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FINAL

REVISED CULTURAL RESOURCES MONITORING AND MITIGATION PLAN FOR THE AMENDED BLYTHE SOLAR POWER PROJECT RIVERSIDE COUNTY, CALIFORNIA

Prepared for

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McCoy Peak, McCoy Wash, and Roosevelt Mine, California USGS 7.5-Minute Quadrangles

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TABLE OF CONTENTS

List of Tables

List of Figures

APPENDICES

1.0 Introduction

1.1 Purpose

The Cultural Resources Mitigation and Monitoring Plan (CRMMP) explains how the project owner of the amended Blythe Solar Power project (project or BSPP) will comply with and how the Cultural Resources Specialist (CRS) will implement the California Energy Commission's (Energy Commission's) cultural resources Conditions of Certification (CoCs). The CRMMP provides procedures to be followed to ensure that impacts to cultural resources will not occur without mitigation that would reduce the impacts to less than significant. The measures that will be implemented will include:

- worker training aimed at recognizing cultural resources;
- specific measures to avoid or minimize impacts to cultural resources (flagging, monitoring, etc.);
- data recovery protocols for known prehistoric and historic archaeological sites;
- archival research protocols for known historic built environment resources;
- 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 any cultural resources that may be exposed during project construction; and
- treatment of any discovered human remains in accordance with state law.

This revised CRMMP was prepared to help the project owner fulfill **CUL-1** through **CUL-19** of the Energy Commission's cultural resources CoCs, which were set forth in the original Commission Decision of September 15, 2010 for the Blythe Solar Power project and which were subsequently revised in the Commission Decision of January 21, 2014 for the Blythe Solar Power project amendment. The CoCs, as amended, are attached as Appendix A to this CRMMP. The purpose of the CRMMP is to lay out a detailed program of monitoring and mitigation for direct and indirect impacts to historical resources, as defined under CEQA, 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 project by providing for the identification, evaluation, treatment, and protection of any historical resources that are significantly affected by or that may be discovered during the construction of the power plant and the associated linear facilities (Figures 1 and 2; figures are attached as Appendix B). Cultural resources are defined as anything made or modified by people, or the remains of any such manufacture or modification, as well as actual 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. “Historical resources,” as defined under CEQA, are the exclusive focus of efforts under this CRMMP to avoid, minimize, or otherwise mitigate the effects of the amended project on such resources.

The CRMMP includes the following:

- a description of the project, including background and phasing;
- a brief summary of known cultural resources in and immediately adjacent to the project or cultural resources that might be affected by the project and a map showing the cultural resources in relation to the project;
- a general research design tailored to the environment, prehistory, and history of the Palo Verde Mesa area and the cultural resources found therein;
- archaeological data recovery program guidelines for known prehistoric and historic archaeological sites that will be affected by the project;
- archival research guidelines for known historic built environment resources program guidelines that will be affected by the project;
- a brief description of the cultural resources portion of the Worker Environmental Awareness Program (WEAP);
- 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 Energy Commission 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 retained cultural materials;
- a statement that the CRS has access to or ability to provide equipment and supplies necessary for mapping, photography, and recovery of any cultural resources that may be discovered; and
- 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

conditions, as amended in the Commission Decision of January 21, 2014, shall supersede any summarization, description, or interpretation of the conditions in the CRMMP (see Appendix A).

1.2 Project Background

NextEra Blythe Solar Energy Center, LLC (NextEra Blythe Solar) is developing the amended BSPP, a 485 megawatt (MW) photovoltaic (PV) solar power plant, on Bureau of Land Management (BLM)-administered land approximately 13 miles west of the town of Blythe in eastern Riverside County, California (see Figure 1). BSPP will be located entirely on public land within BLM Right-of-Way Grant No. CACA–048811. The project was previously approved as a 1,000-MW concentrating solar thermal energy generating project by the BLM and the California Energy Commission (CEC) in September 2010 (the approved project). The amended project's footprint is significantly smaller than, and completely within, the approved project's footprint. The permanent project footprint will be approximately 4,138 acres, including linear facilities. The Solar Plant Site includes the solar arrays, power generating equipment, and support facilities (see Figure 2). The Linear Facilities include a transmission line, distribution line, and a main access road. To the extent possible, BSPP will use the Linear Facilities built by the McCoy Solar Energy project, located directly north of the BSPP, as a means of minimizing environmental impacts. The BSPP will have four units and will be built in four phases. When operating, the units will supply renewable energy to the California electrical grid through an interconnection to Southern California Edison Company's (SCE) Colorado River Substation (CRS).

The key components of the project are the following:

- the solar plant site, i.e., all facilities that create a footprint in and near the field of solar panels, including the solar field (consisting of up to four solar power plants identified as Units 1 through 4), a switchyard which is located near the center of the solar plant site, an operations and maintenance (O&M) facility to be shared by all operating units near the center of the solar plant site (if constructed); and related infrastructure and improvements;
- a double-circuit, overhead 230-kilovolt (kV) gen-tie line;
- telecommunications lines;
- an SCE-owned and operated distribution line; and
- a road providing access to the solar plant site.

Cultural resources laws, ordinances, regulations, & standards (LORS) applicable to the project are presented in Appendix C.

2.0 Project Implementation Sequence and Schedule

2.1 Conditions of Certification (CUL-1 through CUL-19)

This section of the CRMMP presents a detailed list (Table 1) of the location in this document of a discussion of each of the CoCs (**CUL-1** through **CUL-19**). As noted above, the Cultural Resources CoCs from the Commission Decision on the amended project (January 2014) are attached as Appendix A.

Table 1. Locations of CUL-1 through CUL-19 within this CRMMP

Conditions of Certification	Condition Title	Section(s)
CUL-1	Prehistoric Trails Network Cultural Landscape (PTNCL) Documentation and Possible National Register of Historic Places (NRHP) Nomination	6.2 (PTNCL and DTCCL Documentation)
CUL-2	Desert Training Center California-Arizona Maneuver Area Cultural Landscape (DTCCL) Documentation And Possible NRHP Nomination	6.2 (PTNCL and DTCCL Documentation)
CUL-3	Cultural Resources Personnel	6.1 (Cultural Resources Personnel and project Communication Procedures)
CUL-4	project Documents for Cultural Resources Personnel	6.1 (Cultural Resources Personnel and project Communication Procedures)
CUL-5	Cultural Resources Monitoring and Mitigation Plan	Entire document
CUL-6	Prehistoric Quarries Archaeological District (PQAD) Data Recovery and District Nomination	6.3.1 (Prehistoric Quarries Archaeological District (PQAD) Data Recovery and District Nomination)
CUL-7	Data Recovery for Small Prehistoric Sites (Lithic Scatters, Cairns, and Pot Drops)	6.3.2 (Small Prehistoric Sites Data Recovery)
CUL-8	Data Recovery on Historic-Period Sites with Features	6.3.3 (Historic-period Sites with Features Data Recovery)
CUL-9	Data Recovery on Historic-Period Sites with Structures	6.3.4 (Historic-period Sites with Structures Data Recovery)
CUL-10	Data Recovery on Historic-Period Dump Sites	6.3.5 (Historic-period Dump Sites Data Recovery)
CUL-11	Data Recovery on Historic-Period Refuse Sites	6.3.6 (Historic-period Refuse Sites Data Recovery)
CUL-12	Data Recovery on Historic-Period Roads	6.4.1 (Historic-period Roads Data Recovery)
CUL-13	Archival Research on Blythe Army Air Base Reservoir Pipelines	6.4.2 (Blythe Army Air Base Reservoir Pipelines Archival Research)
CUL-14	Archival Research on Radio Communications Facility	6.4.3 (Radio Communications Facility Archival Research)
CUL-15	Worker Environmental Awareness Program (WEAP)	6.5 (Worker Environmental Awareness Program [WEAP])
CUL-16	Construction Monitoring Program	6.6 (Construction Monitoring Program)
CUL-17	Authority to Halt Construction; Treatment of Discoveries	6.6.3 (Authority to Halt Construction) 6.7 (Treatment of Discoveries)
CUL-18	Cultural Resources Report	6.11 (Technical Reporting)
CUL-19	Compliance with BLM Programmatic Agreement	7 (Compliance with BLM Programmatic Agreement)

2.2 General Sequence for Cultural Resources Compliance

CUL-5, Subpart 7, calls for the inclusion in the CRMMP of the "implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground-disturbance and post-ground-disturbance analysis phases of the project." As of January 2015, NextEra Blythe Solar has developed an approximate schedule, subject to change, for project-related tasks for Units 1 and 2 of the Modified Blythe Solar Power Project. Construction schedules for Units 3 and 4 have not yet been developed and will be provided per the notification requirements of this CRMMP when available. The approximate schedule for Units 1 and 2 is as follows (see Figure 3):

- January-June 2015: Wildlife clearance surveys in Units 1 and 2
- January 2015: Vegetation mowing and cacti removal in Unit 1 (20 days)
- May/June 2015. Vegetation mowing and cacti removal in Unit 2 (20 days)
- February-April 2015: Perimeter security and desert tortoise fencing around Units 1 and 2
- February-May 2015: Grading for the Project common areas, substation, Operations and Maintenance building and access roads for Unit 1
- June-August 2015: Grading for the Project common areas, substation, Operations and Maintenance building and access roads for Unit 2
- April-September 2015: Installation of 10 to 14 poles to connect existing gen-tie lines to the Colorado River Substation
- April 2015-August 2016: Construction of the solar field in Units 1 and 2

Cultural resources compliance activities required under the CoCs (**CUL-1** through **CUL-19**) and the related data recovery, archival research, monitoring, and mitigation procedures is anticipated to be implemented in the sequence described below, and according to the timing verifications set forth in the respective CULs unless other timing is agreed to by written approval of the CPM at the request of the CRS.

Pre-ground-disturbance:

- Archaeological surveys for all project components have already been completed. Although not anticipated, any project modification outside of areas that have been previously subject to surveys and testing would be surveyed at the time such areas are identified.
- Obtain Energy Commission approval for key cultural resources personnel pursuant to **CUL-3**.
- Prepare the text and graphics for the video and information brochure for the WEAP training pursuant to **CUL-15**.

- Prepare a cultural resources research design germane to the near-vicinity of the facility site—incorporated as part of this CRMMP pursuant to **CUL-5**.
- Landscape-level scholars contribute to extant Prehistoric Trails Network Cultural Landscape (PTNCL) and Desert Training Center California-Arizona Maneuver Area Cultural Landscape (DTCCL) documentation and potentially contribute further to National Register of Historic Places (NRHP) nominations pursuant to **CUL-1** and **CUL-2**, respectively. Incorporate available context, site evaluation criteria, and research questions from this documentation as part of this CRMMP.
- Conduct, or document previously conducted, data recovery efforts for affected archaeological sites pursuant to **CUL-6, -7, -8, -9, -10, and -11**.
- Conduct, or document previously conducted, archival research for historical resources pursuant to **CUL-12**, **-13**, and **-14**.
- Receive all maps and drawings from NextEra Blythe Solar, pursuant to **CUL-4**.
- Obtain the services of one or, if necessary, several Native American monitors to monitor all ground disturbance specified in **CUL-16**. Where available, preference shall be given to Native American monitors from a tribe or group with traditional ties to the amended project area **CUL-16**.

During ground-disturbance:

- Construction monitoring by cultural resources and Native American monitors —will be conducted full time during the ground-disturbing aspects of construction unless a reduction in monitoring is approved by the CPM pursuant to **CUL-16**.
- Mapping and recording—to be conducted on discovered sites as they are recorded for reporting purposes—of all cultural resources encountered (including photos) will be conducted, and artifacts that are significant or diagnostic will be collected for analysis and eventual curation as identified in the above-cited research design.
- Preparation of data and retained materials for analysis, identification, and inventory—will be conducted following data recovery at each site where data recovery is required. All collected materials will be brought to the AECOM laboratory for analysis and cataloging. All archaeological data will be coded for input into a GIS database according to protocols provided by the PTNCL and DTCCL GIS team. Per agreement obtained from a suitable facility, retained materials will be prepared for curation. Site forms will be updated with recovered site and artifact data and provided to PTNCL and DTCCL PIs.

Post-ground-disturbance:

- Preparation of a final technical report (the Cultural Resources Report [CRR]) pursuant to **CUL-18**—will be conducted after completion of monitoring, data recovery on all known, impacted sites and on historically significant discovered sites, all artifact analyses, and

any external scientific studies. The CRR will be submitted within 180 days after completion of ground disturbance (including landscaping).

- Preparation of retained materials for curation—will be conducted during the processes of laboratory analysis and cataloging. Artifact curation will occur subsequent to the completion of the final technical report on the work.

3.0 Historic Contexts for Palo Verde Mesa

The following section represents a comprehensive historic context for the project vicinity, describing human use of the area over the last 12,000 years. This context draws from a number of general references, as well as the detailed draft contexts that have been prepared for the PTNCL and DTCCL.

3.1 Prehistoric Context

Despite more than 80 years of archaeological investigation, our understanding of the prehistory of the Colorado Desert still relies heavily on comparisons with adjacent regions. In fact, the basic culture history of the region has not changed dramatically since pioneering archaeologist Malcolm Rogers (1939, 1945, 1966) published his initial impressions of the chronology and cultural development of the desert. This state of affairs is largely attributable to the lack of sufficient numbers of stratified subsurface sites in the region, since many desert sites are entirely superficial (Schaefer 1994a, 1994b). Additionally, the prehistoric use of the Colorado Desert was apparently episodic, with long periods of low-intensity use during particularly arid times. Nevertheless, recent and ongoing work continues to sharpen our comprehension of the region. This discussion largely follows Crabtree's (1980) chronological framework with further elaboration of cultural development from Schaefer (1994b) and others (e.g., Love and Dahdul 1992; Schafer and Laylander 2007).

The available evidence indicates that climatic changes, characterized, in part, by temperature and moisture variations, significantly affected the distribution and subsistence practices of prehistoric populations in the Colorado Desert. During the late Pleistocene (25,000 to 10,000 years ago), temperatures in California were generally cool and moist, resulting in widespread montane glaciations and the creation of numerous pluvial lakes (Antevs 1955; Grayson 2011). Throughout much of the Pleistocene, the Colorado River ran some 10 to 15 miles west of its current course, adjacent to the project. Over millennia, the powerful river carved a series of alluvial terraces along its western bank as it moved east and cut down toward its present course. During that time, the project area would have been subject to devastating and unpredictable flooding, which, depending on the velocity of the water flow, sometimes cut away the land and at other times deposited massive quantities of silt, gravel, and rock. Over the millennia, alluvial cycles of deposition and erosion along the Colorado River created the raised, stepped terraces and cobble deposits of Palo Verde Mesa.

Subsequent to the end of the Pleistocene, approximately 14,000 years ago, the first recognizable human use of the Colorado Desert began. The earliest inhabitants of the region were highly mobile hunter-gatherers exploiting a variety of plants and animals. The settlement patterns of the Late Pleistocene and Early Holocene Colorado Desert inhabitants suggest that they preferred to live along the shores of prehistoric lakes and on mesas near perennial washes (Schaefer and Laylander 2007). Evidence of this early occupation has recently been discovered near the project area (Kline 2012, Rondeau 2012).

Roughly 7,000 years ago, local pluvial lakes began to dry out and settlement shifted toward the Colorado River and toward perennial springs and seeps in the mountains and on valley floors

(Pendleton et al. 1986). Between the comparatively verdant river banks to the east and the spring-fed mountains to the west, the parched Palo Verde Mesa became a less than attractive spot for long-term habitation. The Mesa was, as Jay von Werlhof (2004b) has noted, “basically a through-way”, a well-traveled corridor between the river and the mountains, and between the southern low desert and the northern high desert. Nevertheless, the visually striking terraces of the Palo Verde Mesa were likely an important waypoint for travelers. The terraces provided a reliable source of fine-grained toolstone, as well as stands of edible mesquite and saltbush, which could be processed and roasted using local cobbles. Although the project area shows no signs of long-term habitation, the Mesa was clearly well known and repeatedly visited throughout prehistory.

3.1.1 Paleoindian Period: San Dieguito (10,000–5,000 B.C.)

Currently, most archaeologists identify the San Dieguito complex as the earliest use of the Colorado Desert during the Pleistocene–Holocene transition. Rogers (1939) defined this cultural complex based on archaeological surveys of southern California coastal and desert regions conducted in the 1930s. San Dieguito materials are most common around now-dry inland lakes and on old desert terraces, but they have also been found at Ventana Cave in southern Arizona (Haury 1943, 1950), and along the California coast, where they were first documented at the Harris Site (Rogers 1966; Warren 1966). Based on limited material evidence, Rogers inferred that San Dieguito subsistence was focused on highly ranked food resources, particularly large game, although small mammals were also taken. This hunting-focused subsistence strategy, in turn, was thought to have encouraged a pattern of relatively high residential mobility.

The material culture associated with the San Dieguito complex consists entirely of flaked stone tools such as choppers, scrapers, blades, projectile points, and distinctive crescent-shaped items interpreted as amulets (Rogers 1939, 1966; Warren 1966). The lack of millingstone implements has long been viewed as evidence that San Dieguito peoples made little use of plant foods, particularly seed plants that require pounding and grinding. Lorann Pendleton (1984), though, observes that ethnographies of Colorado Desert peoples mention the use of wooden mortars and pestles for the processing of wild mesquite. If similar wooden milling implements were used by San Dieguito peoples, they have not survived in the archaeological record.

Beginning with Rogers, archaeologists have attempted to assign cultural materials to the San Dieguito complex based upon the extent of desert-varnish on rock artifacts, and the degree to which artifacts are embedded in the ancient desert pavements (e.g. Schaefer 1985). Based on these measures, various cleared circles, trails, and geoglyphs have traditionally been included within the San Dieguito complex. These assignments, however, are no longer secure, as both patination and embeddedness have been demonstrated to be unreliable for cross-dating purposes (McGuire and Schiffer 1982; see also Mitchell 1989). Further, in the case of trails, many were used over multiple generations, often by multiple cultural and linguistic groups. In fact, most of the major routes through southern California deserts and mountain passes used today by modern highways (e.g., I-10 and Interstate 15) follow ethnohistorically documented Native American trails.

Despite decades of scholarly research, dating the San Dieguito complex continues to be problematic (Love and Dahdul 2002; Schaefer 1994b). Very little datable material is preserved at most San Dieguito sites. San Dieguito sites in desert regions are often found on desert pavements, which it has been suggested can develop in several ways (Ahlstrom and Roberts 2001:3), including through eolian deflation with the result being that extremely old materials can lay side-by-side with modern trash. Not all desert pavements may be deflationary in origin, however, and some have been demonstrated to be the result of eolian dust both (a) accelerating fragmentation of surface rock facilitating the creation of pavement and (b) settling below uplifted clasts of bedrock surfaces to accumulate as soil beneath the pavement (McFadden et al 1987). The nature of the origin of a pavement may differ depending on environmental and geological circumstances in an area through time (Ahlstrom and Roberts 2001:3). The related Lake Mojave complex, found in the Mojave Desert to the north, is thought to date to between 10,000 and 5,000 B.C. (Warren and Crabtree 1986). More recent work suggests a slightly earlier terminal date of around 6,000 B.C. for the Lake Mojave Complex (Schroth 1994). If the Lake Mojave and San Dieguito complexes are contemporaneous, then this highly mobile, hunting-focused use of the land came to a close early in the Holocene as ancient pluvial lakes contracted and large mammals became scarce.

3.1.2 Archaic Period: Pinto and Amargosa Complexes (5,000 B.C.–A.D. 500)

The Archaic period in North American prehistory is characterized by the emergence of several distinctive regional adaptations to varying local conditions. In the western deserts, the Archaic spans the time from the end of cooler and wetter climatic conditions of the early Holocene, at around 5,000 B.C., to the introduction of pottery and bow-and-arrow technology, around A.D. 500 (Antevs 1955; Grayson 1993; Van Devender and Spaulding 1979). Regional populations were generally expanding, leading to a diversification and intensification of subsistence activities, and regional trade and interaction networks were established. Ground stone tools, largely absent in the Paleoindian period, became widespread during the Archaic.

In the southern California deserts, the best-known regional culture complexes of the Archaic period are the Gypsum, Pinto, Elko, and Amargosa, each defined by recognizably distinct projectile point types. Within the Colorado Desert, the early portion of the Archaic period (ca, 5,000–1,500 B.C.) is often subsumed under the Pinto complex (Crabtree 1980; Rogers 1939), although virtually no open-air desert sites have components dated to this time. The later portion of the Archaic period (ca. 1,500 B.C.–A.D. 500), is associated with the Amargosa complex in the Colorado Desert, following Rogers' (1939, 1966) nomenclature. In contrast with the general pattern of population expansion during the Archaic period, there is a dearth of evidence of Archaic occupation in the Colorado Desert (Schaefer 1994b; Weide 1976). During the early Archaic, the Colorado Desert appears virtually abandoned on the basis of current data. This absence of Archaic occupation of the desert is a key regional research issue (Schaefer 1994b). Due to the scarcity of securely dated Archaic sites in the Colorado Desert, developments within the Archaic must be inferred from the development trajectories of adjacent areas. Current studies around the Ford Dry Lake region may shed new light on the Archaic period occupation of the Colorado Desert (AECOM in progress)

Although few *open-air* sites date to the Archaic period, rockshelter deposits at Indian Hill Rockshelter, in Anza-Borrego Desert State Park (McDonald 1992; Wilke et al 1986), and at Tahquitz Canyon near Palm Springs (Schaefer 1994b) contain late Archaic components below more recent materials. These shelter sites lie roughly 100 miles southwest and west of the project, and contain distinctive dart-sized projectile points, ground stone implements, and rock-lined cache pits. At Indian Hill Rockshelter, McDonald (1992) also uncovered inhumations. One of these is radiocarbon dated to 4,070 ± 100 radiocarbon years before present (RCYBP). Unlike later lower Colorado River burials, these are not cremations. Several other inhumations associated with cairns may also date to the late Archaic (Schaefer 1994b). The materials at the rockshelter sites and others outside of the Colorado Desert suggest that the Archaic period inhabitants of southern California were "diversified hunters and gatherers" who focused increasingly on processing and storing seed and nut foods, and who relied on "mobility" and social "flexibility of group size" to exploit the seasonally variable natural resources of their ranges (Schaefer 1994b).

On the Palo Verde Mesa, evidence for Archaic period use or occupation is slight, as area sites rarely contain diagnostic projectile points or other artifacts necessary to securely date them to the Archaic. In fact, most sites contain no finished flaked stone tools whatsoever (Flenniken and Spencer 2001; Mitchell 1989; Schaefer 1985, 1994b, 2003; Singer 1984). One small suggestion of an Archaic presence on the Mesa, though, exists at site CA-RIV-7175, located along the eastern border of the project. As part of a larger in-field analysis of lithic production in the McCoy Wash area (Flenniken and Spencer 2001), Jerry Reioux and his colleagues documented three bifaces described as "dart-point-size" bifacially worked blanks fashioned of heat-treated chalcedony. Although the bifaces are "blanks," and therefore lack key diagnostic hafting and other attributes necessary to typologically define them, the "dart-point" size of the blanks is suggestive of an Archaic date. Dart-sized points are relatively rare in the subsequent Late Prehistoric after the introduction of bow-and-arrow technology and attendant reduction in the size of projectile points. Archaic period projectile points have been identified several miles west of the project in the vicinity of Ford Dry Lake (AECOM, in progress; Farmer and Ferrell 2010).

