completed DPR 523 form and will include recommendation on the significance of the find. The project owner will submit completed forms to the BLM's Authorized Officer and the CPM.
6. The project owner, the CRS, and the BLM's Authorized Officer and CPM will confer, and the BLM's Authorized Officer and the CPM will determine whether or not the find is eligible for the NRHP/CRHR.
7. If the find is not eligible for the NRHP/CRHR, the CRS/CPM will complete a DPR 523 primary form, and the project owner will submit the completed form to the BLM's Authorized Officer and CPM within the time period specified in CUL-8. After reviewing and approving the form, BLM and the CPM will approve the resumption of construction in the area of the find.
8. If the find is eligible, the CRS will submit to the BLM's Authorized Officer and CPM an avoidance plan or an appropriate data recovery plan. If the CRS or a specialist in human osteology determines that the find includes human remains, those remains are to be treated under the protocol for treatment of human remains (see Section 6.8.5). The CRS will continue to treat the portion of the find not subject to Health and Safety Code 7050.5 and Public Resources Code 5097.98 under this section (6.8.4).
9. The BLM's Authorized Officer and CPM will approve the data recovery plan, and data recovery is carried out. The previously prepared research design (in the CRMMP) and/or the data recovery plan will specify what artifacts are collected and curated. Excavations where cultural material has been discovered will not be back-filled until the BLM's Authorized Officer and CPM approves the back-filling. If the area needs to be secured, the project owner will arrange for plating, fencing, or other temporary measures approved by the BLM's Authorized Officer and CPM.

10. Data recovery is completed. The CRS will complete the appropriate DPR 523 detail form, and the project owner will provide it to the BLM's Authorized Officer and CPM 48 hours following data recordation/recovery, as specified in CUL-8.
11. After reviewing and approving the form, the CPM will approve back-filling the data recovery excavations and the resumption of construction in the area of the find.

6.8.5 Treatment of Human Remains

Per the United States Department of the Interior's Memo on *Bureau of Land Management-California (BLM) Responsibilities Regarding Discovered Human Remains* (2010), all human remains will be treated with respect and dignity upon discovery. Immediately, upon discovery, work will be halted, and the area secured. The County Coroner's Office will be notified. The coroner has up to two working days to assess the remains after notification. The CRS, project owner, CEC and BLM's Authorized Officer will be notified immediately upon discovery of human remains.

If the remains are found to be modern, the appropriate authorities will be notified and no work must resume until investigation is complete.

If the CRS or a specialist in human osteology determines that a discovery includes human remains:

1. All excavation activities within 100 feet will immediately stop, and the area will be protected with flagging or by posting a monitor or construction worker to ensure that no additional disturbance occurs. If the discovery occurs at the end of the work day, the area must be secured by posting a guard, covering the area with heavy metal plates (if the human remains are found below grade) or with other impervious material, or making other provisions to prevent damage to the remains.
2. The project owner or his or her authorized representative (usually the CRS) will contact the County Coroner (Riverside County Coroner, 760-863-8311).
3. The CRS will notify the BLM's Authorized Officer, CPM and, as a courtesy, will notify the NAHC.
4. The coroner will have two working days to examine the remains after being notified in accordance with California Health & Safety Code §7050.5. If the coroner determines that the remains are Native American and are not subject to the coroner's authority, the coroner has 24 hours to notify the NAHC of the discovery.
5. The NAHC will immediately notify the Most Likely Descendant, who will have 48 hours after being granted access to the location of the remains to inspect them and make recommendations for treatment of them. Work will be suspended in the area of the find until the CPM approves the proposed treatment of the human remains.
6. If the coroner determines that the human remains are neither subject to the coroner's authority nor Native American in origin, then the CRS will again contact the CPM in accordance with CUL-8 to determine mitigation measures appropriate to the discovery (Section 6.8.2).

6.9 Expansive Exposure of Discovered Resources Is Possible

Broad areas are usually accessible for archaeological investigations at the project site. In some cases, broad excavations are possible within a linear right-of-way (ROW) when the ROW is through open land. When discoveries possibly more than 50 years of age are made in areas where investigations can be conducted over broad areas, the following will be completed:

1. The horizontal and vertical boundaries of the deposit will be defined.
2. The stratigraphic relationships and depth of the deposit will be defined.
3. The content of the deposit (i.e., the date range and information potential) will be investigated by means of subsurface testing.
4. Sufficient information will be gathered to make a recommendation of eligibility utilizing the research design (refining research design if necessary).
5. The deposit will be recorded on a DPR 523 form, including a location map, a scaled drawing, and a photograph of the resource.
6. An eligibility recommendation will be made for the resource on the form.
7. If the find cannot clearly be recommended as eligible or ineligible for the CRHR, the deposit will be assumed to be eligible. A data recovery program will be developed and approved by the BLM and CPM based on the research design in the CRMMP, or a refined version of the research design approved by the CPM, that reflects the information potential identified by the subsurface testing. If the CPM determines that the find is eligible for the NRHP/CRHR, then all mitigation required by the CPM will be completed prior to continuation of construction in the area of the discovery.

6.10 Expansive Exposure of Discovered Resources Is Not Possible

When discoveries possibly more than 50 years of age are made in trenches within public roadways or areas where access is restricted, the possibility of completing a thorough evaluation of a discovery may be limited. Safety considerations may constrain excavation or testing of a cultural resource. Access to resources discovered at depth in a trench should not automatically be considered restricted. If there is a question about whether access is restricted, the CRS, project owner, BLM, and CPM will consult, and the CPM will determine if the access is restricted as part of the requirements of CUL-8. In cases where exposure of the resource is limited, evaluation of a portion of a deposit for the NRHP and/or CRHR may not be sufficient to allow an eligibility recommendation for the entire resource. When expansive exposure is not possible, the following information will be gathered:

1. The horizontal and vertical boundaries of the deposit or resource will be defined to the extent possible.
2. The stratigraphic relationships and the depth of the deposit will be identified by using subsurface testing. The content of the deposit, i.e., the date range and information

potential, will be investigated. Where access is limited, the content and the date of the deposit (if possible) will be described, and the information potential will be evaluated, utilizing the research design.

3. The site will be recorded on a DPR 523 form, including a location map, a scaled drawing, and a photograph of the resource.
4. If horizontal excavation is extremely limited, and the find cannot clearly be recommended as eligible or ineligible for the NRHP and/or CRHR, the deposit will be assumed eligible. The deposit will be treated by preparing a DPR 523 Primary form to provide a record of the find, including a location map, a scaled drawing, and a photograph of the resource; and by developing a limited data recovery program approved by the BLM and CPM based on the research design in the CRMMP or a refined version of the research design approved by the CPM. All mitigation required by the BLM/CPM will be completed prior to continuation of construction in the area of the discovery.

Construction-related excavations near the find will remain halted until all suspected cultural finds have been properly evaluated and any required mitigation is completed. All ambiguous materials, including suspected yet unfamiliar and/or not readily identifiable cultural materials, will be considered significant by the crew and foreman, until the CRS/CRM can observe the finds and the CRS can make a significance recommendation to the CPM. If significant cultural resources are present and cannot be avoided, then impacts will be mitigated through data recovery or other means consistent with CUL-8.

6.11 Reporting Procedures for Monitoring and Non-compliance

Daily monitoring logs, weekly summaries of daily logs, daily emails, and interim monthly status reports will be submitted as required by CUL-7. During the monitoring period, each CRM will complete a daily monitoring log for each day monitoring is conducted. The logs will track the cultural resources monitoring program, detail any cultural resources discovered during construction, and describe any actions taken, including identification, sampling, analysis, and preparation for curation of the significant finds. The daily logs will also include location, type of construction, the project component being worked on, and soil and weather conditions. The CRS will provide the monitoring logs to the BLM's Authorized Officer and CPM, if requested. The CRS will summarize the log (or logs) in a weekly status report on cultural resources-related activities on the construction site. The CRS will file the weekly reports with the project owner, who will include them in the MCR sent to the BLM's Authorized Officer and CPM. Any site location information forwarded to the BLM's Authorized Officer and CPM will be sent under confidential cover with a formal request for confidentiality pursuant to CEC regulations. If no cultural resources activity occurred during the week, the CRS will note the reasons for not monitoring in the weekly summary report. Each day that no discoveries are made, under CUL-7 the CRS will provide a statement that "no cultural resources were discovered" to the BLM's Authorized Officer and CPM as an email or in some other form acceptable to them. The CRS may make changes in the level of monitoring and in the frequency of daily reporting by submitting a request and detailed justification for the changes to the BLM's Authorized Officer and CPM and