3.1.3 Late Prehistoric/Protohistoric Period: Patayan Complex (A.D. 500–ca. A.D. 1850)

The Patayan complex spans the Late Prehistoric and Protohistoric periods, and dates from approximately A.D. 500 until the American expansion into the area at the turn of the 19th century. The Protohistoric period encompasses a protracted 300-year period of sporadic European exploration and colonization that occurred prior to widespread Euroamerican settlement during which many traditional Native American cultural practices continued to occur before a policy of forced cultural assimilation was instituted. There is a clear correspondence between the geographical distribution of archaeologically recognizable Patayan cultural materials and the historically documented territories of Yuman-speaking peoples: the Quechan, Mohave, Cocopah, Paipai, Yavapai, Havasupai, and others. Thus, the archaeological Patayan complex is often taken to be directly ancestral to the ethnographic Yuman cultures of the region. Nevertheless, Jerry Schaefer notes that non-Yuman groups, such as the Cahuilla and the Chemehuevi, were also active participants in this cultural complex: "the prehistoric Patayan world was multicultural and inter-cultural, representing many dynamic adaptive strategies and social systems but sharing common elements of technology, material culture, and ideology" (Schaefer 1994b).

The Patayan complex is characterized by marked changes in the artifact assemblage, economic system, and settlement patterns of the region. Perhaps the most recognizable change from an archaeological perspective was the introduction of paddle-and-anvil pottery, either from Mexico or from the Ancestral Pueblo groups of the U.S. Southwest (Rogers 1945; Schaefer 2003; Schroeder 1975, 1979). During this time, floodplain horticulture, featuring maize, beans, squash, and other crops, was similarly introduced from the south and east. Arable land along the lower Colorado River came under cultivation, as did the banks of the New and Alamo Rivers in Imperial Valley. The Colorado Desert laid on the prehistoric frontier of the westward expansion of agriculturally based subsistence systems to the east.

Bow-and-arrow technology was also introduced at this time, possibly from desert hunter-gatherer groups moving in from the west and north. Also possible is that the bow-and-arrow was introduced from southwestern agricultural groups living to the east of the project area, who also possessed this technology (Schafer 1994b:65-66). Suggestive of this possibility is that arrow point styles, characteristic of the southwest, have been identified at several sites as far west as the Pacific coast (Koerper and Drover 1983:16-18; Koerper et al. 1996:271-276). Arrow-sized projectile point types of the Cottonwood Triangular and Desert Side-notched series are most common. Cottonwood series projectile points likely predate the Desert Side-notched types, and probably predate the introduction of pottery manufacture in the region. Concomitant with these dramatic subsistence and technology changes were several, apparently related, ceremonial and religious changes. During the Late period, burial practices shifted from inhumations to cremations and partial cremations. Artistic expression on rock (petroglyphs) and land (intaglios) flourishes at this time in association with expanding trade and trail networks, and increasingly elaborate kinship systems tying together extensive territories (McGuire and Schiffer 1982). Warfare likely also increased at this time, and was well documented in the Protohistoric and Historical periods.

By many accounts, the vast majority of the archaeological materials in the Colorado Desert, and on the Palo Verde Mesa particularly, appear to date to the Late Prehistoric and Protohistoric periods (e.g., Rogers 1945; Schaefer 1994b, 2003). Most sites in the Palo Verde Mesa area consist of ceramic sherds and a limited variety of stone tools and tool-making debris. Very few temporally diagnostic tools or projectile point types are recorded in the project vicinity. In archaeological surveys conducted for the project, no finished projectile points were identified, and small numbers of Tizon brownware and Colorado buffware sherds were recorded. A recent detailed study by Flenniken and Spencer (2001) suggests that most of the lithic reduction (stone-tool making) in the project vicinity was directed at the production of relatively small, thin flakes suitable for the creation of arrow-sized projectile points, which appear roughly 1,500 years ago in the region (Ludwig 2005). Additionally, while some of the earth art (geoglyphs), rock art sites, trails, and ceremonial sites likely date to this period (Schaefer 1994b:65-66; Altschul and Ezzo 1994). Some of these ceremonial features continued to be used after European contact, and even to the present day.

3.1.4 The Prehistoric Trails Network Cultural Landscape, a Contributor to the Pacific to Rio Grande Trails Landscape

Laylander and Schaefer (2010) present a summary discussion of several important elements of the PTNCL area that was to serve as a framework for future archaeological investigations of the area's prehistory. That context now serves as a contribution to the larger Pacific to Rio Grande Trails Landscape (PRGTL), which is identified and described in Energy Commission staff's Revised Staff Assessment, Part B (2013:4.3-1–4.3-244) for the Palen Solar Electric Generating System project. The PTNCL context, along with the associated field and laboratory manuals, was intended to assist in the development and testing of inferences concerning patterned associations among site types, site attributes, and artifact assemblages along with landscape features, routes of travel, and critical localized resources. This subsection, which is drawn directly from that context, provides synopses of previous research in the area, archaeological attributes of the trails, and archaeological site types that are known or likely to be represented in the area. Laylander and Schaefer (2010) provide further information related to these topics, as well as detailed discussions of the modern environment, the region's paleoenvironmental conditions from the terminal Pleistocene through the Holocene periods, the human prehistory of the wider region, ethnohistoric and ethnographic evidence bearing upon the area, and existing knowledge of the region's trails system. Information generated during subsequent field investigations has also been included.

The central organizing theme for the PTNCL was a portion of the aboriginal trail system that spanned this segment of the California desert. The PTNCL embraced not only the paths themselves but also the aboriginal features and artifact scatters that are associated with the trails and the more consequential destinations that the trails served to connect. Evidence of trail systems comes from, variably, physical traces on the ground, early historical records on trail use, and ethnographically-documented knowledge of local Native Americans.

Revisions to Laylander's and Schaefer's original 2010 discussion, revisions which are to be conducted in conjunction with the implementation of **CUL-1**, and subsequent revisions to the field and laboratory manuals that were drafted to support future PTNCL research will expand the scope of these documents to facilitate research on the broader Pacific to Rio Grande Trails Landscape of which the PTNCL is but a part (see subsection 6.2.1, below). Our understanding of the Native American trail networks in the Colorado and Mojave deserts, the landscapes in which those networks are embedded, and the ways in which the trail networks serve to culturally bind discrete landscapes is dynamic. In order to develop and administer treatments for these desert trail landscapes which capture and preserve the respective historic values for which each landscape is historically significant, the contexts that provide interpretive baselines and that help to identify and shape pertinent research directions require timely revision with the acquisition of new sets of data, as do the field and laboratory manuals that support efforts to document and evaluate the character of subject trail landscapes.

3.1.4.1 Previous Research on the Trails System within the PTNCL

Several previous studies have addressed portions of the system of trails in the PTNCL area. These are summarized in detail by Laylander and Schaefer (2010). In particular, attention has

been given to the major, braided east to west routes that passes through this area, variously termed the Halchidhoma Trail, the San Gorgonio-Big Maria Trail, and a portion of the Coco-Maricopa Trail network. The southeast corner of the PTNCL area also includes a short segment of the Bradshaw Trail that parallels the Chuckwalla Valley trail to the south. These trails connected with other far-reaching routes, including the Camino del Diablo into the Papagauería in Arizona and Sonora, Mexico, and the Gila trails in western Arizona (Becker and Altschul 2008). Although the project area falls within the catchment of the broader trail network, major trail segments are located outside of the project occurring east/west through the Chuckwalla Valley and north/south along the Colorado River (Figure 4).

3.1.4.2 Archaeological Aspects of the Trails

Different characteristics, or attributes of the region's trail networks, as they are observed archaeologically, have potential significance in the interpretation of these trail systems. Several of these archaeological characteristics are discussed below.

Trail Width

The width of a trail may be helpful in distinguishing a prehistoric human-made trail from an otherwise-similar natural feature of animal origin (which will generally be narrower) or from a trail produced by modern vehicle activity. Width may also be an indicator of the relative extent of trail use, in that trails seem likely to have been widened at least slightly through repeated use.

Johnston and Johnston (1957:23) reported that segments of the Chuckwalla Valley trail that they studied varied in width from 6 to 12 in. (15-30 cm). McCarthy (1993:70) reported that trails in the McCoy Spring area averaged 30 cm in width.

Trail Depth

Depth may be another possible indicator of the intensity of use experienced by a prehistoric trail. Repeated traffic is likely to have compacted and depressed the sediments in the trail, although local geology, slope, and exposure also have an impact on trail depth (see below). Johnston and Johnston (1957:23) reported that some trails were "up to one-half inch deep" (1.25 cm), and average trail depth for the portions of the Chuckwalla Valley trail that they studied was 1 in. (2.5 cm).

Degree of Preservation

Prehistoric trails may tend to deteriorate naturally through time due to a variety of causes, including both erosion and sedimentation. Of particular interest is the creation and widening or deepening of gullies in alluvial surfaces. Such processes may have caused trails to be rerouted upon occasion, in the interest of more efficient travel (cf. McCarthy 1993:83).

Patination

Trail segments are often preserved and detected most easily on old desert pavements. Long-exposed cobbles and pebbles on these surfaces have become patinated or developed desert varnish, taking on darker colors than those that have been more recently exposed by human disturbance in trails. With time, the exposed clasts slowly become varnished as well. Consequently, assessing the relative degree of desert varnish development may offer usable clues concerning the relative ages of trail segments (cf. Rogers 1966:14).

The Problem of Visibility

The record of aboriginal trails is incomplete, as traces of many trails have been destroyed by natural or modern cultural processes. Where trails have been preserved, the extent to which archaeologists are able to detect their presence is potentially influenced by a variety of factors, including the archaeologists' observational abilities, the particular vantage point from which a location is observed during a survey, and even the time of day when a survey takes place.

Optimization of Trail Routes

McCarthy suggested that "the trails follow the path of least resistance to key resource areas" (McCarthy 1982:C-9) and that, "given the often rugged nature of the terrain, trails are usually the shortest and most convenient routes to walk from one point on the landscape to another" (McCarthy 1993:82). An interesting question concerns whether the routes that were selected were indeed optimal, as measured by minimizing the time and/or effort that were expended to reach the destinations, and if so, whether archaeological models for optimal potential routes can successfully predict as-yet-undiscovered trail routes or retrodict the known ones.

Redundancy

Another important question concerns the extent to which exact travel routes were standardized, on a local scale. Johnston and Johnston (1957:23) reported that multiple parallel trails are the rule rather than the exception along the Chuckwalla Valley trail. McCarthy (1982) challenged this conclusion, suggesting that apparently parallel trail segments merely reflect the gradual divergence of distinct routes that led to different destinations.

Several possible explanations for trail redundancy can be suggested. Multiple individuals or parties that were making the same journey at the same time may have preferred to follow routes parallel to each other rather than to travel in single file. Individuals may have been interested in scouting for the presence of faunal, floral, or mineral resources along varied routes, rather than single-mindedly moving toward their destination along a well-worn path. Exploratory efforts may have been made to discover improved routes, and those efforts may have been successful in some cases. There may have been ideological taboos against reusing old routes, for instance because of their association with deceased persons (Rogers 1966).

Constructed Trail Elements

Potential constructed elements of trails include rock linings along the margins of the trails and rows of rocks deposited across trails ("spirit breaks" or "trail blocks"). Rudimentary rock linings might form by rocks being accidentally kicked aside during travel along trails. However, intentionally constructed trail margins seem unlikely to have been created from any utilitarian motives, given the amount of effort that would have been required and the limited practical value of such features. Instead, such intensive construction of trails, when and if it occurred, may more likely have been intended to serve ceremonial or spiritual purposes. Rocks used to symbolically block off trail segments ("spirit breaks" or "trail blocks") have been widely reported in some portions of the Desert West (cf. Rogers 1966:14, 51), although McCarthy (1993:83) notes that they are absent in the McCoy Spring area to the northwest of the BSPP project area.

Remains Associated with Trails

Apart from the archaeological sites that usually exist at trail destinations, a variety of cultural remains have been documented in close association with trails. Small ceramic scatters ("pot drops") are frequently observed, but the common assumption that such remains were accidentally produced may be overstated (cf. Andrews and Schaefer 2010). Scatters of quartz fragments along some trails have been suggested as a measure intended to heighten the visibility of the routes at night. Cleared circles may have represented travel camping places ("sleeping circles"), although investigators have noted that it is difficult to distinguish such cultural features from quite similar features of purely natural origin (cf. McAuliffe and McDonald 2006). Trailside rock cairns, sometimes associated with potsherds and other artifacts, have been interpreted as travel shrines (Johnston and Johnston 1957). On the other hand, the rock art panels and the geoglyphs or ground figures that are found in association with some trails are perhaps at least as likely to represent travel destinations in themselves as to be mere trail accessories.

Destinations and Functions of the Trails

Prehistoric trails were used on trips that may have been undertaken to a variety of different sorts of destinations and for a variety of different motives. On a local scale, motives for using trails potentially included gaining access to particular resources, seasonally relocating the base settlement of a family or a community, and conducting religious/ceremonial activities. On a wider, interregional scale, the motives potentially included travel undertaken to engage in interethnic (international) economic exchange, to access and exploit remote resources directly, to wage warfare, to establish or cement amicable social contacts, and to satisfy spiritual concerns or simple curiosity. Multiple objectives and multiple geographic scales might also have been incorporated into a single trip.

Local Resource Use

Some trails were probably created in the course of the exploitation of the region's available local resources. Much of the travel carried out to forage for plant and animal resources would likely have left no discernible traces on the landscape, because the routes that were followed would

have been intentionally varied and improvised rather than being highly standardized, and therefore would not have been strongly imprinted on the landscape. However, some well-established resource procurement locations, such as springs, hunting ambush sites, or substantial tool stone quarry areas, would have been revisited frequently enough for the creation of lasting trails.

Seasonal Mobility

The local seasonal shifts of the residential bases of communities or families, potentially following well-established routes, may have created or reinforced trails. One such potential pattern of shifts within the PTNCL area that emerges from the ethnographic record was the movement of River Yuman groups away from the lower Colorado River floodplain during the spring-summer flooding period to higher areas in the adjacent desert, which would have potentially included Palo Verde Mesa (cf. Forde 1931:101).

Local Religious/Ceremonial Activity

The use of desert areas that were located away from the Colorado River Valley for special religious or ceremonial activities seems to be well-attested by the geoglyphs on the eastern fringe of the Big Maria Mountains and elsewhere. Rock art sites (that often co-occur with springs and tanks) and perhaps other sites, such as cairn clusters, may have been served similar functions. If the act of traveling to these destinations, as well as the activities that were carried out at the destinations, had a sacred character, this may be reflected in elements of non-utilitarian formalism in the trails themselves.

Interregional Exchange

Economic exchange between different regions or different ethnolinguistic groups may have been a significant motive for prehistoric travel, although the historic and ethnographic records provide few details concerning it. Ethnographic documentation of the items that were moved by interethnic exchange systems in this region is relatively slight, and it seems to focus on nonutilitarian items to a considerable degree (e.g. gourds, gourd seeds, eagle feathers and down, and basketry, as well as esoteric trade items such as songs and ritual knowledge). The incomplete character of the picture that emerges from these sources is attested by the interregional movement of some materials, including ceramics, marine shell beads and ornaments, obsidian, and other types of lithic tool stone, which is well-represented in the archaeological record but not specifically mentioned in the ethnographic record. Added to this list may be other perishable items such as cultigens from the Colorado River Valley.

Exploitation of Remote Resources

Some long-distance travel may have been undertaken to enable the travelers to directly exploit remote resources. This activity may have included both groups from outside the PTNCL area coming into that area to exploit its resources, and groups from either inside or outside of the PTNCL area travelling across the PTNCL area to gain access to resources in other regions.

Lithic quarry areas may have been exploited by travelers coming from the Colorado River Valley, Coachella Valley, or elsewhere in the California Desert, as well as by local groups. Although the PTNCL area would not appear to be an area likely to draw in outsiders for its subsistence resources, it is possible that it was exploited in that way under conditions of stress, and it may have been accessed by trails from the river valley. Some lower-yield areas, such as the PTNCL area, may have been "shared" and open to intermittent exploitation by several different ethnic groups (Singer 1984:38).

The shores of Lake Cahuilla may have been a destination for different ethnic groups during periods when the lake was present. Evidence from ceramic types suggests that the eastern shores of the lake may have been exploited in particular by Colorado River groups (Waters 1982). The Chuckwalla Valley corridor would have provided one logical route for travel between the Colorado River and Lake Cahuilla. The Colorado River itself may also have been a destination for temporary settlement, and it is possible that groups from the desert, such as the Serrano, Cahuilla, and Chemehuevi, may have been able to travel to the Palo Verde Valley and temporarily settle there.

Relationships of Hostility

Early historic and ethnographic sources attest to two primary interethnic alliances that moved trade goods between the Pacific Ocean coast and the Great Plains. The Lower Colorado River was at the intersection of these two primary alliances and a pattern of interethnic warfare in the region centered on this area (Kroeber 1925; White 1974). War parties traveled to stage ambushes, attack settlements, or meet in pitched battles with their enemies. Some desert trails may have been created by such parties.

Relationships of Amity

Long-distance travel was also undertaken to establish friendly social relations with remote groups. This may have been motivated, in part, by the participation of most of the region's groups in the ethnohistorically documented alliance system, and the need for groups to cement support and coordinate their actions with their allies. Other motives for establishing contacts may have included the acquisition of marriage partners and the desire to share in major ceremonial occasions.

Because the river valley itself was occupied in north-south alternation by groups belonging to the two competing alliances, at least during the eighteenth and early nineteenth centuries, north-south trails located in areas safely away from the river valley may have been used on friendly visits, in order to bypass the hostile intermediate settlements (Laird 1976:135).

Travel for Personal or Spiritual Reasons

The oral literatures of the Mohave and the Chemehuevi (who may have been strongly influenced in this by the Mohave) are unusually rich in place names and geographical detail (Kroeber 1948, 1972, 1976; Laird 1976, 1984). These accounts give a picture of cultures that seem to have prized travel and geographical knowledge for their own sake.

Some travels may have amounted to religious pilgrimages, such as the *Xam Kwat'can* or *Keruk* trail (Bean and Toenjes 2010) or the route of spiritual significance sketched in the Chemehuevi Salt Song (C. Laird 1976); portions of these trails may have passed through the eastern portion of the PTNCL area, northeast of the project site (Klasky 2009; but see Musser-Lopez and Miller 2010). Trails may continue to embody spiritual values for contemporary Native Americans (Bean and Vane 1978).

3.1.4.3 Other Site Types

In addition to trails, the PTNCL area contains a wide diversity of other prehistoric archaeological features and artifacts. A functional classification of the sites that bear these remains is an important step toward interpreting regional settlement systems and the roles that trails may have played within those systems.

Sites with small amounts of a single class of remains may be relatively easy to classify, but more extensive or diverse remains are likely to pose more serious problems. Commonly, there is no assurance that extensive or diverse remains were deposited contemporaneously. Instead, a site as it is observed archaeologically may actually be a palimpsest, reflecting a range of unrelated uses of the same location over an extended period of time. Nonetheless, despite the potential pitfalls, it may be worthwhile to develop and use a functional classification of prehistoric sites, based on a presumption that diverse remains, when they are encountered together, may well represent essentially contemporaneous or at least related uses of the location.

Habitation Bases

Functionally, habitation bases should be settlements where a community or a family lived for a period that was measured, at a minimum, in weeks rather than days. Economically, they should be locations of consumption, as much as or more than locations of production. In the immediate Colorado Desert region surrounding the amended BSPP, evidence of religious or ceremonial activities at the locations may occur, although such evidence would not be an essential characteristic.

Archaeological signatures suggestive of habitation bases would include, first and foremost, the quantity and the diversity of the remains that are present at these sites. Habitation features at the sites might include constructed house structures (such as house pits, rock rings, or even desert pavement clearing features), occupied rock shelters, and hearths. Resource processing features such as earth ovens and bedrock milling features might well be present, but they should not dominate the scene if habitation rather than narrowly focused resource exploitation was the primary activity occurring there. Similarly, religious/ceremonial features such as rock art, geoglyphs, and cairns may be present, but those would not be expected to predominate over traces of more mundane activities. Evidence for the consumption of faunal and/or floral resources would be expected, if conditions were favorable for the preservation of that evidence. Lithic assemblages would be expected to include tools that had been extensively used and then discarded, and lithic wastes should also include evidence of tool maintenance rather than being purely the residues from initial tool production. The non-local resources that are represented at

such sites might have come from a variety of different directions, reflecting the practice of radial logistical foraging out from the base. Settlement locations would likely have been selected to optimize access to a number of different resources, rather than just to maximize a single resource.

Apparent habitation base sites are present within the PTNCL area, but they are relatively few, as would be expected. The Chuckwalla Valley seems to have been a relatively resource-poor environment, at least during most of the Holocene, as compared to alternative settlement areas in the Colorado River Valley or the Coachella Valley. Consequently, it may have been more often used by highly mobile foragers or by more settled collectors making logistical forays out from more favored settlement bases situated to the east or west. The localized availability of water was probably also a strong constraint on the choices that were made for settlement locations. As a result, desirable locations around the region's few springs were likely to reused heavily, to the exclusion of establishing bases at more numerous and varied locations.

Some probable habitation base sites have been identified within the PTNCL area, including McCoy Spring (CA-RIV-132, etc.)(McCarthy 1993:172) and Zion Wash (CA-RIV-1383) on the northern edge of the Chuckwalla Mountains (Carrico et al. 1982:179); Corn Spring (Reed 1981b); Site SDM-C-55 at Hayfield Spring on the southern edge of the Eagle Mountains, as described by Malcolm Rogers (Carrico et al. 1982) and three locations at Palen Dry Lake, Granite Well, and Hayfield Canyon, all in the central or western part of Chuckwalla Valley (Singer 1984:39).

Extractive Camps

Extractive camps would include settlements that were occupied on a temporary basis, either by a complete social group (a community or family) or by a more narrowly constituted, task-specific group, organized to forage for particular resources. Extractive camps might include both locations that were occupied briefly during the annual rounds of groups organized on a "forager" basis and also locations occupied logistically by "collectors" (cf. Binford 1980).

At extractive camps, habitation structures reflecting any substantial investment of time and energy would not be expected. Resource processing features might be prominent but relatively limited in the variety of functions they reflect. Religious/ceremonial features would not be particularly likely, although they might perhaps occur. Evidence from the acquisition and processing of resources would be expected to predominate over traces of their consumption, although some consumption would also be expected to have occurred, in this respect suggesting a distinction between extractive camps and simple work stations. In some cases, such sites might contain remains reflecting the activities of only one gender. Nonlocal materials would likely be limited to utilitarian items that were brought from a base camp. If the items that were being extracted at the site did not include tool stone, the lithic assemblage might be expected to be limited to exhausted tools and to debitage that reflected tool maintenance rather than production. The locations for extractive camps may have been chosen to maximize access to a single resource, rather than for diversity in the locally available resources.