receiving their approval for the changes, per CUL-7. The CRS may informally discuss the mitigation and monitoring program with the BLM/CEC staff.

In the event that the CRS, PHA, or CRM, or other cultural resources personnel observe non-compliance with established cultural resources procedures, the CRM will prepare a Non-Compliance and Resolution Report for distribution to the BLM's Authorized Officer, CPM and project owner within 24 hours.

6.12 Data Recovery, Recordation, and Curation

The cultural resources team will have the full complement of equipment and supplies necessary for archaeological data recovery, including site mapping, photography of artifacts and features, and recovery of artifacts and samples, for resources encountered during earth-disturbing activities. Pursuant to COC CUL-8 any cultural resources more than 50 years of age or exceptional, if younger, encountered during the monitoring of construction will be recorded on the appropriate DPR 523 forms and mapped. Any recovered artifacts and samples will be analyzed in accordance with the research design and significant items prepared for eventual curation at the San Bernardino County Museum (760) 291-0370. The project owner will pay all curation fees for artifacts recovered and for related documentation produced during cultural resource investigations conducted for the project. Curation will follow the OHP's Guidelines for the Curation of Archeological Collections (1993).

6.13 Technical Reporting

The final CRR will report on all archaeological fieldwork—surveys, monitoring, and data recovery—conducted during the construction of the project. Ninety days after the completion of ground disturbance (including landscaping), the project owner will provide to the CPM a technical report, the CRR, that describes all project monitoring, data recovery (if required), and data analyses, in accordance with the requirements of CUL-5. The CRR will follow the recommendations in the OHP guidelines (OHP, 1990b). The contents and format of the CRR for the RSEP project will be as follows:

The designated CRS will be the primary author and direct the preparation of a final CRR according to the ARMR guidelines, of findings for any newly discovered cultural resources, or archaeological test excavation or data recovery program that takes place. The CRR will document all field activities, such as the procedures used to determine that no cultural resources were present; or the procedures for avoidance of any archaeological sites newly discovered during project construction; or new surveys for borrow sites and dates, times, locations, results, samplings, and analyses. The report will present a detailed research design, test investigation or data recovery excavation methods, the methods used, scientific results and archaeological research questions addressed, site significance, and any additional recommendations. The report will include an evaluation of cultural resources for the project area whether the findings are positive or negative. The report also will contain a discussion of the results of specialized analyses (radiocarbon, faunal, floral, obsidian hydration and sourcing, etc.). It will contain completed primary and archaeological site records (DPR 523 form) for newly recorded and previously recorded sites within the project

area, maps and photos of the site, drawings and photos of excavation units, and drawings and photos of selected artifacts. If ARMR reports, survey reports, DPR 523 forms, or additional research reports have been previously sent to the CHRIS, then receipt letters from the CHRIS will be included as an appendix to the CRR. If the ARMR reports, survey reports, DPR 523 forms, or additional research reports (including that for the geoarchaeological study), have not been submitted to the CHRIS, then the reports will be attached as an appendix to the CRR. The RSEP project owner will submit the CRR to the BLM and CEC CPM. Within 90 days of BLM and CEC CPM approval of the report, the final report will be distributed to the EIC of the CHRIS system, the SHPO, BLM, and the CPM.

SECTION 7

References Cited or Consulted

Andrefsky, W. 1998. *Lithics, Macroscopic Approaches to Analysis.* Cambridge University Press. Cambridge.

Bancroft, Hubert Howe. 1886. The History of California: The Words of Hubert Howe Bancroft. History Company. San Francisco, CA.