Numerous sites recorded within the PTNCL area have been interpreted as “small-scale, temporary extractive camps probably associated with trade and movement of peoples from the Colorado River” (Carrico et al. 1982:180).

Travel Camps

A potential settlement category that has generally not been distinguished from other types of camps is the travel camp. Such camps are likely to have been occupied only briefly on any one occasion, by individuals or groups whose primary concern was to travel between other destinations.

At such camps, constructed habitation features and resource processing features would be absent or minimal, with the exceptions of perhaps some cleared sleeping areas or hearths. Any religious/ceremonial features at such sites might be similar to those associated with trails. Consumption of resources that the travelers brought with them would be expected, but foraging for local resources would not have played a major role. Site locations would likely have emphasized availability of water and position on convenient travel routes.

As noted, an attempt has not generally been made to distinguish travel camps from base or extractive camps. However, given the potential importance of Chuckwalla Valley as an east-west corridor between the Colorado River Valley and the Coachella Valley, it is likely that some of the smaller scatters of habitation debris would bear reinterpretation as travel camps.

Lithic Quarries and Workshops

The acquisition and initial processing of tool stone occurred at bedrock outcrops or cobble fields where suitable material was present. Such sites are likely to stand out particularly clearly in the archaeological record, because of the abundance of remains that even fairly limited quarrying activity might produce and their excellent preservation. Quarrying and lithic workshop activity might occur at locations that were entirely separate from other activities, but quarries may be identified at locales where habitation bases or extractive camps were also situated.

Sites CA-RIV-1814 and CA-RIV-1819, on the northern margins of the Chuckwalla and Mule mountains, respectively, were fairly extensive quarry/workshop sites that were studied by Clay Singer (1982, 1984). Associated with the quarry at CA-RIV-1814 are numerous loci representing “an extensive array of temporary habitation and special activity sites” (Singer 1984:39). Consequently, the site has been classified as a habitation base. In contrast, CA-RIV-1819 has been classified as a quarry/workshop site. Cobble quarries near the modified BSPP project area include CA-RIV-2846 and CA-RIV-3419 (Keller 2010:138-139).

Biotic Resource Extraction/Processing Sites

The extraction and processing of floral and faunal resources, as distinct from their consumption, may have most frequently occurred at multiple, widely scattered locations and may have left few physical traces. Hunting sites that are visible archaeologically might include hunting blinds, drive fences, observation points at which hunting artifacts (projectile points) were worked, and initial

game butchering areas. Sites for the collection and processing of floral resources might be recognized by milling stations, roasting pits, and lithic tool scatters that are not associated with more general habitation debris.

Sites containing procurement or processing features but lacking substantial assemblages relating to other activities seem to be moderately rare in the PTNCL area. However, in the BSPP project area, Keller (2010:140) reported 10 thermal cobble features. These were interpreted as roasting pits or rock-lined earth ovens that were used to roast plant foods, including mesquite and saltbush.

Religious/Ceremonial Locations

Features that are interpreted as having served religious or ceremonial functions rather than utilitarian ones are common in occurrence and diverse in forms within the PTNCL area. Petroglyphs, pictographs, geoglyphs, cairns, and cremations seem to fall into this category. Some other features, such as rock circles, cleared desert pavement circles, and trailside ceramic scatters, are more ambiguous as to their utilitarian or nonutilitarian functions.

While isolated sets of religious/ceremonial features do occur, both in association with trails and at other locations, in many instances the features are associated with more extensive deposits of habitation remains. At CA-RIV-72, northwest of the Chuckwalla Mountains, Johnston and Johnston (1957:24) noted the presence of 13 large rock cairns, up to 3 ft. (90 cm) high. The rock art at Zion Wash (CA-RIV-1383), classified as a habitation base, “consists of 170 recorded petroglyph panels in 6 major loci and 6 isolated occurrences” (Hedges 1982:B-6). The archaeological record for features in the area around McCoy Spring is particularly rich, thanks to the work of McCarthy (1993). He identified 27 petroglyph sites, as well as apparent ground figures, including rock alignments and purposefully cleared paths. Rock cairns, rock clusters, rock rings, cleared circles, and “trail shrines” (piles of cobbles and pebbles, sometimes with pottery and burnt bone) were also reported.

Incidental Artifact Scatters

Small scatters of lithic and ceramic artifacts, as well as isolated prehistoric artifacts, are quite common in the PTNCL area. Some of these scatters probably represent accidental deposits, such as “pot drops” or lithic items that were damaged or lost during use or travel. However, others may represent lightly used camps or extraction sites where few nonperishable items were discarded or where few items are visible on the ground surface today. Still other scatters may represent religious/ceremonial sites, following McCarthy’s (1993:215) suggestion that some “pot drops” may actually have been trail shrines.

3.2 Ethnographic Context

A number of ethnographically-documented culture groups are associated with Palo Verde Mesa through historical use and oral history. These include the Yuman-speaking Mohave, Halchidhoma, and Quechan, and Numic-speaking Chemehuevi along the lower Colorado River, and the Takic-

speaking Cahuilla in the deserts and mountains west of the project (Bean 1972; Bean and King 1974; Bean and Vane 1978; Fowler and Fowler 1971; Laird 1976; Rogers 1939, 1966; Schaefer 2003; Singer 1984). All of these groups were at home in the deserts, but lived primarily near reliable water sources including the Colorado River, inland lakes, and numerous seeps and springs.

The stretch of the Colorado River immediately adjacent to the project was notably contentious, changing hands more than once in the Protohistoric period. Prior to 1700, the banks of the Colorado River east of Blythe may have been occupied by the historical Maricopa (Kroeber 1925), although this is far from certain. At some point, the Maricopa migrated east and the related Halchidhoma (or Panya) settled the area. Almost immediately, the Halchidhoma found themselves under attack from the allied forces of the Mohave and Quechan. The traditional focus of Mohave population was to the north in the Mojave Desert, while Quechan peoples had their largest villages to the south between Yuma and the Gulf of California. Both groups, though, used the Palo Verde Valley and Mesa area intermittently. Generations of near-constant hostility finally drove the Halchidhoma off the river and, ultimately, to their Maricopa allies on the Gila River in Arizona (Kroeber 1925).

The removal of the Halchidhoma from the Colorado River was part of a larger “international” network of alliances, conflict, and trade that Lowell Bean has described as the “Northern Sonoran Desert Amity-Enmity System” (Figure 5) (Bean and Vane 1978). In the Northern Sonoran Desert during the Protohistoric and Historical periods, traditional allies and trading partners formed two antagonistic groups. In one group, the Halchidhoma were allied with the Maricopa, Pima, Papago, and Cocopah to the east, and the Cahuilla, Diegueño, Serrano, and Gabrielino to the west. In the opposing group, the Mohave and Quechan were allied with the Chemehuevi (Southern Paiute) and Yavapai to the north and east, and the Kamia, Northern Serrano, Chumash, Yokuts, and Tübatulabal to the west. Southwestern Puebloan peoples, such as the Hopi, were interested trading partners in this system, but they were largely neutral (Bean and Vane 1978).

In this trading system of alliance and aggression, the stretch of the Colorado River bracketed by the modern cities of Blythe, California and Ehrenberg, Arizona was a key transshipment point (Bean and Vane 1978). One of the most significant east-west trade routes, known as the Coco-Maricopa Trail (CA-RIV-53T) crossed the river at this point, and ran just south of the project site, alongside present-day I-10. The Palo Verde Valley was a pivot point in the trade between the Plains and the Pacific Coast: a contentious place of strategic interest to all parties.

After the Halchidhoma vacated the Parker-Blythe vicinity between 1825 and 1830, the Mohave lived in the area for a year or so, but then apparently returned north to the Mohave Valley. According to Mohave tradition, the Mohave then encouraged the Chemehuevi, with whom they shared many ceremonial practices, to move into the former Halchidhoma territory along the river (Bean and Vane 1978). By the mid-1800s, if not before, Chemehuevi groups were living along the Colorado River east of Blythe, and experimenting with floodplain agriculture. The lower Colorado River groups had trading relationships with groups to the west, most notably the Cahuilla, who lived principally in the deserts and mountains around historic Lake Cahuilla. The Cahuilla likely

traversed the project site to visit their river neighbors, and, even today, some group members retain knowledge of the area and its traditional resources.

In the late 1860s, hostilities broke out again along the Colorado River, this time between the long-term but uneasy allies, the Mohave and Chemehuevi. Several years of infighting resulted in the western migration of a portion of the Chemehuevi population to Cahuilla villages in Banning and Cabezon and to a Serrano village in the Twentynine Palms area (Bean and Vane 1978; Kroeber 1925). Many of those displaced at that time did not return, but chose to stay among their new allies and kinsmen. In 1874, the Office of Indian Affairs set aside a portion of the Mohave-occupied Colorado River Reservation (now known as the Colorado River Indian Tribes Reservation) for the Chemehuevi. Understandably, most Chemehuevi "preferred to remain in their historical locations near Blythe, Needles, Beaver Lake, and Chemehuevi Valley" rather than live so close to their estranged friends the Mohave (Kelly and Fowler 1986). Ultimately, in 1907, a separate reservation was established along the Colorado River north of Parker for the Chemehuevi living in Chemehuevi Valley (Kelly and Fowler 1986).

As noted above, the Palo Verde Mesa was part of a long-distance transportation corridor from the Plains to the Pacific Coast (Bean and Vane 1978, Davis 1961; King 1981; Sample 1950; Singer 1984). The west side of the Colorado River was also an important corridor for travel between southern and northern river groups, particularly the Quechan and Mohave. North-south running trails have been identified along the river as transportation routes, as well as ceremonial ways linking key mountains, springs, and other landscape features (Stone 1991; Woods 1986). These trails and landscape features are frequently associated with rock and earth art, as well as small rock piles known as cairns.

The Colorado Desert is remarkable for its many prehistoric sites associated with what might generally be termed ritual activities (Altschul and Ezzo 1994). In addition to the remains of Native American habitations and resource procurement locations, the region contains abundant earth figures (geoglyphs), rock art (petroglyphs), shrines, cairns, and a well-preserved trail system along which these features tend to cluster (Altschul and Ezzo 1994; Cachora 1994; Johnson 1985; McGuire and Schiffer 1982; Pendleton et al. 1986; Pigniolo et al. 1997; Reed 1981a; Rogers 1939; Schaefer 1994a, 1994b; von Werlhof 1987). Desolate stretches of desert pavement like those found on and around the project site may seem uninhabited and insignificant, but, as corridors of physical and spiritual travel, they remain important to modern-day Native American groups. As Quechan tribal member and archaeologist Lorey Cachora (2000) describes, key landscape features such as mountains and springs are connected by a web of power which cannot be broken without affecting "the entire cosmos." Thus, "although peaks are most important, the valleys between the peaks, and the desert pavements, are also important in that they are pathways for the web that must run through them from one peak to others" (Cachora 2000; Laird 1976).

In the greater project vicinity, archaeologists have identified segments of east-west trending trails that likely connected communities along the lower Colorado River with resources and communities in the mountains and interior valleys, as well as north-south running trails paralleling the river (Altschul and Ezzo 1994; Cleland and Apple 2003; Mitchell 1989; Stone 1991, Woods

1986). North-south running trails have also been associated with a specific mourning ritual, the keruk, which follows the pattern of the first mourning ritual that involved a pilgrimage between two powerful peaks: Akikwalal at Pilot Knob near Yuma, and Avikwami in the Newberry Mountains near Needles (Ezzo and Altschul 1993). To the east and west of the project, archaeologists have also recorded significant rock art and intaglio sites along the Colorado River and in the McCoy Mountains (von Werlhof 2004a). No prehistoric rock or earth art was identified during the pedestrian surveys for the project, although surveyors did record a 200-meter-long segment of a north-south running trail, which may have connected with a documented segment of the Coco-Maricopa Trail (CA-RIV-53T) at Black Rock, located at the southern tip of the McCoy Mountains, immediately south of the project. The following sections present brief historical discussions of the five Native American groups thought to have the strongest historical residential relationships to the project vicinity.

3.2.1 Quechan

According to Quechan oral tradition, their territorial range extended along the Colorado River from Blythe, in the north, to Mexico, in the south. At the time of sustained European contact in the 17th century, the Quechan people numbered in the thousands. The largest concentration of Quechan traditionally lived at the confluence of the Colorado and Gila rivers, although they were not reported in that area in 1540, when the Alacon and Diaz expeditions reached the confluence (Forbes 1965; Forde 1931). Nevertheless, in the following century large Quechan villages existed in the area.

The Quechan economy was based on a combination of horticulture, fishing, and gathering. During the winter and spring, Quechan groups lived in seasonal village settlements located on terraces above the river floodplain. After the spring floods receded, small family groups would disperse to their agricultural plots along the river to plant crops. After the harvest in the fall, the Quechan would gather again in the large villages on the terraces, where stored agricultural foods, fishing, and limited gathering allowed them to live together through the winter (Bee 1983; Forde 1931). In all times but high flood, fishing in the Colorado River provided an important source of protein.

Numerous named villages were located along the terraces above the lower Colorado River flood zone. The village known as Avi Kwotapai was located on the west side of the Colorado River between Blythe and the Palo Verde Valley, and Xenu mala vax was on the east side of the river near present-day Ehrenhberg (Bee 1982). Quechan and other Yuman-speaking groups report well-traveled trails that extend along the Colorado River as well as trail networks between peaks and other significant landscape features (see discussions in Cleland and Apple 2003). Primary ethnographic sources for the Quechan include Bee (1983), Castetter and Bell (1951), and Forde (1931).

3.2.2 Mohave

The Mohave were one of the most respected and feared groups in California at the time of European contact. They were known equally for their military might, powerful shamans and religious ceremonies, and proclivity to long-distance travel. The Mohave are also notable for their

understanding of themselves as a unified “nation” of people, known as the Hamakhava, rather than as a series of loosely related clans or villages (Kroeber 1925). The whole of the Mohave acted together in defending their territory and attacking their enemies. Visiting parties of Mohave also traveled far and wide, apparently largely out of curiosity and almost entirely without fear. Thus, the Mohave became spiritually and socially influential over a vast portion of the U.S. Southwest and southern California. Even the notably insular Zuñi pueblo people “perform dances that they attribute to the Mohave” (Kroeber 1925).

In 1604, the Oñate Spanish expedition encountered the Mohave as far south as the present Colorado River Indian Tribes Reservation (Stewart 1969), although their largest settlements were known to be further north. Kroeber (1959) reported that the majority of the Mohave population lived along both sides of the lower Colorado River from south of Davis Dam to Topock. According to Stewart (1969), the Mohave also extended their territory south into the Chemehuevi and Colorado Valleys, and intermittently controlled areas as far south as the Palo Verde Valley (cf., Kroeber 1959). After the Halchidhoma vacated the Parker-Blythe area between 1825 and 1830, the Mohave briefly settled there, but soon returned to their stronghold in the Mohave Valley (Bean and Vane 1982).

During much of the year, the Mohave lived in villages on terraces above the Colorado River, only moving down onto the floodplain in the spring to plant crops after the seasonal floods. Like other lower Colorado River peoples, the Mohave relied on floodplain horticulture, fishing, and gathering for subsistence. Planted crops included maize, black-eyed beans (cowpeas), squash, pumpkin, and several local grasses. Cultivated plants were supplemented by the collection of wild plant foods including honey mesquite (*Prosopis glandulosa*) and mesquite screwbean (*Prosopis pubescens*), which could be stored for long periods of time and were traditional staple foods. Although the pods of both plants could be eaten green, they were usually pounded into flour using long stone or wooded pestles. Additionally, screwbean pods were often processed in large pits dug into sandy soil where the pods were placed, covered with vegetation, and then periodically watered to leach out bitter compounds (Lightfoot and Parrish 2009).

The bulk of the traditional Mohave diet was vegetarian, but hunting and fishing were nonetheless important components of the seasonal subsistence cycle. Mohave hunters considered spring the best time to hunt, when they could lie in wait next to springs where the young grass would attract deer. Rabbits and other small game were also targeted, although they were more often taken in traps, snares, and communal drives. When the high waters of the Colorado River receded in July and August, the Mohave turned to fishing and caught a variety of Colorado River fish species by driving them into shallow sloughs or trapping them in seines (Kroeber 1925; Stewart 1957).

The Mohave are well known for their long-distance travel. Like other Colorado River tribes, they participated in a trade network extending east to the Puebloan of Arizona and west to the Pacific coast (Bean and Vane 1978). A number of important passes and routes of travel, including the well-known Mohave trail connecting the high deserts with the southern California coastal valleys, were developed or frequented by the Mohave. The endurance and speed of Mohave travelers was legendary at the time of European contact. According to one hyperbolic account, groups of Mohave men, running only at night, were said to be capable of traveling from the Colorado River

to the Pacific coast in only three days' time, although the typical duration of such a trip was 15 to 16 days (McCawley 1996; see also Bean and Vane 1978). During the Colonial era, the Spanish frequently encountered groups of traveling Mohave who continued the tradition of desert-coastal travel and trade throughout the Mission period, occasionally in conflict with the wishes of Spanish officials (Cook 1962).

The general Yuman belief in the importance of dreaming, and the fundamental interrelationship between the mundane and spiritual worlds, was particularly developed among the Mohave (Kroeber 1925). All people were capable of meaningful dreaming, and most individuals came to their chosen roles in life as a result of their dreams. In dreams, the Mohave travel in a mythical place and time when the world was first formed and the important places, such as mountains and springs, came into being. Dreams also inform public rituals, and the many complicated "song series" that singers perform from memory are said to be dreamed as much as learned. The songs of the Mohave are remarkably specific geographically, noting "the exact spot at which each character journeyed or slept or stood or looked about" (Kroeber 1925). Thus, Mohave songs seem to act as a means of storing and transferring important landscape knowledge: they are, among other things, a collection of meaningfully constituted mental maps of the Mohave territory and beyond (Stoffle et al. 1997). Many nearby groups, including the Chemehuevi, borrowed extensively from the Mohave song series repertoire.

Among the Mohave, individuals and families owned specific parcels of farm land, as well as individual mesquite trees. Disputes over privately owned resources were usually settled through physical contests "calculated to prevent fatalities" and avoid violent reprisals (Kroeber 1925). Primary ethnographic sources for the Mohave include Castetter and Bell (1951) and Kroeber (1920, 1925). More recently, Kenneth Stewart (1983) has summarized the ethnographic literature regarding the Mohave for the Handbook of North American Indians series

3.2.3 Halchidhoma

Although no longer located in the area, the Halchidhoma (also known as the Panya) are a Yuman-speaking people who, until about 1825, lived along the Colorado River between the present-day cities of Blythe and Needles. The Halchidhoma were known to travel and trade over great distances. The Coco-Maricopa Trail, leading west from a portage point across the Colorado River adjacent to the city of Blythe, linked the Halchidhoma with the Pacific coast (Dobyns et al. 1963). Ceramic seriation and radiocarbon dates from marine shell artifacts indicate that an extensive trade network between the Pacific coast and the lower Colorado River region was established by at least A.D. 900 (Sample 1950). The Halchidhoma traded with the Cahuilla, Hualapai, Papago, and Pima of Arizona, and were closely allied with the Maricopa (Bean and Vane 1978).

By all accounts, the Halchidhoma were frequently in conflict with their Colorado River neighbors, the Quechan and Mohave (e.g., Bean and Vane 1978; Kroeber 1925). During the decades, if not centuries, of open hostility, the Halchidhoma established strong alliances with the Yuman-speaking Maricopa and Cocopah peoples who lived to the east, along the Gila River. Ultimately, the Halchidhoma went to live with and intermarried with their allies the Maricopa, and are therefore poorly documented in the ethnographic literature. Spier's (1933) ethnography of the

Maricopa touches only briefly on the, by then historical, Halchidhoma. Other sources include Castetter and Bell (1951), Kroeber (1925), and a more recent summary article by Harwell and Kelly (1983). Bean and Vane (1978) discuss the central role the Halchidhoma, or Panya, people played in the intertribal trading network known as the Northern Sonoran Desert Amity-Enmity System, as well as their eventual migration to the east.

3.2.4 Chemehuevi

The Chemehuevi are the southernmost of 16 groups of Southern Paiute peoples (Kelly and Fowler 1986), and the only non-Yuman speakers living along the lower Colorado River at the time of European contact. The traditional territory of the Chemehuevi was an extensive area southwest of Las Vegas, including portions of the eastern Mojave Desert of California. Describing the Chemehuevi territory, Alfred Kroeber observed that it was “the largest in California occupied by a people of uniform dialect,” but also “easily one of the most worthless, and certainly among the two or three most thinly populated” (Kroeber 1925). Lowell Bean and colleagues have challenged the view that the Chemehuevi population was extremely low at the time of European contact (Bean and Vane 1978). Citing work by Richard Stoffle and Michael Evans (1976), Bean argues that there were at least 13,000 Southern Paiute people (Chemehuevi and Las Vegas groups) “living in a territory running from Las Vegas south to the Palo Verde Valley and from the Colorado River west to the Iron Mountains” (Bean and Vane 1978).

The vast Chemehuevi territory contains some of the driest deserts in the West, and the traditional Chemehuevi subsistence system was the most attuned to desert resources of all of the groups discussed here. The Chemehuevi living in the deserts practiced a relatively nomadic hunting-and-gathering way of life, with larger settlements near reliable water sources, but no permanent villages. Groups moved with the rhythm of the seasons, arriving to harvest plant foods as they matured and hunting primarily small game. Hunting parties also traveled to the San Bernardino Mountains and visited with their allies the Northern Serrano, or Vayume. Owing to the impermanence of most desert encampments, housing was typically of brush erected to protect inhabitants from the harsh sun and wind (Kroeber 1925; Laird 1976). Several foods, including dried meats, dried melon and squash, agave hearts, and various seeds, were stored in specially prepared baskets, earth pits, and caves. Chemehuevi groups did not live permanently with their food caches, though, and the stealing of cached food was apparently a grave issue: one which could incite war and inflict spiritual harm (Laird 1976).

Until their expansion into the lower Colorado River region, the Chemehuevi did not use pottery, but relied instead on a variety of woven baskets and implements, often with painted designs. Chemehuevi hunters were known for their recurved, sinew-backed bows, which, though shorter than comparable Mohave bows, were nonetheless, accurate, powerful, and well-suited to hunting deer and other big game (Laird 1976). Those groups that settled along the Colorado River adopted agriculture, more substantial wooden dwellings, pottery, and a number of other cultural features from their riverine neighbors.

Despite an underlying friction, the Chemehuevi were traditional allies of the Mohave, and after the Halchidhoma were driven from the Colorado River area in the early 19th century, the Chemehuevi

moved into the Parker-Blythe area vacated by the Halchidhoma. Bean suggests, following Roth (1976), that the Chemehuevi may have settled in the Palo Verde Valley vicinity before the expulsion of the Halchidhoma. According to Mohave tradition as recounted by Kroeber (1925), the Chemehuevi were invited to come to the Colorado River after 1830 by the Mohave. According to Laird's (1976) Chemehuevi sources, though, the Chemehuevi Valley and Cottonwood Island along the Colorado River were part of the Chemehuevi traditional territory prior to the 1800s. Kelly's (1934) ethnographic work suggested that the southern expansion of the Chemehuevi was relatively "recent," dating to the early 1800s. This continues to be a point of disagreement between scholars and between the descendants of the historical Mohave and Chemehuevi.