Barbour, Charles. n.d. *Mount Up! A History of the 86th Cavalry Reconnaissance Squadron Mechanized in World War II.* Accessed June 16, 2011 http://www.super6th.org/86th_cav/index.html

Beattie, George William and Hellen Pruitt Beattie. 1939. *Heritage of the Valley: San Bernardino's First Century.* San Pascual Press. Pasadena, California.

Bettinger, R. L. and M. A. Baumhoff. 1982. The Numic spread: Great Basin cultures in competition. *American Antiquity* 47:485-503.

Binford, L. R. 1980. Willow Smoke and Dog's Tails: Hunter-gatherer settlement systems and archaeological site formation. *American Antiquity* 45:4-20.

Binford, L. R. 1982. The archaeology of place. *Journal of Anthropological Archaeology* 1:5-31.

Bischoff, Matt C. 2000. The Desert Training Center/California-Arizona Maneuver Area, 1942-1944: Historical and Archaeological Contexts. Statistical Research, Inc. Technical Series 75.

Blake, Francis G. 1996. "Camp Rice Map Mystery Solved." *Army Motors*, Independence, MO: 33–34.

Bloomberg, Nancy J. 1987. A Historic Indian Community at Victorville, California. *Journal of California and Great Basin Anthropology* 9(1), pp. 35-45

Bureau of Land Management (BLM). 1986. Desert Training Center: California-Arizona Maneuver Area Interpretive Plan.

Bureau of Land Management (BLM). 1998. World War II Desert Training Center, California-Arizona Maneuver Area. Online document accessed May 3, 2011 at: http://www.blm.gov/ca/st/en/fo/needles/patton.html

California Energy Commission (CEC). 2010a. *Staff Assessment and Draft Environmental Impact Statement.*

California Energy Commission (CEC). 2010b. *Rice Solar Energy Project: Commission Decision.*

Chartkoff, J. L. 1987. Exchange Systems in the Archaic of Coastal Southern California. *Proceedings of the Society for California Archaeology* 2:167-176.

Chartkoff, J. L. and K. K. Chartkoff. 1984. *The Archaeology of California*. Stanford University Press. Stanford, CA.

Christenson, A. L. 1980. Change in human food niche in response to population growth. In *Modeling Change in Prehistoric Subsistence Economies*. Edited by T. K. Earle and A. L. Christenson. Academic Press, New York.

Cleland, C. C. 1966. The prehistoric animal ecology and ethnozoology of the upper Great Lakes region. *Anthropological Papers, Museum of Anthropology, University of Michigan* 29.

Cleland, C. C. 1976. The focal-diffuse model: an evolutionary perspective on the prehistoric cultural adaptations of the eastern United States. *Midcontinent Journal of Archaeology* 1: 59-76.

Costigan, Giovanni D., 1st Lt. 1944. "2nd Airdrome Detachment, Rice Army Airfield, Unit History." In, *Third Air Force History of the 1st, 2nd, & 3rd Airdrome Detachments from their Activation on 1 August 1943 to March 1944*. Unpublished manuscript. Microfilm on file, Air Force Historical Research Agency, Maxwell Air Force Base, Alabama. Roll No. 5427, Call No. 289.05-1.

Dohrenwend, J.C., W.B. Bull, L.D. McFadden, G.I. Smith, R.S.U. Smith, and S.G. Wells. 1991. Quaternary geology of the Basin and Range Province in California. In *The geology of North America, Volume K-2, Quaternary non-glacial geology: conterminous U.S.*, edited by R.B. Morrison, pp. 321-352. Geological Society of America, Boulder, CO.

Earle, D.D., Kelly A. Lark, Cole Parker, Margaret. R. Ronning, and J. Underwood. 1998. Cultural Resources Overview and Management Plan for Edwards AFB, California, Volume 2: Overview of Historic Cultural Resources. Computer Sciences Corporation, Edwards Air Force Base, California. Submitted to the Air Force Flight Test Center, Base Historic Preservation Office, Edwards Air Force Base, California, Contract No. F04611-92-C-0045. On file at the Base Historic Preservation Office, Edwards Air Force Base, California.

Eberling, Gail. 1997. Rice, California. *The Believer's Bulletin.* September. Eagle Mountain Community Baptist Church, Desert Center, California.

Fergusson, Aaron. 2009. Cultural Resources Inventory for the Rice Solar Energy Project, Riverside County, California.

Freeman, Paul. 2009. Abandoned & Little-Known Airfields: California: Southeastern San Bernardino County. Site accessed May 19, 2009 http://www.airfields-freeman.com/CA/Airfields_CA_SanBernardino_SE.htm#rice

Gutierrez, Ramon A. and Richard J. Orsi. 1998. *Contested Eden: California Before the Gold Rush.* University of California Press, Berkeley.

Hazenbush, T. G. 1944. Completion Report Search-Restoration and Disposal of Duds C-AMA and Impact Areas. U.S. Army Corps of Engineers, Los Angeles District, Los Angeles, California.

Headquarters Desert Training Center. 1943. Training Memorandum No. 27. Training, D.T.C. Period Beginning 19 July, 1943. Manuscript on file, General Patton Memorial Museum, Chiriaco Summit, California.

Kelly, Isabel T. and Catherine Fowler. 1986. *Southern Piute.* Found in Handbook of North American Indians, Vol. 11 Great Basin. Edited by Warren L. D'Azevedo. Smithsonian Institute, Washington.

Kelly, R.L. 1983. "Hunter-gatherer Mobility." *Journal of Anthropological Research.* 39: 277-306.

Krege, Melvin. 1944. Oral history interview. Interviewed by Carol Brooks, September 21. Transcript on file, Arizona Historical Society, Yuma.

Kroeber, A. L. 1902. Preliminary Sketch of the Mohave Indians. American Anthropology, Vol. IV, 276-285.

Kroeber, A. L. 1925. Handbook of the Indians of California. *Bureau of American Ethnology Bulletin* 78, Smithsonian Institution, Washington, D.C.

Kroeber, A. L. 1971. *Elements of Culture in Native California.* Found in The California Indians: A Source Book. Second Edition. Edited by R.F. Heizer and M.A. Whipple. University of California Press, Berkley.

Lech, Steve. 2004. Along the Old Roads, A History of the Portion of Southern California that Became Riverside County 1772-1893.

Martin, Roland. 1991. Oral history transcript. Interviewed by Carol Brooks. November 12. On file, Arizona Historical Society, Yuma, Arizona.

Meller, Sgt. Sidney L. 1946. The Desert Training Center and C-AMA Study No. 15. Historical Section – Army Ground Forces.

Merz, Walter. n.d. *836th Engineer Aviation Battalion.* Unit history, sections of which are on file, Arizona Historical Society, Yuma, Arizona.

Moratto, Michael. 1984. *California Archaeology.* Academic Press, Orlando.

Mulholland, Catherine. 2002. *William Mulholland and the Rise of Los Angeles.* Berkley, University of California Press.

Murdock, George Peter. 1968. The Current Status of the World's Hunting and Gathering Peoples. In *Man the Hunter.* Richard B. Lee and Irven Devore (eds.) Aldine de Gruyter, Hawthorne, NY. 13-22.

Native American Heritage Commission. 1989. Guidelines for Monitors/Consultants Native American Cultural, Religious, and Burial Sites. http://ceres.ca.gov/nahc/guidelines4mon.html.

Native Languages. 2009. http://www.native-languages.org/mojave.htm. Accessed June 8, 2010.

Northern Arizona University. n.d. Fort Mojave Indian Tribe. Electronic resource, accessed 7-2-2010, http://www.cba.nau.edu/caied/TribePages/Mojave.asp.

Office of Historic Preservation (OHP). 1989. *Handbook for Completing an Archaeological Site Record*. Department of Parks and Recreation Resources Agency, State of California.

Office of Historic Preservation (OHP). 1990a. *Instructions for Completing the California Historic Resources Inventory Form*. Department of Parks and Recreation Resources Agency, State of California.

Office of Historic Preservation (OHP). 1990b. Archaeological Resource Management Report (ARMR): Recommended Contents and Format.

Office of Historic Preservation (OHP). 1991. Guidelines for Archaeological Research Designs.