In the Protohistoric and Historical periods, the Chemehuevi traveled extensively through the deserts and as far west as the Pacific coast "just to look around," and to exchange goods and obtain marine shell ornaments and raw materials (Kelly and Fowler 1986). Periodically, small groups of Chemehuevi and Las Vegas Southern Paiute would travel together to the Hopi villages in Arizona, although those trips were described as purely social visits involving gift exchanges, not trading expeditions (Kelly and Fowler 1986).

When Europeans first reached the California desert, the Chemehuevi occupied the eastern half of the Mojave Desert from south of Death Valley to Riverside and Imperial Counties. As mentioned above, traditional Chemehuevi subsistence was based on hunting and gathering, although the groups living along the lower Colorado River adopted floodplain horticulture similar to that practiced by the Mohave and Quechan (Kroeber 1925; Roth 1976). The Colorado River Chemehuevi, though, retained a greater reliance on hunting and gathering than their Yuman neighbors. Primary ethnographic sources for the Chemehuevi include Laird (1976), Kelly (1934), Kelly and Fowler (1986), and Euler (1966), who wrote a comprehensive ethnohistory of the Southern Paiute.

3.2.5 Desert Cahuilla

The Desert Cahuilla traditionally occupied the Coachella Valley, west of the project, near the modern towns of La Quinta and Indio, where desert and montane geographies collide. During the Late Prehistoric and Protohistoric periods, the Cahuilla were in regular contact with groups along the lower Colorado River. The traditional route to the river crossed directly south of the project along the course of the Interstate Route I-10. Along with other Takic speakers, the Cahuilla are believed to have migrated into southern California from the Great Basin. Scholars do not agree upon the timing or effect of the Takic migration, and it remains an important topic of ongoing research (e.g. see Golla 2007; Sutton 2009). Based on linguistic data and archaeological materials, researchers have suggested migration dates from 550 B.C. to A.D. 450. Before inland Lake Cahuilla dried up around A.D. 1500, Cahuilla peoples lived densely along the shoreline, making pottery very similar to that fashioned by the Yuman peoples of the Colorado River. Historically, the Cahuilla territory spanned from the Orocopia Mountains, in the east, to the San Gorgonio Pass and the San Jacinto Plain near modern-day Riverside (Bean and Vane 1978).

Cahuilla subsistence was an extensive hunting-and-gathering system tethered to permanent villages located near reliable water. Most large Cahuilla villages were inhabited year-round by a

single, related lineage group. With the exception of the Lake Cahuilla settlement system, high desert canyons with perennial springs were particularly favored village locations. High canyon villages straddled several ecological niches and afforded protection from wind, weather, and enemies. The Cahuilla were organized into several clans, each consisting of several lineage groups tracing their ancestry to a single male ancestor. Each lineage group controlled a territory spanning three critical "life zones" and an ecotone: the low desert zone, high desert zone, transition ecotone (between 5,000 and 7,000 feet in elevation), and mountain zones (Bean and Bourgeault 1989). Specific resources within these zones, such as springs and mesquite patches, were owned by lineage groups. Traditional songs and stories, some related to specific resources and landscape features, could also be owned exclusively by lineage groups and larger clans.

Seasonally, as different foods became available, small groups would move to temporary camps to collect localized plant resources and to hunt. Important game animals included rabbits, deer, and bighorn sheep. The Cahuilla primarily exploited desert plant resources such as agave, yucca, mesquite, various cacti, and grasses, In addition, large groups periodically traveled into the mountains to harvest acorns and pinyon nuts with their Serrano mountain allies. They would bring the harvests back to the permanent settlements where the nuts could be stored for many months.

In the Northern Sonoran Desert Amity-Enmity System (Bean and Vane 1978), the Cahuilla were key trading partners with the Halchidhoma (Panya) moving a majority of the traded goods through the southern California desert valleys and mountain passes. In the Historical period, the Cahuilla along with the Maricopa were instrumental in reopening trade and communication between the Spanish settlements along the California coast and the Sonoran desert (Bean and Vane 1978).

There are a number of ethnographic sources for the Cahuilla (e.g., Barrows 1900; Kroeber 1908; Strong 1929). Since the 1970s, Lowell Bean (e.g., 1972, 1978) has become the foremost non-native interpreter of traditional Cahuilla culture, synthesizing the extant ethnographic data and working closely with modern tribal members (Bean and Saubel 1972; Bean and Vane 1978).

3.3 Historical Context

European exploration of the Colorado Desert began in the 16th century, but sustained Euro-American settlement of the region did not occur until the mid-19th century. This extended period of exploration without expansion creates a long Protohistoric period in the region, during which Europeans and local Native American groups knew of one another, but interacted very little. This time period is discussed above from the point of view of Native American history. Below, the Euro-American expansion into the region and subsequent historical developments are described.

3.3.1 European Exploration

By 1539, the Spanish had begun to explore parts of what they named Alta California. Early explorers, such as Francisco de Ulloa (1539), Hernando de Alarcon (1540), and Francisco de Coronado (1540), led expeditions into the Gulf of California, reaching the mouth of the Colorado River and continuing up the River past the Gila confluence. However, little exploration of the interior deserts was undertaken until much later. Spanish exploration of the interior deserts for the

next 200 years was intermittent as the region was considered desolate, remote, and filled with staunch indigenous adversaries such as the Mohave and Quechan.

The first recorded explorer of the interior Colorado Desert region was Father Eusebio Francisco Kino, a Jesuit missionary, cartographer, and explorer. Starting in 1691, Kino established a string of missions in northern Mexico and southern Arizona, finally reaching the Colorado River in 1702. Almost 70 years later, Father Francisco Garcés followed Kino's route, reaching the villages of the Quechan Indians at the junction of the Gila and Colorado rivers in 1771. Garcés's party crossed the Colorado River and traveled west through the desert until they could see the San Jacinto Mountains in the distance, before returning to Sonora. Three years later, Father Garcés and a Spanish border captain named Juan Bautista de Anza attempted an overland route to Monterey. When they reached the Colorado River, Anza found the local Quechan to be surprisingly friendly. The Quechan assisted the Spanish in fording the river, locating wells and trails, and ultimately rescuing an exploring party lost in the desert.

Subsequently, the Quechan became less receptive to Spanish incursions onto their land and, in 1781, they barred the Spanish from using the Yuma trail which had been the primary overland route between the California coastal and inland Sonoran Spanish settlements. For several decades, the Spanish were forced to travel around the Colorado River region by sea. Only after the Spanish forged an alliance of convenience with the Maricopa in the 1820s to send goods and communication along the Coco-Maricopa trail, did the Quechan reopen the Yuma trail in 1827 (Bean and Vane 1978).

During the 18th and into the 20th century, an active Native American slave trade existed in the region, capitalizing on the traditional enmities in the Northern Sonoran Desert. In this slave trade, lower Colorado villages were frequently raided for slaves by eastern tribes motivated first by Spanish interests and later by Mexican and American policies and social institutions (Brooks 2002). These slaving raids further reduced local native populations already devastated by the introduction of Old World diseases such as smallpox and measles (Bean and Vane 1978).

3.3.2 The American Expansion: Mining

After the Treaty of Guadalupe-Hidalgo in 1848, the United States took control of the U.S. Southwest in the same year that gold was discovered in California. Mining camps were established in the desert as early as 1850, with the beginning of gold mining at Salt Creek in the Amargosa Desert. Along the eastern bank of the Colorado River, the town of La Paz, once known as Pot Holes, developed when gold was discovered nearby. The subsequent mini-gold rush in the area made La Paz an instant boomtown whose population peaked at 1,500 in the 1860s (Wilson 1961). Along the stage line between San Bernardino and the Colorado River, La Paz was an important stop, serving as the county seat for Yuma County until 1870 (Thompson 1985). The La Paz mining district yielded placer gold for only a short period, though, and by the end of the 19th century, La Paz passed from boomtown to ghost town.

The first Americans to arrive in the Colorado Desert in any numbers were prospectors hunting for the next big gold strike. Regionally, mining and prospecting activity was most intense in the

mountains and high deserts of the Mojave, but small-scale mining has been a consistent feature of the Colorado Desert from the 1800s to the present day. By 1863, between “2,500 and 3,000 Americans and Mexicans were on the River between Palo Verde Valley and El Dorado Canyon,” most of them engaged in mining (Poston 1863, cited in Bean and Vane 1978). Generally speaking, mining productivity in the Colorado Desert was greatest between 1890 and 1910, with a brief resurgence during the Great Depression in the 1930s, when a hard-scrabble existence in the desert seemed preferable to unemployment in the cities (Rice et al. 1996; Morton 1977). In the immediate project area, manganese and gypsum mining were particularly intense during the initial years of World War I (WWI) and World War II (WWII), when other mining activities were reduced or curtailed entirely.

In the 1820s, limited placer mining began in the eastern Colorado Desert. In the early 1800s, prospectors were some of the only Euro-Americans traveling in the California deserts, and they frequently came into conflict with Native American groups. From the 1840s through the 1880s, the U.S. Cavalry established a series of camps and forts throughout the Arizona, Nevada, and California deserts to protect settlers and immigrants from the often hostile tribes whose territories they were invading. In 1848, the discovery of gold at Sutter’s Mill brought a tremendous influx of American and European settlers to California. Between 1849 and 1860, an estimated 8,000 emigrants crossed the Colorado Desert on their way to California (Laflin 1998). In the 1850s, some would-be miners tried their luck in the eastern Colorado Desert, but found very little gold. Most miners simply passed through the desert on their way to the larger strikes to the west and north.

By the turn of the century, miners from all over the world and from all walks of life had migrated to California hoping for the next big strike. While the popular image of the prospector is an old white man with a dusty hat and a trusty burro, the reality was much more diverse. Many of the earliest miners in California were Native American, Mexican, Spanish, and freed or escaped African American slaves. With the completion of most of the western rail lines in the 1860s and 1870s, numerous immigrant Chinese railroad workers also turned to mining. The Chinese joined a host of hopeful immigrants from Ireland, England (particularly Cornwall), Italy, Germany, France, Chile, Peru, Australia, Croatia, and even the Pacific Islands (Caltrans 2008). Although few in number, women also owned interests in mines and took part in prospecting. The mining towns of the 1850s were raucous and exotic places filled with people from across the globe in search of easy fortune. In the last decades of the 1880s, though, most of the easily mined placer deposits of gold were depleted and the “halcyon days of the gold rush were quickly coming to a close,” precipitating increased racial and ethnic tensions throughout the state (Caltrans 2008). In the project vicinity, the most numerous ethnic groups were Euroamericans, Native Americans, African Americans, and recent Mexican immigrants, some of whom were also seasonal workers in the agricultural fields around Blythe.

In the newly founded farming community of Blythe, local newspapers extolled the mineral riches of area mountains, which were reported to contain “nearly all important minerals” including gold, silver, copper, lead, limestone, and manganese (Blythe Herald, 15 January 1917; see also Palo Verde Valley Weekly Review, 9 November 1916). The glowing accounts of mineral riches in early Blythe newspapers were belied by accompanying humorous pieces about the “passing of the

prospector," and the advent of a new "mechanized" type of prospector who bid farewell to the burro in favor of "a real automobile" (Palo Verde Valley Weekly Review, 28 December 1916; Blythe Herald, 15 January 1917). By the early 1900s the glory days of mining were over. In the Palo Verde Valley area, mining remained a relatively small part of the economy, never becoming the economic boon that early town planners might have hoped.

Several modestly successful copper mines, such as the Crescent Mine and Smith-Hopkins Mine, were located in the northern McCoy Mountains, but the less-glamorous gypsum and manganese deposits became more important in the region. In the northern extent of the McCoy Mountains, several mines produced significant quantities of manganese, the ore being used to harden steel for armaments (Butler 1998; Shumway et al. 1980). During WWI, the Blackjack mine employed one to two dozen men at a time to extract 45-percent-pure manganese ore which was shipped east for use in armament factories. A brief mention of the mine in the Blythe Herald optimistically proclaimed the "outlook" at the Blackjack mine "unusually good" due to the inflated war-time price of manganese ore (Blythe Herald, 11 October 1917). With the end of the war in 1918, though, the price of manganese fell to prewar levels, and manganese mines lay largely dormant until the onset of WWII in the 1940s.

When the United States formally entered WWII, manganese mines in the McCoy Mountains became active once again. Of the dozen or so manganese mines "active in the vicinity of the McCoy Mountains north of Blythe" during WWII, the largest was the Arlington Mine along the northeastern flank of the McCoy range (Shumway et al. 1980). From 1942 to 1945, the Arlington Mine shipped roughly 8,500 tons of ore via the Santa Fe Railroad at the Inca (Cox) siding (Shumway et al. 1980; see also Palo Verde Valley Times, 19 November 1942, and 24 June 1943). In 1945, the government created new, more-stringent specifications for manganese ore that none of the McCoy deposits could meet, leading to a near total shutdown of the mines in a matter of months.

In addition to manganese, area gypsum deposits were also exploited during WWII. Gypsum is a primary ingredient in modern wall board, known commonly as drywall, and historically it was used as a component in various plasters and in fast-drying Portland cement. Several large gypsum deposits exist north of the project. The most significant is located near the railway town of Midland, which developed to support the gypsum mines. Two prospectors discovered and filed for gypsum claims at the project site in 1907. The U.S. Gypsum Company bought the claims in 1910 to the site called Mineral City. Initially forming a tent city, miners camped in the area to access the gypsum mines. In 1916, the California Southern Railroad put in a spur from Rice to Blythe, which passed right through the town of Midland.

During the height of WWII, the "need for quick construction of armed forces installations boosted the employment [at the Midland mines] to an all-time peak of over 400 men," more than 1,000 town residents, 200 houses, a company bunkhouse and cookhouse, a company school, a company store and service station (Shumway et al. 1980). The plant produced sheetrock and rock lath, and was at one time was the number one producer of wallboard and plasterboard in the world. In addition, Midland provided Hollywood studios with the loose gypsum that created snowflakes for winter scenes in films.

During the period of 1956 to about 1960, many improvements were made in the living conditions at Midland. Television was cabled down from a neighboring hill, natural gas, and electricity was brought in from lines running through Blythe, and telephones were installed in each house (Riverside Press*,* January 8, 1967, and September 29, 1968). It was likely at this time that a pipeline paralleling a road running through the project site CA-RIV-9983 (temporary site number SMB-H-600) was constructed to serve the expanding town of Midland. In the 1960s, though, the quality of the gypsum began to decline and the demand for gypsum was increasingly met by foreign mines. In December 1966, the Midland Plant, then owned by US Gypsum, was closed (Shumway et al. 1980). Many of the abandoned buildings have since been used for controlled fire exercises by Riverside County fire departments. In addition, one mine shaft was converted into a fallout shelter by the Riverside County Disaster Preparedness Office.

Within the project, no mines or significant prospects exist. The many waves of mining activity in the region are identifiable in the project as a scattering of abandoned prospecting pits, collections of food trash and other debris, well-traveled dirt roads, and a handful of prospect claim markers in the form of wooden stakes, small stone cairns, and metal cans which may originally have contained claim papers. These are most common along the west side of the project at the base of the McCoy Mountains, and in the many drainages that cut into the mountain range. Automobile parts, bits of screening and wire, and sundry tools are also common, reflecting the new, 20th-century prospector's reliance on automobiles: "He now packs his chuck and blankets, and a barrel of water if he is wise, and goes forth in a real automobile," often of an "ancient vintage" (Blythe Herald, 15 January 1917).

3.3.3 The American Expansion: Transportation

Sustained economic development in the Colorado Desert region only began in the 1870s, and came to fruition in the early part of the 20th century. Development was dependent largely on two things: transportation and water. The first of these came in the form of a series of overland trails and stagecoach lines created to service the emerging mining towns. Early in the 1860s, Hank Brown and John Frink independently developed routes to access the gold mines in the vicinity of La Paz, Arizona (von Till Warren et al 1980). Frink's Route was an east-west road established as an alternative to the more southern Butterfield Stage. This was apparently the first development across the Palo Verde Mesa, although it has since all but disappeared (von Till Warren and Roske 1981). In 1862, William D. Bradshaw opened a route, later known eponymously as the Bradshaw Trail. This route crossed the desert to the La Paz mining district. Bradshaw also operated a ferry across the Colorado River near Providence Point, opposite a small community that would become Ehrenberg, Arizona.

Bradshaw developed his road partly along Brown's and Frink's previous routes, although Bradshaw's trail headed more directly east from the Salt Creek Pass to the north slopes of the Chocolate Mountains. Bradshaw, like the majority of early trailblazers, used Indian routes that predated Spanish exploration. Part of Bradshaw's Trail may have been the Coco-Maricopa Trail which intersected the Colorado River near Blythe. The Bradshaw Trail, like many other cross-country routes, became largely obsolete with the arrival of rail service in the desert and the depletion of the La Paz gold fields in the late 1870s. The railroads reoriented the development of

trails and wagon roads that connected new mining communities to major routes of transportation. Railroad stops became destinations for wagon roads, allowing points of access to develop the remote desert interior (von Till Warren et al 1980).

The first railroad came to the Colorado Desert in 1877, with the construction of the Southern Pacific Railroad. The Southern Pacific line began on the coast and reached Yuma on September 30, 1877. The railroad was the single most important boost to mining in the southeastern Colorado Desert, offering convenient transportation of heavy mining equipment, supplies, personnel, and, when the miners were lucky, bullion. By 1880, the Southern Pacific Railroad was providing access to new gold and silver ore deposits in the Chocolate Mountains, Cargo Muchachos, and Palo Verde Mountains. Water remained a scarce resource in the desert, with most water for mining enterprises coming from highly localized sources such as springs, wells, and streams.

By the mid-1910s, the Mecca–Los Angeles Highway, nicknamed the Sunkist Trail by E.R. Fairbanks and now U.S. Highway 60 (Palo Verde 2005), was in place across the mesa from Black Rock to Blythe. At about this time, one main dirt road, now known as Mesa Drive (site CA-RIV-9981, temporary site number SMB-H-601), was blazed north-south through the project area, following a section line surveyed by the Government Land Office (GLO) in 1916/7. The road and several small roadside structures are evident in early maps of the vicinity (County of Riverside 1920).

To the west, at the base of the McCoy Mountains, another north-south road (CA-RIV-9983) extended north from U.S. Highway 60 toward the mining town of Midland. A mining boomtown founded in 1925, Midland rose up around extensive gypsum deposits initially discovered in 1907. In 1916, the town was also served by a spur line of the California Southern Railroad. Water was shipped by railroad car from Blythe to Midland daily, as well water was never sufficient for the community. The north-south “Midland Road” appears in aerial maps dating from the 1920s, although the road is likely older than that. An aboveground pipeline running parallel to the road most likely dates from a general period of improvements in Midland in the 1950s.

3.3.4 Development of the Palo Verde Valley

In southern California, agriculture became an economically important industry by the late 1850s, directly on the heels of the enormous growth in population produced by the Gold Rush. In the late 19th century, homesteading formed the foundation of California’s growing agricultural economy. The passage of the Homestead Act in 1862 and the Desert Land Act of 1877 opened vast areas of public land to private citizens who were interested in developing the land for agriculture or livestock. In addition, the U.S. Congress passed the Swamp Land Act in 1850 to transfer federal lands that were viewed as virtually worthless to the management and disposal of several individual states, including California. A majority of these lands were partially submerged and required reclamation to make them viable for agricultural and other purposes. California acquired over two million acres of land, and passed legislation in the 1860s and 1870s governing the conveyance of such lands to private individuals who would undertake projects to reclaim them. Generally, these lands were auctioned off to the highest bidder who could then prove activities to

reclaim the lands (L.G. 1914). This provided the opportunity for venture capitalists to monopolize the lands, including ranchers who could secure fertile pasture lands, railroad speculators who could capitalize on lands adjacent to major routes of transportation, and land speculators like Thomas H. Blythe who had a civil engineer ready to spearhead the reclamation of the land for an agricultural community and a new city.

3.3.4.1 The Founding of Blythe

From 1855 to 1884, the U.S. General Land Office registered many new settlers in the Palo Verde Valley (Setzler 1998), but the first large-scale venture to develop land in the Valley began in the 1870s with the arrival of Thomas H. Blythe, "the father of the Palo Verde Valley." Blythe was the visionary developer of the seasonally inundated lands on the west bank of the Colorado River, directly across from the established portage point at Ehrenberg, Arizona. Born Thomas Williams in England in 1822, Thomas changed his name after a series of business failures and came to America for a new start in 1849. He eventually moved to San Francisco in 1855 and gained some success in a wide range of ventures, including mining, promotion, and general investment. Although he never married, Blythe had one daughter named Florentine Blythe, also known as Flora and Florence, who was born in 1873 and raised by her mother in England.

In 1875, Blythe traveled with an ambitious civil engineer named William Calloway to Ehrenberg, Arizona along the Colorado River. Calloway had previously been engaged in building many of the desert roads of San Diego County, which at that time included most of current Riverside County. Before coming to Blythe, Calloway had worked on San Diego's first water system drawn from Pound Canyon. In 1871, he traveled to Ensenada, Baja California to help build a new town to be called Burton City, which ultimately failed to develop. Upon returning to San Diego, Calloway continued to work on the City's water system, experimenting with an artesian well (San Diego Weekly Union, July 13, 1871 and October 12, 1871). Calloway had also been the superintendent of the San Diego-Fort Yuma turnpike construction, which took him into the desert (San Diego Historical Society, online files accessed December 3, 2009).

Calloway's knowledge of the land and engineering acumen impressed Blythe and encouraged him to consider investing in development along the Colorado River. Blythe and Calloway envisioned the development of the river-fed lands, and Blythe had a particular dream of constructing an elaborate hacienda in his newly developed riverside retreat (Setzler 1998). To realize his dream, Blythe hired Calloway as a project engineer and George S. Irish as project manager. In 1876, Blythe was introduced to Mexican General Guillermo Andrade, a promoter of colonization of the Colorado River on behalf of the Mexican government. Andrade became a silent partner in Blythe's scheme for development. In the coming years, Blythe's venture to clear and develop 40,000 acres of land west of the Colorado River became an obsession for him, although he spent very little time there (Setzler 1998).