Office of Historic Preservation (OHP). 1993. Guidelines for the Curation of Archeological Collections. State Historical Resources Commission, Department of Parks and Recreation.

Office of Historic Preservation (OHP). 2003a. *California Historic Property Inventory*. On file at California Historical Resources Information System, South Central Coastal Information Center, California State University, Fullerton, Fullerton, California.

Office of Historic Preservation (OHP). 2003b. *California Inventory of Historic Resources*. On file at California Historical Resources Information System, South Central Coastal Information Center, California State University, Fullerton, Fullerton, California.

National Register Bulletin. 1997. How to Complete the National Register Registration Form. Internet document accessed April 22, 2011 at: http://www.nps.gov/nr/publications/bulletins/nrb16a/

Office of Planning and Research (OPR). 2005. *State of California Tribal Consultation Guidelines.* http://www.opr.ca.gov/index.php?a=programs/tribal.html accessed October 25, 2010.

Pedrotty, Michael A., Julie L. Webster, Gordon L. Cohen, and Aaron R. Chimiel. 1999. *Historical and Architectural Overview of Military Aircraft Hangars. A General History, Thematic Typology, and Inventory of Aircraft Hangars Constructed on Department of Defense Installations.* Prepared for United States Air Force, Headquarters, Air Combat Command. Prepared by United States Army Construction Engineering Research Laboratory, Champaign, Illinois.

Ponti, D. J. 1985. The Quaternary alluvial sequence of the Antelope Valley, California. In *Soils and Quaternary geology of the southwestern United States*, edited by D. L. Weide, pp. 79-96. Geological Society of America Special Paper 203. Boulder, CO.

Porter, Valerie. 2009. General Patton's Desert Shrine, American Heritage, Site accessed May 19, 2009 http://www.americanheritage.com/articles/web/20070928-george-s-patton-museum-desert-mojave-training-california-tanks.shtml

Robinson, W. W. 1979. *Land in California, The Story of Mission Lands, Ranchos, Squatters, Mining Claims, Railroad Grants, Land Scrip, Homesteads.* University of California Press, Berkeley.

Schneider, Joan S., Michael K. Lerch, Gerald A. Smith. 1995. A Milling-Implement Quarry at Elephant Mountain, California. *Journal of California and Great Basin Anthropology*, 17 (2), pp. 191-221.

Shott, M. 1986. Technological organization and settlement mobility: an ethnographic examination. *Journal of Anthropological Research* 42:15-51.

Speck, Roy E., 1st Lt. 1944. "3rd Airdrome Detachment, Desert Center Army Airfield, Thermal, California. 9 March. In, In, *Third Air Force History of the 1st, 2nd, & 3rd Airdrome Detachments from their Activation on 1 August 1943 to March 1944*. Unpublished manuscript. Microfilm on file, Air Force Historical Research Agency, Maxwell Air Force Base, Alabama. Roll No. 5427, Call No. 289.05-1.

Stephenson, Enoch B. 1998. "Those Damn Yanks." In, *Missions Remembered: Recollections of the World War II Air War. The Men of the Middle Tennessee WWII Fighter Pilots Association.* McGraw Hill, New York.

Stewart, Kenneth. 1971. *Mohave Warfare.* Found in The California Indians: A Source Book. Second Edition. Edited by R.F. Heizer and M.A. Whipple. University of California Press, Berkley.

Stoffle, Richard W. and Maria Nieves Zedeno. 2001. Historical Memory and Ethnographic Perspectives on the Southern Paiute Homeland. Journal of California and Great Basin Anthropology, 23(2). Pp. 229-248.

Stratton, Royal B. 1859. Captivity of the Oatman Girls: *Being an Interesting Narrative of Life Among the Apache and Mohave Indians.* Carlton and Porter. New York.

Sutton, Mark Q., Mark E. Basgall, Jill K. Gardner, and Mark W. Allen. 2007. Advances in Understanding Mojave Desert Prehistory, In *California Prehistory, Colonization, Culture, and Complexity,* edited by Terry L. Jones and Kathryn A. Klar, pp. 229-246. AltaMira Press, Lanham.

Terracon Consultants, Inc. 2009. Preliminary Geotechnical Engineering Report, Rice Solar Energy Project, Former Rice Airfield Highway 62, Mile Marker 109, Rice, California August 5, 2009 Terracon Project No. 60095017. Prepared for SolarReserve, LLC.U.S. Air Force Historical Division. nda. Historical Data Pertaining to Rice Army Air Field, California. USAF Historical Division, Research Studies Institute, Special Projects Section, Maxwell Air Force Base, Alabama. Microfilm on file, U.S. Air Force Historical Research Agency, Maxwell Air Force Base, Alabama. Roll No. 24735, Call No. K110.5017-1.

U.S. Air Force Historical Division. ndb. Historical Data Pertaining to Desert Center Air Field, California. USAF Historical Division, Research Studies Institute, Special Projects Section, Maxwell Air Force Base, Alabama. Microfilm on file, U.S. Air Force Historical Research Agency, Maxwell Air Force Base, Alabama. Roll No. 24735, Call No. K110.5006-1.

U.S. Army Corps of Engineers (USACE). 1996. Archives Search Report Findings for the former Rice Valley Sand Dunes, Riverside County, California. DERP-FUDS Project No. J09CA005001. U.S. Army Corps of Engineers, Rock Island District, Rock Island, Illinois.

U.S. Army Corps of Engineers (USACE). 1998. *Ordnance and Explosive Archives Search Report for Laguna Maneuver Area- Northern Portion, La Paz, Maricopa, and Yavapai Counties, Arizona.* Defense Environmental Restoration Program for Formerly Used Defense Sites. U.S. Army Corps of Engineers, Rock Island District, Rock Island, Illinois.

United States National Park Service (USNPS). 1983. Internet document accessed June 16, 2011. http://www.nps.gov/history/local-law/Prof_Qual_83.htm.

United States Department of the Interior. 2010. Memo: Bureau of Land Management-California (BLM) Responsibilities Regarding Discovered Human remains. BUREAU OF LAND MANAGEMENT California State Office, Sacramento, CA 95825.

Wallace, William. 1955. "A Suggested Chronology for Southern California Coastal Archaeology." *Southwestern Journal of Anthropology* 11 (3): 214-230.

Wallace, William J. 1962. Prehistoric Cultural Development in the Southern California Deserts. American Antiquity. 28(2):172-180.

Wallace, W. J. 1978. Post-Pleistocene Archaeology, 9000 to 2000 B.C. In *Handbook of North American Indians, Volume 8 California*. R. F. Heizer (ed.): 25-36. Washington, D.C.: Smithsonian Institute Press.

Warren, C. N. 1968. Cultural Tradition and Ecological Adaptation on the Southern California Coast. *Archaic Prehistory in the Western United States, Symposium of the Society for American Archaeology, Santa Fe*. In *Eastern New Mexico University Contributions in Anthropology*. C. Irwin-Williams (ed.): 1(3).

Warren, Claude N. 1984. The Desert Region. In M.J. Moratto, California Archaeology, pp. 339-430. Academic Press, Inc, San Diego.

Wheeler, George M., First Lieut. 1879. Report Upon Unites States Geographical Surveys West of the One Hundredth Meridian, Vol. III: Archaeology. Government Printing Office, Washington, D.C. for the Corps of Engineers, U.S. Army.

West, G. James, Wallace Woolfenden, James A. Wanket, and R. Scott Anderson. 2007. Late Pleistocene and Holocene Environment, In *California Prehistory, Colonization, Culture, and Complexity,* edited by Terry L. Jones and Kathryn A. Klar, pp. 11-34. AltaMira Press, Lanham.

Appendix A
Cultural Resources Conditions of Certification

Appendix B
Resumes for Cultural Resources Staff

Designated Cultural Resources Specialist
Aaron Fergusson

Alternative Cultural Resources Specialist
Natalie Lawson

Project Historical Archaeologist
Roderic N. McLean, M.A., RPA

Appendix C
Cultural Resources Daily Monitoring Log Form

Appendix D
Certification of Completion of Cultural Resources Education Program Form

Appendix E
Curation Facility