In 1875, the venture filed with the state of California for 400,000 acres of Swamp Land District No. 310, as designated by the Swamp and Overflow Act (Palo Verde 2005). By late 1875, Blythe named his fledgling town "Blythe City, in compliment to myself" (Setzler 1998). Initially the town consisted of tent houses, a corral, and a general store. Thomas Blythe made the first filing in

California for water rights in 1877, when he requested rights to Colorado River water for his venture (Setzler 1998). He was granted 190,000 miner's inches. Water-rights in hand, Calloway and Irish developed experimental ditch and canal irrigation systems, hiring local Native American laborers who had been farming the floodplains successfully for centuries. The centerpiece of their irrigation system was a masonry head gate in the riverbank to control flow to the system (Palo Verde 2005). By 1878, a 40-acre experimental farm, known as the Colorado Company, was planted. In 1880, Calloway killed a Chemehuevi man in an altercation, and was promptly killed by two Chemehuevi workers who witnessed the fight. Relations were already strained between work foreman Calloway and the increasingly disenfranchised Chemehuevi laborers, whose traditional lands had been granted for development (Bean and Vane 1978). After the killings, most of the Chemehuevi workers fled the area, causing a delay in the completion of the main canal intake. Calloway was eventually replaced by C.C. Miller, new hands were hired, and work continued (Setzler 1998). Two years later, the canal was almost complete, and Blythe made his second and last visit to the site. Blythe was enthusiastic about the progress, but fatefully, he would never see the fruition of his $82,000 investment. Only one year later, on April 4, 1883, Thomas Blythe died of a heart attack in San Francisco (Setzler 1998). After years of convoluted legal battles, Blythe's daughter Florentine inherited the property in 1904.

Almost immediately after Blythe's daughter inherited the property, the Mutual Water Company (precursor to the Palo Verde Irrigation District) was formed to purchase the land from her. In 1904, Florentine sold the land and titles were transferred to the Mutual Water Company. During this time, pioneering settlers continued to pour into the Valley, and the town of Blythe grew from a tent city to a proper town, incorporating in 1916 with 600 residents on 832 acres of land (Palo Verde 2005). The first residents were "desert characters, homesteaders, pioneer settlers who wanted land of their own, fugitives from the law and adventurers who met the accepted challenge to help tame the area, and make it civilized" (Setzler 1998). Mining activities and then homesteading and experimental farming continued to attract new residents and commerce, via steamboat and railroad. Most of the early homes throughout the Palo Verde Valley were tent houses, although there were also a few adobe buildings in the region (Setzler 1998). The town of Blythe and the Palo Verde Valley prospered in the 1910s, with high demands for crops related to wartime activities, most of all cotton. With a new cotton gin in 1911, and settlers clamoring for homestead lots, the town of Blythe experienced a small boom, peaking with high cotton production in 1919 and the end of WWI. Several civil projects were constructed during this period of prosperity, and set the foundation for the continuing growth of the city.

In transforming arid land into productive farming and grazing lands, water was the key. Long after the people of Blythe had incorporated and begun to farm the productive Palo Verde Valley with Colorado River water, the Metropolitan Water District was created in the 1930s to transport water from the Colorado River to the Los Angeles basin. The Metropolitan Aqueduct was constructed from Parker Dam, north of the project, through the mountains east of Indio to Riverside and, finally, to Los Angeles. It was the largest construction project in the world at the time and provided much-needed jobs during the Depression (Pittman 1995). The diversion of water to the Los Angeles basin, though, was of little import to the farming communities of Blythe and the greater Palo Verde Valley, as they retained their water rights originally granted to quixotic town founder, Thomas Blythe.

3.3.4.2 Agriculture and Ranching on the Palo Verde Mesa

On the Palo Verde Mesa in the vicinity of the project, agriculture remains a challenging pursuit due to poor soils and lack of water. These impediments, though, have not stopped a few enterprising souls from attempting to raise plants and livestock on the land. The incredible success of the irrigated fields in the Palo Verde Valley has surely encouraged expansion onto the inhospitable mesa. In 1929, the Palo Verde Mesa and Chuckwalla Valley Development Association proposed a large-scale irrigation project for the Palo Verde Mesa (Palo Verde Development 1929). The project was further explored in 1931, and the main project canal was proposed to follow a contour line around the mesa (Palo Verde Development 1931). Ultimately, the project did not come to fruition. In 1936, the Palo Verde Irrigation District (PVID) proposed another irrigation project following the mesa contour lines and centered on the McCoy Wash to the north and east of the project (PVID 1936). Several tracts of land were claimed as Homestead Entries and Desert Land Entries in the area just east of the project site. These were developed as part of the new PVID. Despite high hopes and good intentions, though, most of the originally developed fields lay fallow now.

Modern satellite images of the region document a history of efforts to tame the Mesa. Due to the arid conditions and general lack of vegetation, many activities are etched into the land and visible from the air today. In the vicinity of the project, several large-scale agricultural ventures are evident, though only a handful are presently active. The dry scars of circular central-pivot irrigation fields often used to farm alfalfa are overlain by large rectangular tracts, some of which today support palm tree farms, citrus orchards, and jojoba fields. The only currently operational tracts near the project lie east of the project: one expansive system of orchards south of I-10 along the edge of the Mesa, and a series of orchards (including palm tree farms) paralleling the McCoy wash, east and northeast of the project. The orchards typically contain water retention basins and intensive irrigation systems.

Within the project, there are no currently operational agricultural or ranching enterprises. From the early 1900s forward, though, a number of land claims were made and lost on the Mesa. Land use records maintained by the BLM document 49 separate Desert Land Entries, Homestead Entries, and Land Patents within the project site. An additional five State Grants, Leases, and ROWs were listed within the project site each affecting several map sections. Most of the land claim entries (Desert Land and Homestead) were made early in the 1900s between 1909 and 1911. Several of them were cancelled or relinquished within three years of the originating entry date. Many, though, were simply left open until all but one of the outstanding entries were cancelled by the BLM in 1950.

The one entry that was not cancelled or relinquished is a patented inholding within the project site, Desert Land Patent number LA 1131488. Patented in 1951 to Mr. Gene Ransom, the 160.32-acre tract was originally claimed as a Desert Land Entry in 1910 (LA 038784) and renewed in 1914 (LA 039315). The boundaries of the inholding are clearly visible on satellite images and some reworking of tract land is evident, but no irrigated fields or obvious livestock enclosures are present. No other land claims were patented within the project site or the transmission corridor although patented private holdings abut the project to the east and south.

In 1914, entrepreneur A. E. Nicholls obtained title to a 168-acre lot of Section 36 in Township 6 South, Range 21 East, south of I-10 and adjacent to the project's transmission corridor. Nicholls envisioned the development of a community named Palowalla but the development became known as Mesaville and now as Nicholls Warm Springs (Setzler 1988). WWI delayed his development plans, but by 1917 there were at least a few residents on the Mesa (GLO 1917). One main road, now known as Mesa Drive and following section line surveyed by the GLO in 1916/7, is evident in early maps of the vicinity. This same road runs north through the project site and several structures, including some that appear to be site CA-RIV-9663, are evident along its extent on maps from the 1920s (County of Riverside 1920s).

Within the entire Archaeological Survey Area, only one site with standing historical-age structures was encountered during the current Class III survey: site CA-RIV-9663 built along a north-south running dirt road now known as Mesa Drive and recorded as site CA-RIV-9981 (see Transportation section, above). Site CA-RIV-9663, dates to the early 20th century and contains several dilapidated concrete and stone structures, a concrete water trough (with an etched date of "1936"), fencing, and associated refuse. The structures appear to be part of a ranch or farm, although no Land Patents were filed for the site location. A series of Desert Land Entries for Sections surrounding site CA-RIV-9663 were entered in 1909, cancelled and then renewed in 1911, and ultimately cancelled in 1950. Further archival research of BLM records might reveal the names of the entry holders as well as the nature of the enterprise. At present, the structures and associated features at site CA-RIV-9663 appear to be related to ranching, rather than agriculture. This assessment is based on the lack of obvious irrigation or cultivated fields in the site vicinity and recent work in the McCoy Wash (Spencer et al. 2001).

To the north and east of the project, in the McCoy Wash area, Albert Spencer, Jerry Reioux, and colleagues (Spencer et al. 2001) recorded several sites probably associated with limited livestock grazing similar in character to sites within the project. In several site record forms (e.g., those for sites CA-RIV-7174, CA-RIV-7179, and CA-RIV-7080 on file at the Eastern Information Center (EIC), Spencer and colleagues describe riveted metal well heads, dilapidated wire and lumber enclosures, concrete foundations, and other features that they associate specifically with early 20th century sheep grazing. As evidence of such activity, they cite a Mr. Walter Scott and "oral histories" which describe the use of the McCoy Wash and vicinity for sheep grazing early in the 20th century. Recent discussions with Roger Henning of the PVID indicate that sheep grazing was common in the area historically (Henning, personal communication, 2009). Several serially updated Homestead Entries in the northeast quarter of Section 6 of Township 6 South, Range 22 East, dating from 1911 to 1937 may also be associated with sheep ranching attempts along the McCoy Wash and in the northeastern quadrant of the project site.

Spencer and colleagues' reconstruction of sheep ranching in the area accords well with both the recorded archaeological features and historically documented floods of the McCoy Wash, which left the normally dry area verdant and grassy for a short while. One such large flood occurred in 1939, when almost 6 inches of rain fell in the month of September alone (Palo Verde 2005). Other notable wet years occurred at somewhat regular 3- to 8-year intervals from 1909 to 1941 and were less frequent thereafter. Much of the early 20th century ranching-related debris in the project

area may date to the period of green after the 1939 flood and brief green periods during other wet years, particularly 1918, 1921, and 1931 (Palo Verde 2005).

3.3.5 Training for Foreign Wars

Harsh, dry, and forbidding, the western deserts of California, Arizona, and Nevada have always been one of the most thinly populated regions in the United States. Prehistorically, the western deserts were home to a number of Native American groups, as discussed above, most of whom congregated along the rivers and other reliable water sources, leaving vast stretches of desert largely uninhabited. Today, populations are still concentrated along the rivers and around fresh springs and wells. In March 1942, when General George S. Patton, Jr., first visited the area, there were only a handful of small towns and a total human population in the low thousands, but he and the U.S. military command were delighted with this "desolate and remote" landscape (Meller 1946).

All of the qualities that make the western deserts inhospitable—the dry hot days and bitterly cold nights, the general lack of water, the poor sandy soils, the dunes and desert pavements broken only by craggy mountainous terrain—were the very qualities that made the deserts ideal for large-scale, realistic military training. In the western deserts, military commanders found a vast, unforgiving, and lightly populated landscape perfect not only for training troops in desert tactics, but also for mounting joint maneuvers on a previously inconceivable scale. Making the area even more inviting were the relatively good transportation systems of paved roads and rail lines that crossed the deserts and allowed for the movement of supplies, personnel, and armaments (Bischoff 2009; Henley 1989).

3.3.5.1 World War II: The Desert Training Center and California-Arizona Maneuvers Area

Early in 1942, shortly after the bombing of Pearl Harbor and the United States' entry into WWII, the Director of Army Ground Forces and Combat Training for the War Department, Lt. General Lesley J. McNair, ordered the creation of the Desert Training Center (DTC) in California, Arizona, and Nevada. The DTC was to be a training facility where U.S. troops could become acclimated to the rigors of desert fighting, and desert tactics and military equipment could be tested before the inevitable confrontation with the Germans in North Africa. Lt. General McNair believed in greater "realism in training," which he equated with "large maneuvers and live-fire exercises" of a kind rarely seen in U.S. military training up to that point (Gorman 1992). The DTC was, thus, also intended to function as an enormous mock theater of war in which his ideas about "realism in training" could be put into action.

One man who shared McNair's abiding belief in training realism was General Patton, who had only recently been placed in command of the first tank unit in U.S. military history, the I Armored Corps. Early in his military career as a cavalry man, Patton had observed first-hand the importance of large, realistic training maneuvers. In 1916, as part of the punitive expedition against Pancho Villa, the cavalry amassed in the western deserts a "war strength regiment of infantry and some artillery…in the midst of an unrestricted maneuver and hundreds of square miles of varied terrain," and the training benefits were, in Patton's words, "almost UNIMAGINED"

(Patton 1917, in Province 2002, capitals in original). Therefore, when General Patton was tasked with overseeing the creation of the DTC in the western deserts of California, Arizona, and Nevada, he was fully aware of the hardships and "unimagined" benefits of the deserts. Patton scouted the region by plane, jeep, and horseback beginning in March 1942. The area he eventually chose was well suited to military training because of several features, including the general lack of human habitation, the difficult and varied terrain, the established railroads and highways, the presence of several military installations throughout the region, and the fact that much of the land was owned by the U.S. government (Henley 1989). The terrain of what would become the DTC was thought to be quite similar to that of North Africa, except for the rugged mountains. Although parched, sprawling, and isolated, the region could easily be supplied with water and other necessary provisions through the use of extant rail facilities (Bischoff et al. 2010:24).

Desert Training Center

The DTC was unequalled in size, initially covering over 19,000 square miles of California and Nevada desert between Desert Center to the Colorado River and from Yuma to Searchlight. It was larger in area than England (and 9 U.S. states), and was eventually expanded to include another 13,000 square miles in two areas of Arizona. The Department of the Interior, which owned the vast majority of the land, permitted its use for training. The War Department acquired approximately 105 million acres through transfer or purchase, including the land for the DTC camps (Bischoff 2009; Bischoff et al. 2010:24, 45). Patton himself negotiated for utilities and transportation from the Metropolitan Water District of Los Angeles, the Southern California Telephone Company, and the Southern Pacific Railroad (Bischoff et al. 2010:25). The DTC represents the first time that the Army had attempted to simulate a full theater of operations.

Patton established his base of operations near Shaver's Summit (now Chiriaco Summit) at Camp Young. Troops began arriving at the DTC in April of 1942 via troop train, and more than 4,800 enlisted men were stationed there by the end of May. They endured harsh physical training that included restricted water (one canteen per day) and food (only "B" and "C" rations), physical endurance training, and lack of sleep. Life at the DTC was so difficult that the officers and enlisted men came to refer to the facility as "the place that God forgot" (Henley 1989). Approximately 1,000 soldiers died while training at the DTC, many from dehydration (Bischoff et al. 2010:35). Live fire exercises were conducted whenever possible. More than one soldier noted that actual warfare could be easy in comparison to the rugged training regimen.

Patton commanded the DTC for only three months and in July 1942 he was placed in charge of the Allied invasion of North Africa, code named Operation Torch. When General Patton left the DTC, his units were replaced by 12,000 new troops and he was replaced by Major General Alvan Gillem, Jr., who commanded the II Armored Corps. Five more corps would rotate through the training center before its closure (Bischoff et al. 2010:37), and all of the maneuvers in the project vicinity were likely under the direction of Major General Gillem and his successors, including important figures such as General Walton Walker and General Terry Allen. Patton's exercises were largely confined to the desert reaches around Camp Young, many miles to the west of the project. The first large-scale maneuvers reported in the local Palo Verde Valley Times newspaper began in

August of 1942, under the direction of Major General Gillem, and eventually spilled onto the Palo Verde Mesa.

California-Arizona Maneuvers Area

After the resounding success of the Allied troops in North Africa, the need for desert training evaporated, but the perceived benefits of the DTC as a vast theater of war ensured the center's survival. In 1943, after 19 months of operations and expansion, the DTC was home to more than 190,000 troops and encompassed some 32,000 square miles in California, Arizona, and Nevada. On October 18, 1943, the DTC was officially renamed the California-Arizona Maneuver Area (C-AMA), in recognition of the evolving purpose and scope of the facility (Bischoff et al. 2010:45-46). Units that experienced training at the facility went on to fight in both the European and Pacific theaters. The facility, though, continues to be better known as the DTC, and most researchers today acknowledge that fact by referring to the facility by the somewhat cumbersome name Desert Training Center/California-Arizona Maneuver Area, or DTC/C-AMA (Bischoff 2009).

A contemporary account of the DTC/C-AMA, dated 19 November 1943 by Captain Herbert Chase, Public Relations Officer, describes the mission of the facility:

> The mission of the California-Arizona Maneuver Area is to train, maintain, and supply troops realistically as in a Theatre of Operations. The training is designed to harden troops physically and to train soldiers mentally for the shock of battle. Much of the firing is conducted under realistic battle conditions. Other objectives are the development of tactics, techniques, and training methods suitable for desert warfare, and to test and develop equipment and supplies (Baty and Maddox 2004).

In addition to the command center at Camp Young, the DTC/C-AMA eventually contained 12 divisional camps in California and Arizona, including the top-secret Camp Bouse where specially equipped tanks and their crew were readied for action against the Germans (Baty and Maddox 2004; see also Henley 1989). Of the California camps, Camps Iron Mountain, Essex/Clipper, and the short-lived Camp Rice (35 miles north of the project) were constructed in the spring of 1942. Shortly thereafter, Camps Coxcomb and Ibis were constructed in the summer of 1942 and the winter of 1942/1943, respectively (Bischoff 2009). Camp Pilot Knob, the furthest south camp located roughly 80 miles due south of the project, was constructed in the spring of 1943. Camps Laguna, Horn, Hyder, and Bouse, in Arizona, were constructed after the Arizona land known as "Area B" was added to the DTC/C-AMA in the summer of 1943 (Bischoff 2009). These camps realized Patton's vision of simple facilities that closely mimicked the Spartan living conditions of an active war zone. Accommodations consisted of canvas tents for all personnel (including officers) and temporary kitchens, showers, and latrines. The few wooden structures were also temporary in nature, including administrative centers and hospitals (Bischoff et al. 2010:28). Divisional camps occupied a three- by one-mile rectangle and contained rock-lined roads, unit areas, and other lasting features (Bischoff 2009:53) Other DTC facilities included ranges, maneuver areas, depots, airfields, bivouacs, hospitals, and railroad sidings (Bischoff 2009: 51; Bischoff et al. 2010:25).

The divisional camps are the most visible remains of the enormous flurry of military activity in the DTC/C-AMA between 1942 and 1944, but they were not the true focus of that activity. As Matt Bischoff (2009) forcefully stated in his overview of the DTC/C-AMA:

> [T]he purpose of the facility was to train soldiers. Troops did not come out to the desert to remain in their camps, and they spent much time in the field, training and maneuvering. Maneuver areas and their related sites represent the real "work" of the Desert Training Center, where men were taught to fight and survive in desert combat.

Maneuvers

During the life of the DTC/C-AMA, there were six major maneuvers consisting of multiple divisions pitted against one another across enormous battle lines (Bischoff 2009). These maneuvers covered hundreds of miles, included more than 15,000 soldiers, and lasted a week or more (Bischoff et al. 2010:30). In the project vicinity, evidence for maneuvers is well represented, creating a landscape of war comparable to any actual battlefield. As documented in local newspapers, the Palo Verde Mesa and the towns of Midland and Blythe were frequently embroiled in the "sham battles" of the DTC/C-AMA (e.g. Palo Verde Valley Times, 20 August, 3 September, 24 September, and 8 October 1942). In the late summer and fall of 1942, the town of Blythe became known as "Little Libya" sitting at the center of "the greatest desert maneuvers in the history of the American Army" (Palo Verde Valley Times 8 October 1942).

These enormous maneuvers ran for several weeks or months, during which the men lived on the desert in makeshift bivouacs, and dined primarily on canned C- or K-rations opened with distinctive key-wind strips, P-38 can openers, or "bayonet" style. At times, the military apparently also supplemented troop rations with locally bought canned food items, particularly canned sardines. As one soldier from the 3rd Armored Division, VII Corps stationed at the DTC in the summer of 1942 remembered:

> Sardines, of course, were a staff of life. No man of the 3rd will ever forget the constant diet of "goldfish." It was sardines with tomato sauce in camp, sardines right out of the can while moving. Sardines and more sardines! Along with these despised "desert trout," tomatoes, fruit salad and canned turkey were issued often enough to become tiresome. (Woolner et al. 1946)

In the project, surveyors noted a large number of identical oval sardine cans packed in California. Although sardines were also a favored food of miners and ranch hands, many of the sardine cans in the project area were associated with military ration cans and other military debris – visible evidence of the steady diet of "goldfish."

The controlled dispersal of armored vehicles was critical to desert camouflage and defense. During most maneuvers troops traveled, slept, and ate with their vehicles, not in centralized facilities (Patton 1942, in Province 2002). This method of dispersed bivouac, march, and battle

formation, would be expected to result in an equally dispersed and scattered distribution of food, fuel, oil, and other trash, similar to that actually observed in the project area (see Chapter 5).

In one notable "sham battle," the fighting spilled over onto the Palo Verde Mesa and "hundreds of tanks maneuvered on the north mesa" in the vicinity of the project (Palo Verde Valley Times, 24 September 1942). In an exciting underdog victory, the Red army, "outnumbered two to one, fell back 70 miles toward the Palo Verde Valley [to the mesa], and successfully outpointed the numerically superior Blue army" (Palo Verde Valley Times, 24 September 1942). This battle was held between the communities of Vidal, Rice, and Blythe, in an area encompassing the project. During the Red army's strategic retreat, they took over the town of Blythe with tanks, "covering the main thoroughfares leading into town." A few weeks later in early October 1942, the fighting again encroached upon the "outskirts of Blythe," as foreign observers from more than a dozen allied countries – from Chile and Venezuela to China, South Africa, and Poland – came to see Major Gillem's vast training maneuvers (Palo Verde Valley Times, 8 October 1942).

After the exercises of the summer of 1942, local papers do not mention large-scale battles in the area again. Through 1943, there are sporadic notices of soldiers getting lost on the desert, causing highway accidents, taking showers at the USO Club during maneuvers, or causing a stir in Blythe, which was often overrun by men on leave with nowhere else to go (Palo Verde Valley Times, 4 March, 18 March, 8 July, 29 July 1943). Troops from Camps Ibis and Rice are specifically mentioned. The lack of comment on major maneuvers in the vicinity of Blythe during 1943, after such vivid accounts in 1942, may simply reflect a growing sense of secrecy and control over media coverage of DTC/C-AMA affairs. Alternatively, though, the Palo Verde Mesa may not have hosted large-scale maneuvers again.

One tantalizing bit of evidence is a map from 1943 titled, "California-Arizona Maneuver Area," thus post-dating the renaming of the facility in October 1943, which shows the Palo Verde Mesa north of the Blythe Army Air Base as an "Off Limits" area. In this map, on file at the George S. Patton Museum, the east-west access road between the WWII-era Arlington Mine and the Inca railroad siding is also marked as off limits. After the 1943 change in mission from desert training to theater of war, apparently "many areas within the DTC/C-AMA area were designated 'off limits' to soldiers," and the Mesa northwest of Blythe may have been one of them (Bischoff 2009). If so, then most of the materials present in the project would date to the brief window between the departure of General Patton in the summer of 1942, and the re-alignment of the DTC as the C-AMA in the fall of 1943.

Blythe Army Air Base

To support the mission of the DTC/C-AMA, several desert airfields were commandeered and significantly improved by the Army between 1942 and 1944. One of these wartime training bases was the Blythe Army Air Base, which was originally constructed by the Civil Aeronautics Administration in 1940 as Intermediate Flying Field Site 21 (Wilson 2008). Site 21 was further upgraded in 1941, when the National Defense Program awarded $400,000 to the Works Progress Administration to expand the runways to accommodate larger military planes (Wilson 2008). With the development of the DTC/C-AMA, the little airfield west of Blythe was identified as an excellent

candidate for Army use, and it was officially taken over by the Army in April 1942, under the direction of General Henry H. Arnold, Commanding General of the Army Air Forces (Wilson 2008). One month later, the 46th Bombardment Group was deployed to the Blythe air field, and the men immediately went to work building base housing, bringing in utilities, and improving the airfield facilities. The 46th was largely equipped with Douglas A-20 ground attack aircraft. This group was followed by the 3rd Observation Squadron and eventually replaced by the 85th Bomb Group and subsequently the 34th Bombardment Group (Bischoff et al. 2010:52-53).

By September 1942, the airfield was formally designated the Blythe Army Air Base (AAB), with paved runways suitable for military aircraft. Like other contemporary bases, Blythe AAB featured a dispersed layout to minimize losses from enemy attack. In the spring of 1943, the airfield was further improved, and an "unusually large taxi strip, of a type heavy enough to accommodate the largest four-motored bombers" was constructed (Palo Verde Valley Times, 4 June 1943; see also 13 May 1943). In addition to its four runways, aprons, hangar, and barracks, Blythe AAB was also equipped with a theater, hospital, recreation hall, post-exchange, and swimming pool (Bischoff et al. 2010:52-53).

From the fall of 1942 to 1945, the Blythe Army Air Base supported numerous training exercises in the DTC/C-AMA and became known for its excellent training of heavy bomber crews who went on to complete successful bombing missions in Europe and the Pacific (Wilson 2008; see Meiser 2009, Attachment 6). The first squadrons assigned to Blythe supported the DTC at this time, supporting and participating in the ground units' training. Their planes preformed a variety of bombing and attack exercises, flying low over troops' heads to simulate strafing and dropping large flour-filled bombs. Later base tenants were oriented towards training replacement crews, including pilots, navigators, bombardiers, flight engineers, radio operators, and gunners, for deployment overseas. Aircrew training included ground exercises, such as an overnight bivouac, as well as flight training. At its operational height in late 1943, Blythe AAB hosted 7,685 personnel (Bischoff et al. 2010:52-54).

Closing the DTC/C-AMA and Blythe Army Air Base

Ultimately, the enormity of the DTC/C-AMA training exercises became too great to manage, as all available troops, including communications and transportation specialists, were needed on the fronts in Europe and the Pacific. After training hundreds of thousands of enlisted men and officers, and aiding in the formulation of numerous tactical advances, the DTC/C-AMA was declared surplus on April 1, 1944.

As a heavy-bombing training facility, the Blythe Army Air Base remained in operation for another year, although under the reduced designation of Blythe Army Air Field. At the end of 1945, though, after months of slow down-staffing and dismantling, the Blythe Army Air Field was decommissioned and returned to the people of Blythe as a community airport (Palo Verde Valley Times, 11 October 1945, 20 December 1945). During this time, the remaining Army staff, including a combat engineer battalion, helped the small town of Blythe recover from the war by assisting in several beautification projects during their off weekends (Palo Verde Valley Times, 4

October 1945). In its final days, the air field briefly hosted the famed Tuskegee Airmen of the 99th Fighter Squadron (Bischoff et al. 2010:54).

With the closing of the DTC/C-AMA and the Blythe Army Air Base, the Colorado Desert returned to its prewar population and activity levels. Civilian buildings and airports converted for military use during WWII returned to civilian use. The extensive postwar cleanup effort included the removal of all moveable equipment and material, including telephone poles and wire installed by the Army. Surplus military barracks were recycled for a variety of uses throughout the local communities (see Meiser 2009, Attachment 6). Major decontamination projects, intended to clear impact areas of unexploded ordnance, were conducted with the help of Italian prisoners of war. However, because nearly the entire training area had been used for live-fire exercises, only limited ordnance clearing was possible, and in some cases departing units simply buried unexploded ordnance and other materials in place (Bischoff et al. 2010:70-71).

Following the cleanup, most of the DTC/C-AMA reverted to BLM control. In 1948, the Blythe airfield property was transferred back to the County of Riverside, and the dismantling of the former air base buildings and structures began. In the 1960s, the new Blythe Airport Terminal building was constructed, along with the construction of I-10 that realigned U.S. Highway 60/70. In the early 1970s, a truck stop was built over the site of the air base headquarters (Wilson 2008, site visit May 2009).

3.3.5.2 Exercise Desert Strike

In the spring of 1964, the enormous area that had been the DTC/C-AMA once again supported large-scale military training exercises employing both ground and air forces. From May 17 to 30, 1964, a joint Army–Air Force training exercise, known as Exercise Desert Strike, took over the Palo Verde Mesa and more than 12 million acres along the California-Arizona border. Amid the escalating nuclear arms race, the U.S. Strike Command elected to conduct the largest and most costly training exercise at the time, to “become familiar with the concepts and doctrines associated with large-scale employment of nuclear weapons” (U.S. Army, n.d.). Army and Air Force units were trained in passive and active tactics, concepts and procedures for joint operations, and the use of and defense against tactical nuclear weapons.

The exercise was a two-sided enactment, with fictitious world powers code named “Calonia” and “Nezona” sharing a common border at the Colorado River. The premise of the conflict between these two entities, each led by a Joint Task Force and two designated War Cabinets, was a dispute over water rights. Major tactical operations during the exercise included deep armor thrusts, defensive operations along natural barriers, counterattacks including airmobile and airborne assaults, and the simulated use of nuclear weapons. The Air Force provided fighter, air defense, interdiction, counter-air reconnaissance, and troop carrier operations in support of both joint task forces (U.S. Army, n.d.). In the first phase of Desert Strike, Nezona initiated mock battle with a full-scale invasion of Calonia. A new concept for military river crossings was put into operation during this invasion, accomplished with a combination of assault boats, amphibious armored personnel carriers, ferries, bridges, and fords at eight major sites across a 140-mile long

stretch of the Colorado River. The practice of attack and counterattack continued into a second phase, in which simulated nuclear strikes and airborne assaults were traded between the forces.

To the troopers who participated in Desert Strike, the exercise was better known as “the long, hot walk” (Moore 2008). According to Major John Jinerson, who participated in Desert Strike as part of A Company, 459th Signal Battalion, the experience of these enormous maneuvers for individual soldiers and units was often a lot of waiting followed by brief moments of activity (John Jinerson, personal communication 2009). Stationed between Amboy and Cadiz, Jinerson’s company was testing two-way radios for use in Vietnam, and was not directly involved in most of the simulated live-fire exercises along the river. To relieve the heat and the boredom, many men brought in beer by the case. A particular favorite was Falstaff beer, because “it was cheap” (John Jinerson, personal communication 2009; see also Jinerson’s 2009 online video). Within the project, surveyors found a number of aluminum soft-top beer cans of the type that would have been available in 1964, including Falstaff beer cans.

Desert Strike “proved once again the lessons which had been learned in World War II when this same area had been part of the great California-Arizona Maneuver Area,” with one commander General Bastion praising the extensive Desert Maneuver Area as it “provided freedom of maneuver and reduced the dependence of units on existing road nets. The long distances involved, the possibility for uninhibited movement, and the lack of civilian population centers as an alternate supply source provided extremely fine tests in logistics, communications, and maintenance” (U.S. Army, n.d.).

The magnitude of the troop movements, and the required supplies and equipment, made Exercise Desert Strike the largest training operation in the United States since WWII (U.S. Army, n.d.). The total cost of Desert Strike was $35,342,493, with the participation of 89,788 troops (U.S. Army, n.d.). The U.S. Continental Army Command initially critiqued the operation as being poorly planned due to equipment degradation in the difficult environment and a lack of value in troop training for the time and cost, although the value of more “realistic” engagements for all involved units was noted (U.S. Army, n.d.). After Desert Strike, large-scale training exercises were discontinued in the Desert Maneuver Area, and the Country became more completely engaged in the war in Vietnam.

4.0 Cultural Resources within the Project Area

Complete summaries of the results of the cultural resources inventories conducted for the approved project are provided in the Cultural Resources Class III Survey Draft Report (Keller 2010) and the Addendum 1 Cultural Resources Class III Report (Vargas 2010) prepared by AECOM and the relevant records listed in Attachment 5 and Attachment 4 of those documents, respectively. These inventories identified hundreds of cultural resources within and near the approved project. This CRMMP focuses exclusively on those resources that would be affected by the amended project and require mitigation. For the purposes of clarification, Appendix C includes a table showing the current treatment status of all archaeological resources within both the approved and amended projects by trinomial and temporary site number. Three hundred and thirty two prehistoric and historic-period resources were originally recorded in the approved project area. Two hundred and seventy one resources were found not eligible for listing on the California Register of Historical Resources (CRHR) on the basis of surficial data from the original pedestrian survey; the remaining 61 resources were recommended or assumed eligible for the CRHR and subject to mitigation under the approved project's CoCs. As a result of the amended project's reduced footprint, only 20 of the original 61 archaeological resources included in the original CoCs will now be impacted. Those 20 resources are included in the amended CoCs. Four additional resources which are no longer in the amended project are also listed in the amended CoCs; these are included in discussions below to ensure conformance between the amended CoCs and this document. These resources include CA-RIV-9801, -9558, -9764, and -3419. During the compliance phase of the original project, certain treatments conducted in compliance with the original CoCs was undertaken on recommended or assumed CRHR eligible resources both presently outside of and within the amended project footprint (see Appendix C). Any work completed on resources now outside of the amended project will be reported on in the final CRR. The following sections first present overviews of the archaeological sites within the amended project site that require mitigation, arranged by age (prehistoric or historic) and by site type. Each site type is briefly described, followed by an overview of the relevant sites within the amended project site. These are followed by a section presenting the known historic standing structures. The sections detail the potential eligibility of each resource for listing on the CRHR; for some, the discussion also includes an assessment of NRHP eligibility.

As shown in Table 2, a total of 24 archaeological sites and two historic built environment resources that are located within the amended project area require additional data recovery efforts to mitigate impacts by project activities (Figure 6). For the purposes of this CRMMP, the archaeological sites are characterized according to the following site types: small prehistoric sites, prehistoric sites with thermal cobble features, prehistoric quarry sites, historic-period sites with features, historic-period sites with structural remains, historic-period dump sites, historic-period refuse scatter sites, and historic-period roads. Eight prehistoric sites (or prehistoric portions of multi-component sites) and 17 historic sites (or historic portions of multi-component sites) must undergo the data recovery and evaluation protocols detailed in CoCs **CUL-6** through **CUL-14**. Note that some multi-component sites require treatment of both their prehistoric and historic components. This table reflects the status of archaeological site treatment under the Amended CoCs at the time of the Final Commission Decision for the Amended Project.

Table 2. Cultural Resources Subject to Treatment under the Amended BSPP Conditions of Certification

Resource Identifier	Age	Site Type	CEC Recommended Mitigation	Location	Treatment Status
Blythe Army Air Base Radio Communications Facility	Historic	Built Environment	Archival research under **CUL-14**	Linear Facilities Corridor	Treatment complete; CPM letter report approval received 10/13/10
Blythe Army Air Base Reservoir and Pipelines	Historic	Built Environment	Archival research under **CUL-13**	Linear Facilities Corridor	Treatment complete; CPM letter report approval received 11/2/10
CA-RIV-9795	Multi-component	Small Prehistoric Site (Lithic Scatter)	Historic-period component ineligible. Assessment and data recovery for prehistoric component under **CUL-7**	Modified linear facilities corridor	Treatment complete; CPM letter report approval received 6/27/11
CA-RIV-9801	Multi-component	Small Prehistoric Site (Pot Drop)	Historic-period component assumed eligible and data recovery complete as recorded. Assessment and data recovery for prehistoric component under **CUL-7**	Modified linear facilities corridor	Not in Amended Project but listed in Amended CoCs; removal will be requested by CRS
CA-RIV-9540	Historic	Historic-Period Site with Feature	Assessment and data recovery under **CUL-8**	Plant Site	Treatment pending
CA-RIV-9558	Multi-component	Prehistoric Site with Thermal Cobble Feature; Historic-Period Refuse Scatter Site	Assessment and data recovery of prehistoric component under pertinent parts of **CUL-6** and of historic component under **CUL-11**	Plant Site	Not in Amended Project but listed in Amended CoCs; removal will be requested by CRS
CA-RIV-9560	Historic	Historic-Period Refuse Scatter Site	Assessment and data recovery under **CUL-11**	Plant Site	Treatment complete; CPM letter report approval received 6/13/11
CA-RIV-9565	Historic	Historic Period Dump Site	Assessment and data recovery under **CUL-10**	Plant Site	Treatment completed; letter report pending
CA-RIV-9570	Historic	Historic Period Dump Site	Assessment and data recovery under **CUL-10**	Plant Site	Treatment completed; letter report pending

Table 2. Cultural Resources Subject to Treatment under the Amended BSPP Conditions of Certification

Resource Identifier	Age	Site Type	CEC Recommended Mitigation	Location	Treatment Status
CA-RIV-9623	Multi-component	Small Prehistoric Site (Cairn Feature)	Historic-period component assumed eligible and data recovery complete as recorded. Assessment and data recovery for prehistoric component under **CUL-7**	Plant Site	Treatment completed; CPM approval of letter report pending
CA-RIV-9656	Historic	Historic-Period Refuse Scatter Site	Assessment and data recovery under **CUL-11**	Plant Site	Treatment pending
CA-RIV-9657	Historic	Historic-Period Refuse Scatter Site	Assessment and data recovery under **CUL-11**	Plant Site	Treatment pending
CA-RIV-9662	Historic	Historic Period Dump Site	Assessment and data recovery under **CUL-10**	Plant Site	Treatment completed; CPM approval of letter report pending
CA-RIV-9663	Historic	Historic-Period Site with Structural Remains	Assessment and data recovery under **CUL-9**	Plant Site	Treatment completed; CPM approval of letter report pending
CA-RIV-9668	Historic	Historic-Period Site with Feature	Assessment and data recovery under **CUL-8**	Plant Site	Treatment pending
CA-RIV-9672	Historic	Historic-Period Site with Feature	Assessment and data recovery under **CUL-8**	Plant Site	Treatment pending
CA-RIV-9674	Historic	Historic-Period Site with Feature	Assessment and data recovery under **CUL-8**	Plant Site	Treatment pending
CA-RIV-9676	Historic	Historic-Period Refuse Scatter Site	Assessment and data recovery under **CUL-11**	Plant Site	Treatment completed; CPM approval of letter report pending
CA-RIV-9679	Historic	Historic-Period Dump Site	Assessment and data recovery under **CUL-10**	Plant Site	Treatment completed; CPM approval of letter report pending
CA-RIV-9764	Multi-component	Prehistoric Site with Thermal Cobble Feature	Historic-period component assumed eligible and data recovery complete as recorded. Assessment and data recovery for prehistoric component under pertinent parts of **CUL-6**	Plant Site	Not in Amended Project but listed in Amended CoCs; removal will be requested by CRS

Table 2. Cultural Resources Subject to Treatment under the Amended BSPP Conditions of Certification

Resource Identifier	Age	Site Type	CEC Recommended Mitigation	Location	Treatment Status
CA-RIV-9768	Multi-component	Historic Period Dump Site	Prehistoric component assumed eligible and data recovery complete as recorded. Assessment and data recovery of historic component under **CUL-10**	Linear Facilities Corridor	Treatment complete; CPM letter report approval received 6/27/11
CA-RIV-9812	Prehistoric	Prehistoric Site with Thermal Cobble Feature	Geophysical prospection, ground-truthing, and data recovery from a sample of resources, under **CUL-6**	Plant Site	Treatment pending
CA-RIV-9979	Multi-component	Prehistoric Site with Thermal Cobble Feature	Historic period component CRHR-ineligible. Assessment and data recovery for prehistoric component under pertinent parts of **CUL-6**	Plant Site	Treatment pending; not a prehistoric feature, removal will be requested by CRS
CA-RIV-9981	Historic	Historic-Period Road	Assessment and data recovery under **CUL-12**	Plant Site	Treatment completed; CPM letter report approval received 11/2/10
CA-RIV-9983	Historic	Historic-Period Road	Assessment and data recovery under **CUL-12**	Plant Site	Treatment completed; CPM letter report approval received 11/2/10
CA-RIV-3419	Prehistoric	Prehistoric Quarry Site	Geophysical prospection, ground-truthing, and data recovery from a sample of resources, under **CUL-6**	Plant Site	Not in Amended Project but listed in Amended CoCs; removal will be requested by CRS

In addition to the potential for sites to be significant independently, they may contribute to one of the two landscapes (PRGTL and DTCCL) and the Prehistoric Quarries Archaeological District (PQAD) described in this document and must be evaluated as such. All of the prehistoric sites discussed below are potential contributors to PRGTL. All of the WWII-era DTC/C-AMA historic-period sites are potential contributors to the DTCCL.

A small number of the prehistoric sites may also be potential contributors to the PQAD, a recently identified archaeological district spread out along the east side of the proposed project site. As defined by Energy Commission staff, potential contributors appear to include the resource types of prehistoric sites with thermal cobble features, prehistoric quarry sites, and prehistoric lithic scatter sites. This district may evidence recurrent visits by Native Americans to the quarries to assay and mine toolstone and other activities associated with these visits. Thus, all contributing sites discussed below must be evaluated for historical significance as elements of the PQAD as well as individual sites.

4.1 Prehistoric Archaeological Sites

4.1.1 Small Prehistoric Sites

Lithic Scatters

This site type can range from what appear to be single-use flaking stations to large scatters that appear to contain numerous flaking episodes with a light background scatter of debitage. Discrete flaking stations, where a single episode of lithic reduction occurred, often include cores and debitage, but rarely finished tools or useable flakes. When tools are found in lithic scatters, they are usually broken blanks from early in the manufacturing process, or expedient tools. The debitage in lithic scatters may be the result of various core and biface reduction technologies. Debitage size and character is often associated with the size of the parent material. Although lithic scatters are generally interpreted by archaeologists as places where toolstone acquisition and tool manufacture occurred, Native American representatives have pointed out that certain ritual activities also result in the production of scatters of flaked stone materials (Altschul and Ezzo 1994; Cachora 1994).

One prehistoric lithic scatter site warrants additional mitigation efforts prior to the initiation of ground disturbing activities related to the project: CA-RIV-9795. CA-RIV-9795 contains flakes and flake fragments (shatter), a core, a biface, and tested cobbles directly related to the production of the site debitage collection. The lithic debris at this site consists of CCS, which is readily available in cobble form on remnant pebble terraces[1] along the eastern side of the project area. The site measures 30 m by 70 m.

[1] "Pebble terrace" is a colloquial expression in the archaeological literature of the region. The expression usually refers to an alluvial terrace, the coarse-fraction sedimentary matrix of which includes very well-rounded pebbles and cobbles which have, in turn, formed a well-imbricated desert pavement across the terrace tread.

The above-mentioned lithic scatter site is in good to fair condition and retains its integrity of location, setting, association, and feeling. The site has the potential to offer information relevant to a number of research themes, such as lithic technology, chronology, travel, subsistence, and possibly ritual activity. Data recovery and evaluation procedures, as discussed in Section 7.2.1 of this document and in CoC **CUL-7**, will thus be executed.

Prehistoric Sites with Cairn Features

Within the Colorado Desert, prehistoric cairns are typically found on stable surfaces. The cairns, which may have partially collapsed, are typically composed of multiple courses of dry-stacked rocks ranging from pebbles to small boulders. Prehistoric cairns are frequently found associated with trails or other prehistoric features. Researchers have also documented a number of inhumations associated with cairns, most of which appear to date to the Archaic period (McDonald 1992; Schaefer 1994b).

Site CA-RIV-9623 contains a cairn feature that measures approximately 10.7 meters northeast-southwest by 6.1 meters northwest-southeast. The cairn consists of a collection of rocks that are approximately 20 centimeters (cm) in diameter and do not appear to exhibit any thermal alteration on their exterior surfaces, nor are there any visible carbon elements within the vicinity. The cairn may be prehistoric in age, although historic and recent cairns, primarily related to mining activity, are also common in the project area. Site CA-RIV-9623 also contains a historical debris scatter; no treatment is required for this component of the site. The possibly prehistoric cairn feature, however, is a contributor to the PTNCL and thus mitigation efforts will follow the data recovery and evaluation protocol summarized in Section 7.2.1 and detailed in CoC **CUL-7**.

Prehistoric "Pot Drop" Sites

A "pot drop" has in common practice traditionally been defined as a small, distinct concentration of sherds from a single vessel. As early as the 1930s, Malcolm Rogers recognized that shrines along trails and other ceremonially significant sites in the Colorado Desert frequently contain concentrations of prehistoric ceramics.

One site, CA-RIV-9801, contains a small, distinct concentration of sherds, likely from a single vessel, classified as a "pot drop." While the concentration is not associated with any physical trail remnant, it is in the vicinity of the corridor of trail CA-RIV-53T. More broadly, CA-RIV-9801 is a multicomponent site with historic refuse scatters and a small amount of lithic material, in addition to the prehistoric ceramic assemblage; the historic component does not require further treatment.

Though there is likely a low potential for buried cultural materials, this site is considered a contributor to the PTNCL based on its potential association with CA-RIV-53T and will be evaluated for eligibility in the NRHP and the CRHR as described in Section 7.2.1 of this document using the procedures specified in CoC **CUL-7**.

4.1.2 Prehistoric Quarry Sites

The archaeological and ethnographic record in California indicates that deposits of high-quality toolstone were likely mined repeatedly over centuries and possibly even for millennia. While some quarries were may have been claimed by particular ethnic or family groups, most were undoubtedly used by a variety of groups with overlapping ranges (Heizer and Treganza 1972:299-300). Lithic raw material procurement sites can take the form of quarries where rock was dug and chiseled out of the ground, and free deposits of rock, typically transported and aggregated through water or glacial action (Heizer and Treganza 1972).

In the project area, the long remnant pebble terraces associated with the Pleistocene course of the Colorado River were frequented by prehistoric groups who used the very well-rounded river cobbles to create flaked stone tools of various types. Often the initial work of removing the weathered outer cortex of the cobbles appears to have been completed where the cobbles were found on the pebble terraces. Thus, the pebble terraces contain clear evidence of their use for lithic raw material procurement and early-stage reduction.

Mitigation is required at one previously recorded prehistoric quarry site, CA-RIV-3419. CA-RIV-3419 has been the subject of several studies (Flenniken and Spencer 2001; Mitchell 1989; Reed 1984a, 1984b; Schaefer et al. 1998; Wilson 1984), and encompasses a remnant section of the raised pebble terraces of the Palo Verde Mesa. The mesa, a large and gradually sloping abandoned alluvial terrace of the Colorado River, contains multiple terrace structures which are often interpreted as deflationary features but are potentially accretionary deposits yielding an abundance of cobbles available on the ground surface (see Section 7.1.3.1 for additional discussion on pebble terraces). Naturally abundant cobbles were collected (quarried) and tested at such sites, resulting in diffuse lithic scatters across the whole of the pebble terrace surfaces. CA-RIV-3419 also contains cleared circles that may be prehistoric, as well as evidence of recent cobble and other rock collection including buckets, disturbed collection areas, and vehicle tracks (Mitchell 1989; Parker and Parker 2008).

Despite recent disturbances by cobble collectors, the quarry site is in fair to good condition. It retains its integrity of physical location and setting, as well as association and feeling as a vast geographic plateau on the desert landscape whose component features of cobble raw materials, culturally modified cobbles and lithic debitage, and thermal cobble features physically evidence the prehistoric use of this expanse for lithic raw material resource procurement and processing. Although previous researchers have suggested that the site be considered ineligible for inclusion on the NRHP (Mitchell 1989; Reed 1984a, 1984b), the site appears to retain significant research potential, particularly in light of a more recent lithic analysis of such sites (Flenniken and Spencer 2001; Ludwig 2005). Lithic analyses conducted by Flenniken and Spencer (2001) at sites in the McCoy Wash area near Blythe and by Ludwig (2005), also in the vicinity of Blythe, have shed new light on the lithic procurement and reduction techniques practiced by native peoples in this area. Site CA-RIV-3419 also has the further potential to inform prehistoric themes such as chronology, travel and trade (cf., Singer 1984), subsistence, lithic technology, and possibly cultural affiliation and ritual activity depending on the scope of the analysis. In addition, this site is a contributor to both PQAD and the PTNCL and requires evaluation for eligibility to both the NRHP and the

CRHR. Methods for evaluation and data recovery at the site are summarized in Section 7.1.3.5 of this document and described in detail in CoC **CUL-6**.

4.1.3 Prehistoric Sites with Thermal Cobble Features

Features consisting of thermally altered rocks are a common element of archaeological sites throughout the Colorado Desert and Great Basin (Thoms 2009; Shaefer et al. 2014). While these may have served a variety of functions, in general the use of heated rocks was likely designed to take advantage of the rocks' capacity to efficiently retain heat, thus providing warmth over an extended period (Thoms 2009). In the California deserts, the majority of these features are thought to represent cooking activities, most likely of seeds or some form of geophyte (Eerkens and Rosenthal 2002; Schaefer et al. 2014). These features may take a variety of forms, ranging from formalized and structurally complex roasting pits to simple clusters of rocks (Eerkens and Rosenthal 2002).

Archaeologically, the remains of roasting pits are roughly circular concentrations of fist-sized cobbles, typically measuring 1 to 3 meters in diameter. The cobbles often show evidence of thermal alteration. Cobble concentrations may be the in situ remains of earth ovens, or they may be "clean out" concentrations of stones removed from an oven to access the roasted foods within. Several examples of this site type were identified immediately adjacent to the west, but not located within the boundaries of, the pebble terraces located east of the project.

Four sites located within the project area containing thermal cobble features require mitigation for project impacts. Thermal cobble features are composed of circular to oval concentrations of fire-affected cobbles, with their source material likely collected from the adjacent pebble terrace. One site, CA-RIV-9812, is located along the western boundary of the adjacent prehistoric quarry site CA-RIV-2846, where periodic flood water flow has deposited finer sediments allowing stands of mesquite to grow. This site is composed exclusively of three thermal cobble features. Three multicomponent sites, CA-RIV-9558, CA-RIV-9979 and CA-RIV-9764, have potential thermal cobble features amidst historic-period refuse.

Taken together, the features at these sites measure between 1.4 and 4 meters in largest dimension, and many appear to be partially embedded in the surrounding soil, suggesting some subsurface extension. Various prehistoric groups used roasting pits, or rock-lined earth ovens, to roast plant foods, including mesquite and saltbush which grow on the Palo Verde Mesa. However, historic-period fire rings are also known in the area, and the presence of three features otherwise historic-component sites suggest these may potentially be of more modern origin.

The features in these three sites appear to retain integrity of location and setting, resting physically in their original location on the desert landscape. The three features at prehistoric site CA-RIV-9812 also retain association with each other and with prehistoric thermal cobble feature sites outside of the amended project leading towards pebble cobble terrace CA-RIV-2846, and feeling as a manifestation of prehistoric land use on the sparse Palo Verde Mesa. Thermal cobble features have research potential as a poorly documented class of features in the project area

vicinity, although similar features are known in the far-flung region (Shackley 1984). The sites have the potential to provide information relevant to the prehistoric research themes of chronology, settlement, and subsistence, and possibly cultural affiliation and ritual activity, as well as to contribute to the historical significance of the PQAD and the PTNCL. A protocol for the treatment of thermal cobble features is summarized in Section 7.1.3.5 of this document and described in detail in CoC **CUL-6**.

4.2 Historic Archaeological Sites

4.2.1 Historic-Period Sites with Features

Four early- to mid-20th century historic sites with features warrant mitigation: CA-RIV-9540, CA-RIV-9668, CA-RIV-9672, and CA-RIV-9674.

Site CA-RIV-9540 contains a refuse scatter and a well head, and is likely related to ranching or prospecting activities in the area during the early part of the 20th century. This site is in good to fair condition and retains much of its integrity of location, design, setting, materials, workmanship, association, and feeling. It contains a preserved structural feature which could add a great deal to our currently deficient understanding of the early 20th century use of the Mesa, and has have the potential to yield critical information about early 20th century ranching activities. Further testing at this site would greatly aid in distinguishing the activities and context of this site; mitigation protocol for CA-RIV-9540 is discussed in Section 6.3.3 and will follow the methods set forth in CoC **CUL-8**.

The remaining sites date to the WWII-era and are contributors to the DTCCL. These include components such as debris scatters, cleared areas, and project wooden ramps.

Site CA-RIV-9668 is composed of historical-cleared areas that are sections of desert pavement which have been “cleared” of the uppermost layer of patinated cobbles and gravel, revealing a lighter subsurface. No artifacts are associated with the cleared areas. Sites CA-RIV-9672 and CA-RIV-9674 contain historic refuse scatters and one or two wooden ramps. All of the sites related to WWII-era military use of the area are contributors to the DTCCL and warrant mitigation in order to establish their locations, contents, and association with the DTC/C-AMA. The appropriate data recovery and evaluation procedures are summarized in Section 7.2.2.1 and detailed in CoC **CUL-8**.

4.2.2 Historic-Period Sites with Structural Remains

One site, CA-RIV-9663, is a historic-period archaeological site with structural remains that require additional mitigation activities.

The site is located along the eastern historical road (CA-RIV-9981), now known as Mesa Drive. The site is a probable ranch consisting of three stone-and-concrete structures and several associated features, including a water trough, water pipes, fencing fragments, and refuse deposits. The standing structures were constructed out of local cobbles and boulders bound together with cement, and the construction technique is distinct from that of WWII-era military structures. The water trough at CA-RIV-9663 has a date of “1936,” which was scratched into the

concrete before it dried. The ranch, though, may have been founded earlier and certainly could have been used later. Based on current research, we believe that CA-RIV-9663 and several refuse scatters in the vicinity are the remains of limited ranching enterprises on the Palo Verde Mesa. During WWII, the ranch site was also the scene of military activity, and the site contains scatters of munitions, ration cans, and other wartime military debris.

This site is in fair condition, although all structures have collapsed in whole or in part, all retain partially standing walls, and their footprints are visible. Despite these factors, the site retains much of its integrity of location, design, setting, materials, workmanship, and feeling. It could yield data relevant to the historic themes of agriculture and ranching, and military training. Data recovery and evaluation methods to be implemented are discussed in Section 7.2.2.2 and detailed in CoC **CUL-9**.

4.2.3 Historic-Period Dump Sites

Four historic-period dump sites, CA-RIV-9570, CA-RIV-9565, CA-RIV-9662 and CA-RIV-9679, located on the proposed plant site warrant mitigation efforts, and one additional site located along the linear facilities corridor, CA-RIV-9768, will also necessitate data recovery and evaluation activities if impacts cannot be avoided by spanning it. All of the sites appear to date to the 20th century, although their contextual associations vary, and CA-RIV-9768 also has a prehistoric component.

Site CA-RIV-9570 is a historic refuse dump with one cobble feature. The feature is composed of two discrete cobble clusters and one lone cobble, arranged in such a way that they appear to be an arrow pointing south. The entire feature measures 10 feet, 8 inches x 4 feet and is likely an aerial marker associated with a nearby survey monument. The refuse dump contains over 200 food, beverage, and oil cans along with a smattering of other historic trash, and some of the artifacts indicate that the site dates to the mid-20th century.

Site CA-RIV-9679 contains collections of WWII-era military refuse, including food ration cans, oil cans, glass fragments, and munitions. Site CA-RIV-9565 contains collections of WWII-era military refuse, including food ration cans, oil cans, tobacco tins and glass fragments. CA-RIV-9662 is an oil can dump (largely S.A.E. 20W or 30W), and may be the remains of a tank and/or vehicle maintenance stop where several vehicles were serviced.

Site CA-RIV-9768 was originally recorded as two separate sites (temporary site numbers SMB-H-522 and SMB-H-525) and was later recorded as a single large site composed of a historic-period refuse dump and associated features and a prehistoric lithic scatter that encompasses a 132,089-square-meter area. The site is situated on relatively flat, developing desert pavement and is bounded to the south by I-10, to the southwest by a deep wash, and to the north by possible remnants of Highway 99.

The prehistoric component of this site represents one or more episodes of lithic reduction focused on several different types of toolstone, including quartz, quartzite, cryptocrystalline silicate, and meta-sedimentary materials. The flaked stone present includes tested cobbles, cores, tools,

debitage, shatter, and a segregated reduction location. No temporally diagnostic items were identified, and no additional mitigation measures are necessary for the prehistoric component of this site.

The historic component of this site of a mixed collection of refuse and features associated with mining or ranching in the early 20th century, military training during wartime, and the town of Blythe's former dump. Several refuse scatters containing cans, glass, car parts, and other debris are present at CA-RIV-9768. In addition to the numerous trash scatters, the historic component of this site includes military emplacements, excavated pits that may represent military emplacements, ditches, hand-excavated trenches, graded areas, a wood structure and associated pits that may represent a mine, borrow pits, paved and dirt roads, a railroad tie post, a fence, campfire or burn pile, and a fire pit. The presence of modern refuse indicates dumping events still occur in this area, possibly associated with I-10, considering the site's proximity to the road. The high density of artifacts and features indicates that there is potential for subsurface cultural deposits.

These historic-period dump sites are in good to fair condition and largely retain their integrity of location, setting, association, and feeling. These dump sites, more so than more diffuse refuse scatters with fewer artifacts, hold the potential to yield further information relevant to the historic research theme of military training. In particular, the dump sites promise to elucidate something of the nature of the inadequately documented maneuver areas within the DTC/C-AMA. As pieces of the larger landscape of war in WWII, these sites retain significant research potential, and appropriate data recovery and evaluation methods for sites CA-RIV-9570, CA-RIV-9565, CA-RIV-9679, and CA-RIV-9768 are discussed in Section 7.2.2.3 and fully delineated in CoC **CUL-10**.

4.2.4 Historic-Period Refuse Scatter Sites

The recordation of five historic-period refuse scatter sites (CA-RIV-9558, CA-RIV-9560, CA-RIV-9656, CA-RIV-9657, and CA-RIV-9676) located on the project site need to be upgraded in order to refine the attribution of these sites, which may be DTCCL contributors. All of the sites appear to date to the 20th century.

One of these sites (CA-RIV-9560) is a small trash scatters with unclear contextual associations, composed almost exclusively of food and beverage cans that likely date to the early to mid-20th century. Site CA-RIV-9558 is a historical refuse scatter consisting of 36 cans and miscellaneous other trash, as well as a possible deflated hearth feature. This site is located adjacent to the historic road CA-RIV-9663 and may represent roadside trash.

Two sites, CA-RIV-9656 and CA-RIV-9657 are located within 200 feet of the early 20th century ranch site CA-RIV-9663. Site CA-RIV-9656 contains 82 miscellaneous metal car parts and 21 glass fragments, while the contents of site CA-RIV-9657 is more varied. The artifacts located at both of these sites may be related to the early ranch (CA-RIV-9663). Data recovery and evaluation of these sites may provide important information related to the research theme of agriculture and ranching.

CA-RIV-9676 is an airplane crash site and associated scatter of historical debris. The airplane debris present consists of more than 300 pieces of miscellaneous metal hardware including electrical components, munitions casings, and metal sheeting with military-style designs on the exterior. Military ration and other food cans are also present at the site; the military ration cans and airplane debris are associated with the military training of WWII. Several aluminum soft-top beer cans of the type common in the 1950s and 1960s also occur in the trash scatter; these are possibly related to the use of the area during Exercise Desert Strike. Additional mitigation efforts at CA-RIV-9676, including data recovery and evaluation activities, hold the potential to yield further information relevant to the historic research theme of military training.

Many of these refuse scatter sites are in good or fair condition, although the condition of some sites in washes is poor. Most of the sites largely retain their integrity of location, setting, association, and feeling. Although most of these sites are unlikely to have subsurface deposits, additional mitigation efforts are required to adequately record, test, and evaluate them for NRHP and CRHR eligibility. The project's cultural resources personnel will follow the procedures reviewed in Section 7.2.2.4 of this document and completely defined in CoC **CUL-11**.

4.2.5 Historic-Period Roads

Two unpaved historic roads, CA-RIV-9983 and CA-RIV-9981, transect the project area. The western road, CA-RIV-9983, connects the I-10 corridor to the Arlington Mine Road in the north This road may have been constructed as an access road during WWII to the then-active Blackjack Mine, adjacent to the WWII-era Arlington Mine. The eastern road, CA-RIV-9981, runs due north from the I-10 corridor along a section line surveyed in 1917. Today this road is known as Mesa Drive, although it is largely unimproved.

Both of these roads appear to be in their original locations, as any deviations would be evident on the fragile desert pavement. Both continue to be used today and have likely been cleared or graded during their histories. They are, therefore, no longer intact representatives of early 20th century roads, and they lack integrity of design and workmanship. However, the routes themselves retain their integrity of location and setting. The historical association of the routes is not entirely clear, although the western road seems related to mining, and particularly access to the manganese mines in the northern reaches of the McCoy Mountains, whereas the eastern road allows access to CA-RIV-9663, the early 20th century ranch site, and appears to have been frequented more often by ranchers. Data recovery and mitigation protocols for these two sites thus will involve archival research by a qualified historian rather than fieldwork and subsequent analysis. These methods are discussed in Section 7.3.1 of this document and described in CoC **CUL-12**.

4.3 Standing Structures

Two historic-era standing structures associated with Blythe Army Air Base are located within the project area and require additional mitigation activities. Due to the nature of these structures, data recovery and evaluation efforts will be conducted via research by a qualified architectural historian.

Reservoir and Pipelines

To supply water for the air base and thousands of personnel, a reservoir was constructed at a sufficient elevation in the foothills of the McCoy Mountains to provide a gravity flow to the air base below on the Mesa. The structure is a reinforced concrete-lined concave dome reservoir with a 557,000 gallon capacity (Wilson 2008). A concrete gutter encompasses the circumference of the reservoir, and a set of concrete steps lead to the bottom. A pipeline fed the reservoir with water pumped from several wells at the base, and another pipeline returned the water to the base using gravity flow. Although the reservoir is located outside of the impact area of the project, the location of the associated pipelines is currently unknown. Therefore additional research by a qualified architectural historian is required to establish the current existence and locations of the pipelines in order to ensure that the construction of the project's underground facilities that cross these old pipelines avoids impacting them. This mitigation process is discussed in Section 7.3.2 of this document and detailed in CoC **CUL-13**.

Radio Communications Facility

Originally built circa 1950, the radio facility at Blythe is a one-story concrete block building with a square plan and a circular roof with instruments installed around the flat eaves. The origins of the radio facility are undetermined, but it appears on U.S. Geological Survey (USGS) topographical maps dating as early as 1951. Its distinguishing features are its utilitarian shape and the radio instruments installed on it. It has no decorative detailing. The building, if partially original, appears to have had significant alterations by the 1980s. The transportation and communications corridor through the area was significant in the development of the area, particularly tied to aviation, and thus it requires additional mitigation efforts in the form of archival research to evaluate it for eligibility in the NRHP and the CRHR. These protocols are discussed in Section 7.3.3 of this document and detailed in CoC **CUL-14**.

5.0 General Research Design

The purpose of this general research design is to provide a framework for data recovery efforts laid out in the amended CoCs intended to mitigate impacts to archaeological sites of determined or assumed significance for their information value, as well as to quickly establish whether an inadvertently discovered archaeological site meets the thresholds of significance referenced by the California Environmental Quality Act (CEQA) (i.e., eligible for listing in the CRHR under Criteria 1, 2, 3, or 4 and retains integrity) that would trigger implementation of mitigation activities. Processes for that determination and implementation of mitigation are described below in Section 9.

Most archaeological resources are of significance under state and federal law insofar as they retain their integrity and can be associated with significant historic events or persons, or important research issues in the study of the past. Although the World-War-II-era materials in the project area can be reasonably associated with the training activities of the historic DTC/C-AMA and the life work of General Patton, other cultural resources may be significant with respect to the archaeological research issues to which they could contribute useful data or with respect to the associative values for Native American communities.

Research issues in the Colorado Desert region include questions that relate to both the prehistory and history of the region as they may be understood through the lens of archaeological inquiry. These research issues are here categorized into broad research domains which may be relevant at the local, regional, or national level. These domains can be addressed by the identification and analysis of various types of cultural resources, from individual artifacts to entire landscapes. The site types described in Section 4 above and in the Cultural Resources Class III Survey Draft Report (Keller 2010) may provide information relevant to one or more of the research domains defined below. More detailed breakdowns of site, feature, and artifact types that have been prepared for the PTNCL (Laylander and Schaefer 2010) and DTCCL (Bischoff et al. 2010) are also quite useful in this regard. These domains, in turn, aid in the construction of the geographically, temporally, and thematically specific historic contexts necessary for the evaluation of cultural resources for California and National Register eligibility (Wyatt 2009).

5.1 Prehistoric Archaeological Research Domains and Questions

5.1.1 Chronology

Chronology is of basic importance to any archaeological research endeavor because it provides a context for addressing many other research issues. Thus, the precision and accuracy of dates are critical because they form the baseline for the other research topics. For example, chronological data could potentially contribute to our understanding of the nature and timing of population movements in the area, and to establish relationships among sites in the local or broader region. Chronological determinations may also assist in refining regional or local culture historical sequences.

Chronology building continues to be a major research emphasis in the Colorado Desert. Most of the sites known in the region are surface sites consisting of small quantities of lithic and ceramic artifacts. Stratified sites of any kind are very rare in the Colorado Desert and along the lower Colorado River (Cleland and Apple 2003; Schaefer 1994b). The prehistoric concentration of population along the banks of the Colorado River has meant that the majority of intensive habitation sites have been removed from the archaeological record by seasonal flooding. Thus, various factors have conspired to hinder the development of an adequate cultural chronology of the region.

One of the most important research goals of any prehistoric research program in the Colorado Desert, therefore, should be the refinement of the regional chronological framework. Any site that contains organic cultural remains suitable for radiocarbon dating could prove useful in this endeavor, as would any site with chronologically sensitive artifacts such as projectile points and ceramics. Beyond this general observation, key chronometric topics for the region are (1) the reliability of regional dating methods, (2) the earliest phases of human occupation of the region, (3) the poorly understood Archaic period occupation, and (4) a refinement of the regional ceramic sequence.

Absolute dating techniques are preferable to relative dating of diagnostic artifacts, because absolute dating is an independent assessment of the age of the site. Radiocarbon dating is an extremely accurate and reliable method for establishing the age of organic materials (e.g., charcoal, wood, burned floral remains, bone, shell, organic-rich soil). Obsidian hydration is an alternative means of dating that can provide relatively reliable results, provided the source of the material is known and multiple samples are submitted to omit any outliers. Thermoluminescence dating of ceramics and fire affected rock is a less common method for establishing absolute dates, but it can be effective and reliable when sample sizes are sufficiently large.

If there is no material appropriate for establishing absolute dates for a site, a relative chronology may be established by linking temporally diagnostic artifact types (e.g., projectile points, ceramics, shell beads, etc.) present at the site to the regional culture history. This latter relative dating method would, however, be much less precise. Ideally, relative dating results from the site would support absolute dating results, so that ages obtained through radiocarbon, obsidian hydration, or thermoluminescence techniques can be used in conjunction with diagnostic time-marker artifacts to assess the overall age of a site.

The early- to middle-Holocene chronological sequences that are widely accepted for the Mojave Desert and southwestern Great Basin are largely based on changing projectile point forms, along with some other artifactual evidence, such as the increasing importance of stone milling technology, possible changes the degree of formality in tools, and changing lithic raw material preferences. In contrast to the situation farther north, recognized middle-Holocene sites in the Colorado Desert are notably uncommon. Early- and middle-Holocene sites in the area are most likely to be recognized by diagnostic flaked lithic tools such as projectile points, as well as the absence of late prehistoric materials. When such sites are identified, finding appropriate strategies to arrive at absolute dates for such remains will be crucial.

The signature archaeological elements of Late Prehistoric occupations include human cremation (in place of inhumation), small projectile points (indicating the replacement of the atlatl and dart by the bow and arrow), and pottery. Well-dated sites in the Coachella Valley support the proposition that pottery was not widely used until ca. A.D. 1000, although the tradition is presumed to have been present on the Colorado River by ca. A.D. 500. One aspect to be considered in the introduction of ceramics is the attraction of Lake Cahuilla for groups living on the lower Colorado River; the lake undoubtedly afforded greater opportunity for cultural interaction, which may have included the sharing of Colorado River pottery and pottery traditions. Absolute dating of archaeological deposits that contain diagnostic Late Prehistoric remains, as well as late Holocene deposits that lack some or all of these diagnostic materials, will be the key to refining the regional chronology. Relative dating, for instance, based on intra-site vertical superposition or inter-site horizontal contrasts, may also shed light on the sequence in which the Late Prehistoric innovations occurred.

Site types that may be associated with this research domain include habitation sites; lithic scatters and flaking stations with obsidian or temporally diagnostic projectile points; ceramic scatters and pot drops; thermal features containing dateable organic materials or fire affected rock; and cremations or human remains.

5.1.1.1 Research Questions

- When was the site used? Which cultural period (Paleoindian, Early or Late Archaic, Late Prehistoric/Protohistoric) or complex (San Dieguito, Pinto, Amargosa, Patayan) does the site represent? Does the site consist of single or multiple components?
- Is there chronological evidence to suggest intermittent use of the site or extended use over a period of time?
- Do the chronological data at the site contribute to our understanding of the relationships between different periods or phases within established cultural sequences, or between archaeological sites in this region?
- Taken as a group, do chronological data from the sites examined here suggest patterns in the prehistoric use of the area? Which periods are well-represented with available dates, and which are not represented at all?
- Are the chronological sequences that have been developed for the Mojave Desert and the Great Basin (e.g., “Lake Mojave,” “Pinto,” and “Gypsum” periods) also applicable to the region containing the BSPP, or do distinctive local patterns of change need to be recognized?
- When did the changes in material culture that distinguish the Late Prehistoric period manifest themselves in the BSPP area? Did these changes appear simultaneously, or did their adoption span a period of several centuries, or even longer? If the changes were not original, local innovations, from what direction(s) did they come?

5.1.1.2 Hypotheses

A primary goal of this research domain is descriptive – to ascertain whether a site can be reliably ascribed to a particular temporal period. This primary goal is not amenable to the formulation of testable hypotheses. On the other hand, an additional chronological goal will be to test current reconstructions of regional cultural history. This latter goal will be the focus of the hypotheses discussed below.

- Hypothesis Chron-1 – Since the project area is near the boundary of the Mojave and Colorado Desert culture areas, chronological data will tend to exhibit aspects of both areas. The culture history of these two areas is perhaps most different during the Archaic Period, a time when sites were rare in the Colorado Desert but more abundant in the Mojave Desert, particularly during the late Archaic. In view of this, a key test implication of this hypothesis is that Archaic period materials are more abundant at the project area than is typical of the Colorado Desert.
- Hypothesis Chron-2 – There will be no evidence of an occupation predating 12,500 radiocarbon years ago. The dating of the earliest entry of human into the New World remains a key broad research topic in North American archaeology. In both the Colorado Desert and the Mojave Desert, there have been claims of “pre-Clovis” occupations; however, confirmation of such early dates is still lacking. Recent evidence along the southern California coast is suggestive that the western North American coast may have served as an early (pre-Clovis) entry corridor. Thus, very early material may be found in the interior, but the project area is not considered a likely target of the earliest occupation of the region.
- Hypothesis Chron-3 – Cultural patterns recognized in the Mojave Desert and the southwestern Great Basin, such as Lake Mojave, Pinto, and Gypsum, are fully applicable and adequate to characterize the early and middle Holocene cultural patterns in the PTNCL area.
- Hypothesis Chron-4 – The majority of datable sites date to the Late Prehistoric period. This prediction is due to the proximity of the project area to the Colorado River corridor. While this corridor would have been attractive to humans throughout all of prehistory, its most intensive occupation appears to have occurred after the introduction of agriculture, about 1500 years ago. The project area would have been an easily accessed resource zone for Late period populations practicing floodplain agriculture.
- Hypothesis Chron-5 – Cremation, the bow and arrow, and the regular use of pottery did not appear simultaneously within the BSPP area, but emerged across a period of several centuries during the Late Prehistoric period.
- Hypothesis Chron-6 – The regular use of pottery was introduced into the PTNCL area in fully developed form from the lower Colorado River Valley.

5.1.1.3 Data Requirements

The most important contributions to this research issue would come from the application of absolute dating techniques. These would require the presence of organic materials suitable for radiocarbon dating (e.g., charcoal, wood, burned floral remains, faunal bone, marine shell, organic-rich soil), obsidian artifacts for hydration analysis, or ceramics or fire-affected rock for thermoluminescence dating. If none of these materials are present on-site, temporally diagnostic artifacts (e.g., projectile points, ceramics, shell beads) can be used to establish relative chronologies.

5.1.2 Ritual Activity

Much of the recent research in the Colorado Desert has focused on sites and trails associated with what might generally be termed ritual activities (Altschul and Ezzo 1994; Ezzo and Altschul 1993). The region contains a remarkable number of geoglyphs, petroglyphs, cairns, and shrine sites, as well as a trail system along which these features tend to cluster (Altschul and Ezzo 1994; Cachora 1994; Johnson 1985; McGuire and Schiffer 1982; Pendleton et al. 1986; Pigniolo et al. 1997; Reed 1981a; Rogers 1939; Schaefer 1994a, 1994b; von Werlhof 1987). Desolate stretches of desert pavement like that of the project may seem uninhabited and insignificant, but as corridors of physical and spiritual travel, they remain important to modern-day Native American groups. As Quechan tribal member and archaeologist Lorey Cachora (2000) describes, key landscape features, such as mountains and springs, are connected by a web of power which cannot be broken without affecting “the entire cosmos.” Thus, “although peaks are most important, the valleys between the peaks, and the desert pavements, are also important in that they are pathways for the web that must run through them from one peak to others” (Cachora 2000; see also Laird 1976).

In the project vicinity, north-south running trails have been associated with a specific mourning ritual, or *keruk*, following the path of the first mourning ritual that involved a pilgrimage between two powerful peaks: *Akikwalal* at Pilot Knob near Yuma, and *Avikwami* in the Newberry Mountains near Needles (Ezzo and Altschul 1993). To the east and west of the project, archaeologists have also recorded significant rock art and geoglyph (intaglio) sites along the Colorado River and in the McCoy Mountains (McCarthy 1982, 1993, von Werlhof 2004). Any archaeological research program in the lower Colorado River region that encounters trails or other ritual-related features and sites has the potential to contribute to our understanding of this research domain.

Site types possibly associated with the domain are some lithic and ceramic scatters, particularly those along trails or in association with cairns, geoglyphs, or petroglyphs; trails; cleared circles; rock rings; prehistoric cairns; petroglyphs, ground features such as geoglyphs and rock alignments; and cremations and human remains.

5.1.2.1 Research Questions

- What features or artifacts indicative of ritual activity are present?

- Do ethnographic data or oral histories provide information about ritual activity at the site or the surrounding area?
- Can key landscape features be associated with specific ethnographically documented culture groups or rituals?
- Is there stylistic variability among ritual features (e.g., cairns, geoglyphs, or rock art) or portable objects (e.g., pendants or incised stones) that may indicate shared use of the site by two or more culture groups, or changes in the nature of ritual activity over time?
- When was the site used? Does the site provide evidence of extended ritual use over time? Are contemporary sites found nearby with similar ritual features?
- Are patterns in ritual activity evident across the area, in terms of frequently encountered features or distinctive artifact groupings?

5.1.2.2 Hypotheses

Altschul and Ezzo (1994) describe archaeological evidence for major and minor centers of ritual activity. These centers are often associated with trail networks. Hypotheses under the Ritual Activity Research Domain are derived in part from their observations, plus more recent Native American consultation programs.

- Hypothesis RA-1 – Evidence of a major ceremonial center as described by Altschul and Ezzo (1994) is absent from the project area. Major ceremonial centers are associated with key events in Yuman cultural narratives and are marked archaeologically by the presence of major concentrations of ground figures, rock art panels, cleared circles, and/or constructed rock features. There is no evidence to suggest that such a center is located at the project site.
- Hypothesis RA-2 – Evidence of small-scale ritual activity will be found. Native American oral history suggests that ritual activities were widespread throughout the California deserts and were associated with a variety of terrain types. These activities may, or may not, have left material remains that are identifiable today.

5.1.2.3 Data Requirements

The presence of archaeological features such as trails, cairns, rock alignments, cleared circles, or rock art is usually associated with this research issue. Certain portable artifacts such as pendants, incised stones, crystals, and pigments may also be indicators of ritual activity. Ethnographic data and oral history play a vital part in the analysis and interpretation of ritual sites. Ethnographic research and Native American consultation can be particularly important in determining whether site types associated with multiple research domains (e.g. trails, cairns, cleared circles, and rock rings) served ritual as well as secular functions.

5.1.3 Travel and Trade

Travel and trade have been documented throughout California during the prehistoric and ethnohistoric periods, including between the coast and the desert region. Travel was conducted for warfare, sociality, and even out of sheer curiosity (Kelly and Fowler 1986; Pendleton et al. 1986), and travel for the purpose of trade was likely an important adaptive strategy that allowed acquisition of raw materials and goods not otherwise available in their home territory. During the Late Prehistoric and Protohistoric period, long-distance travel became increasingly important in the lifeways of lower Colorado River groups. Increased travel and interaction can be seen archaeologically in the form of a greater quantity and variety of exotic items including marine shell from the Pacific Coast and the Gulf of California, obsidian and other non-local toolstones, unusual pottery types, and the adoption of foreign artifact types and technologies. Trade of plant and animal materials during prehistory may have mitigated food shortages, and although ethnographic information documents trade in a wide variety of foods, most evidence is not readily preserved in the archaeological record (with the exception of materials like shell and stone food-processing implements). Additionally, traditional River Yuman culture, as reflected in ethnographically recorded oral narratives, seems to have attached a high value on personal travel and geographical knowledge as ends in themselves. The lower Colorado River area was also the focus of a trade system with two primary interethnic alliance networks, resulting in extensive intercommunity or interethnic warfare; desert trails may have served both as avenues for raids against enemies and as routes to bypass the territories or settlements of potentially hostile groups.

Throughout the Protohistoric and historical periods, the Palo Verde Mesa was part of a long-distance transportation corridor from the Pacific Coast to the Colorado River (Bean and Vane 1978, Davis 1961, King 1981, Sample 1950, Singer 1984) and into the Southwest. The landform acted as “basically a through-way,” rather than as a habitation zone (von Werlhof 2004b). A segment of the well-documented Coco-Maricopa Trail (CA-RIV-53T) runs east-west just south of the project plant site, and parallel to the modern I-10 highway. Several other prehistoric trails have been recorded in the area running both north-south, paralleling the river, and east-west, between the Colorado River, the McCoy Mountains and beyond (McCarthy 1982, 1993). As mentioned above, these prehistoric trails are sometimes associated with ritual landscape features like geoglyphs, petroglyphs, and cairns, but not all travel along them was necessarily, or exclusively, ritual in character.

The PTNCL was originally defined as portions of the Coco-Maricopa Trail, other trails in the Chuckwalla Valley, and 11 potential places of ethnographic significance as comprising the Prehistoric Trail Network Cultural Landscape. Study of this regional trail system was intended to inform research on indigenous settlement, migration, trade networks, and how significant places along trail segments may support those groups who were engaged in the route’s control and/or use. As a result of additional research on the PTNCL, it became apparent that the PTNCL was part of a much larger trail network system, the PRGTL, which fostered interregional travel, trade, and warfare throughout the southwest, from the Pacific Coast to eastern New Mexico. This larger network, of which the PTNCL remains a part, includes three primary trail corridors that connect the Pacific coast of California with the California Central Valley and served to connect many of the

same tribal groups who exist in the region today, including the Cahuilla, Serrano, Chemehuevi, Mojave, Quechan, and Cocopah (California Energy Commission 2013: 4.3-1–4.3-244). Continued research on the braided trail network and significant ethnographic sites within the Chuckwalla Valley, Lower Colorado River Valley, and the Coachella Valley placed in this larger regional context will refine our understanding of travel, trade and prehistoric mobility patterns and resource use across this area of today's southwestern United States. Trade and travel, as a research concept, frames the derivation of class of potentially significant prehistoric site types including trails, cairns, and sites containing exotic raw materials, technologies, or artifact classes, all of which may contain information strengthening existing interpretations and understanding of regional prehistoric networks of goods and peoples. The latter types of sites, containing non-locally derived materials and/or technologies, have long provided the basis for establishing patterns of trade networks within an area as well as regionally (Davis 1974).

5.1.3.1 Research Questions

- What materials indicative of trade/exchange are present?
- If present, can non-local lithics be sourced (e.g., obsidian)?
- If present, what is the point of origin of non-local non-lithic materials (e.g., marine shell, ceramics)?
- Does the source of any non-local materials change over time? Are there any associated stylistic changes?
- Do the materials present at the site add to our understanding of the nature of resource procurement and distribution networks operating in the overall economic system of the region during the Prehistoric period?
- To what extent was east-west travel motivated by interregional travel rather than the acquisition of local resources within the project area?
- To what extent were prehistoric trails used for purposes of social interaction, ceremonial activities, or warfare, rather than for economic exchange between communities? Such non-utilitarian uses of trails are reported in the ethnographic and ethnohistoric records– did these uses occur in prehistory, or were they strictly very late phenomena?

5.1.3.2 Hypotheses

Hypotheses under the Trade and Travel Research Domain are derived from the presence of a major east-west trail just south of the project area, and from the presence of smaller east-west routes that parallel this major route within the project area. North-south oriented trade and travel corridors may be present in the project area, but they were likely to have been more common closer to the Colorado River.

- Hypothesis TT-1 – The project area is far enough removed from the known east-west trail that exotic goods and other evidence of trade are rare or absent.

- Hypothesis TT-2 – To the degree that exotic goods or other evidence of trade is present in the project area, goods derived from the east-west axis predominate. Test implications of this hypothesis would suggest, for example, that Pacific coast shells may be present, but Gulf of California shells absent. Additionally, any exotic toolstones found will be from distant sources east and west but not north and south. For example, central Nevada obsidian, present in the eastern Mojave, will be absent from the project area as will material from Obsidian Butte, located south of the project area. Coso obsidian, sourced to the northwest, may be present (but in very limited quantities) in view of the fact that this type of material may have entered east-west exchange relationships along the Mojave River, and possibly further south.
- Hypothesis TT-3 –Multiple, parallel or converging trail routes through the east-west corridor were the rule rather than the exception, to the extent that the routes were not closely constrained by passes or fixed natural destinations, such as springs.
- Hypothesis TT-4 – Camps identifiable as travel camps rather than habitation bases or extractive camps occur in association with major east-west routes but not with secondary east-west routes or with north-south routes within the project area.
- Hypothesis TT-5 – Trails, including dead-end routes, are conspicuously associated with non-utilitarian features, such as petroglyphs, pictographs, geoglyphs, and cairns.
- Hypothesis TT-6 – There is archaeological evidence for prehistoric visits to major landscape vantage points, such as accessible crests of hills or mountains, lacking any evident utility for resource procurement.

5.1.3.3 Data Requirements

The presence of non-local cultural material, such as obsidian, marine shell (shell beads and ornaments), and ceramics, would be required to address this research domain. Recovery of material for laboratory analyses (e.g., x-ray fluorescence sourcing of obsidian or neutron activation analysis for ceramics) would be beneficial, preferably from stratigraphically intact and temporally controlled contexts. If they are manufactured of local tool stone, curated lithic artifacts such as bifacial cores or tool preforms may suggest that local quarries played a part in the regional economic system, and that these artifacts represent trade items.

5.1.4 Culture History

Culture history and the cultural affiliation of material remains is a significant research domain in all of the Americas, but in the Palo Verde Valley and Mesa areas it is particularly important due to the number of documented linguistic and ethnic groups who laid claim to, passed through, and otherwise used the region. The ethnographically documented culture groups most closely associated with Palo Verde Mesa through historical use and oral history include the Yuman-speaking Mohave, Halchidhoma, and Quechan, and Numic-speaking Chemehuevi along the lower Colorado River, and the Takic-speaking Cahuilla in the deserts and mountains west of the project (Bean 1972; Bean and King 1974; Bean and Vane 1978; Fowler and Fowler 1971; Laird 1976; Rogers 1939, 1966; Schaefer 2003; Singer 1984). None of these groups are documented to

have lived permanently in the project vicinity on Palo Verde Mesa, but they all used the many resources of the greater region and traveled along traditional trails that cross cut the mesa.

The timing and nature of the arrival of these ethnic groups to the region is poorly understood. Estimates have varied widely as to the timing of the entry of Uto-Aztecan or Northern Uto-Aztecan speakers (ancestral to Takic, Numic, and Tübatulabal groups) into the deserts of southern California, as well as for the direction from which they came. A best guess would probably put the arrival of Uto-Aztecan speakers no earlier than the breakup of Northern Uto-Aztecan, or after perhaps 2500-1000 B.C. The division of Core Yuman into its three branches (River, Delta-California, and Pai) may have occurred sometime between ca. 1000 B.C. and A.D. 700, and the division of River Yuman into its constituent languages (including Mohave, Quechan, Maricopa, and, presumably, Halchidhoma) may have occurred around ca. A.D. 500-1000. Either of these linguistic events may correspond to the initial arrival of Yuman speakers to the lower Colorado River Valley and their use of areas to the west, including the project area.

One possible set of archaeological signatures for these early ethnic changes in the project area might be found in any relatively abrupt, datable changes in material culture, ideally in its symbolic rather than purely utilitarian aspects, potentially including rock art. Another set of signatures might lie in changes in the prevailing technology or strategy of resource use. Such changes might reflect peculiarities carried from the newcomers' region of origin, and they might have constituted the competitive adaptive advantages that allowed the newcomers to expand their territory at the expense of the prior inhabitants.

Control of the stretch of the Colorado River immediately adjacent to the project was notably contentious during the Protohistoric period. Prior to 1700, the banks of Colorado River east of Blythe may have been occupied by the Maricopa (Kroeber 1925), although this is far from certain. At some point, the Maricopa migrated east and the Halchidhoma settled the area. Generations of near-constant warfare with the Mohave finally drove the Halchidhoma off the river and, ultimately, to their Maricopa allies on the Gila River in Arizona (Kroeber 1925). After the Halchidhoma vacated the Parker and Blythe valleys between 1825 and 1830, the Mohave encouraged their traditional allies, the Chemehuevi, to move into the former Halchidhoma territory along the river (Bean and Vane 1982). By the mid-1800s, Chemehuevi groups were living along the Colorado River east of Blythe.

All of these lower Colorado River groups, including the Mohave and Quechan, traditionally used and traveled through the Palo Verde Valley and Mesa. They all had trading relationships with groups to the east and west, most notably the Cahuilla around historical Lake Cahuilla. The Cahuilla, as well, traversed the project visiting their river neighbors. Prior to the Late Prehistoric and Protohistoric period, the ethnic and linguistic affiliation of the region is not known, although it was likely largely in Yuman-speaking people's hands (Kroeber 1925). Disentangling ethnic and linguistic affiliations from artifactual and other archaeological remains is notoriously difficult (see recent work by Lightfoot [2005] and Silliman [2004]). Nevertheless, recent ceramic analyses suggest that there are notable distinctions between the pottery created in the vicinity of Lake Cahuilla, presumably by the Cahuilla, and that made along the Colorado River, presumably of Yuman manufacture (Schaefer 1994b). Other data classes that might shed light on this research

domain include projectile points, ground stone implements, rock art, ornamental items, and subsistence and settlement patterns. The last data class would be particularly useful in distinguishing the Chemehuevi, who retained many of their more mobile hunter-gatherer ways, from the Yuman groups who had long led a more sedentary, horticultural life.

Site types pertinent to this research domain are habitation sites, lithic scatters with diagnostic tools or production techniques, ceramic scatters and pot drops, petroglyphs, ground features such as geoglyphs and rock alignments, and cremations and human remains.

5.1.4.1 Research Questions

- What materials indicative of specific linguistic or ethnic groups are present?
- Do ethnographic data or oral histories provide information about groups that used the site or the surrounding area?
- Is it possible to recognize archaeologically the initial appearance of Uto-Aztecan or Yuman speakers within the project area? If so, are there any clues as to the direction from which they arrived and the identity of their predecessors?
- If present, can non-local lithics (e.g., obsidian) or non-lithic materials (e.g., marine shell, ceramics) be sourced? Does the source of any non-local materials change over time? Are there any associated stylistic changes?
- Do the stylistic attributes of features (e.g., geoglyphs, rock art) or artifacts (e.g., pottery, basketry, projectile points, ground stone implements, or ornamental items) offer any evidence of cultural affiliation? Is there variability among these attributes that may indicate use of the site by two or more culture groups, either concurrently or over time?
- If present, do burials or cremations offer any evidence of cultural affiliation?
- Is use of the project area by one or more specific cultural groups indicated by subsistence and settlement patterns or site function (see Section 6.1.5 below)?

5.1.4.2 Hypotheses

Hypotheses in the Culture History Research Domain are derived from the proximity of the project area to the Colorado River corridor, which was controlled during the majority of the Late Prehistoric period by Yuman groups. Takic and Numic groups undoubtedly entered the area, but archaeological evidence of their presence would be distinctly rare in the project area.

- Hypothesis CH-1 – A significant degree of discontinuity in material culture and in biological descent (as measured primarily by mitochondrial DNA [mtDNA]) occurred in the region around the beginning of the first millennium B.C., potentially reflecting the initial arrival of Uto-Aztecan speakers in the region. Remains subsequent to that discontinuity will share greater similarities with pre-discontinuity remains in the Mojave Desert, the southwestern Great Basin, and the southern Colorado Plateau than with remains in regions to the south of the project area.

- Hypothesis CH-2 – A significant degree of discontinuity in material culture (in addition to the introductions of small projectile points, ceramics, and cremation) and in biological descent occurred in the area during the second half of the first millennium A.D., potentially reflecting the initial arrival of Yuman speakers in the region. This discontinuity will coincide chronologically with the appearance of agriculture in this portion of the lower Colorado River Valley.
- Hypothesis CH-3 – Cultural and human biological remains in the project area dating from the early portion of the Late Prehistoric period (possibly representing the initial Yuman inhabitants) show greater similarities with earlier remains that are found farther south in the lower Colorado River Valley and in northern Baja California than with earlier remains in areas to the west, north, or east of the project area.
- Hypothesis CH-4 – Remains attributable specifically to the Mohave, the "Panya" (the Halchidhoma, Maricopa, and/or Bahacecha), and the Quechan, based primarily on differences in ceramic types and traits but potentially also shell beads, rock art, mtDNA, and other characteristics, are present in the project area and date exclusively from the second millennium A.D.
- Hypothesis CH-5 – Remains attributable to Takic (Cahuilla and/or Serrano) groups, based on similarities to assemblages in areas farther west, appeared in the area during the first half of the second millennium A.D.
- Hypothesis CH-6 – Remains attributable to Numic (Chemehuevi) groups, based primarily on similarities to assemblages found farther north and northeast but also on materials imported from the north, did not appear in the area until after ca. A.D. 1600.
- Hypothesis CH-7 – Lithic arrow points, particularly Desert Side-notched points, are from sources that would have been accessible to Numic groups. This hypothesis is based on the rarity of stone arrow points at Patayan sites, and the ethnographic observation that river groups typically did not use stone-tipped arrows.

5.1.4.3 Data Requirements

Addressing this research domain requires archaeological materials that exhibit stylistic attributes (i.e., decoration, distinctive manufacturing styles or shapes) that allow them to be assigned to specific linguistic or ethnic groups. These materials might include pottery, basketry, projectile points, ground stone implements, rock art, or ornamental items. The presence of non-local cultural material, such as obsidian, marine shell (shell beads and ornaments), or exotic ceramics, may indicate use of the area by groups with core territories that are located elsewhere. These kinds of materials should be recovered for laboratory analyses (e.g., x-ray fluorescence sourcing of obsidian). If present, human remains (as either burials or cremations) and associated grave goods are particularly effective indicators of cultural affiliation.

5.1.5 Subsistence and Settlement

The content of an archaeological site provides information regarding its cultural affiliations, temporal periods of use, functionality, and other aspects of its occupation history. Generally, the

range and variability of artifacts present in a site may permit reconstruction of various aspects of prehistoric culture, including, among other topics, ethnic affiliation, diet, and social structure. Site function (e.g., habitation, temporary camp, task-specific procurement or processing site, etc.) is integral to evaluating the role of the site within a broader regional landscape pattern.

Beyond the depositional and cultural historical considerations, the recordation and excavation of sites potentially provides valuable information regarding prehistoric behaviors. Here, the focus is on elucidating aspects of the subsistence economy and settlement strategies on a seasonal basis. Such analyses provide a context to better understand the diet of the prehistoric inhabitants at a site, as well how they positioned themselves in relation to the biotic resource structure (plants, animals) on a seasonal basis. Understanding the season during which, for example, plant resources were ripe and available for processing can shed valuable information on settlement strategies. Such analyses provide clues to which resources were available and when the project area likely had the most food resources seasonally available, and can provide an estimate as to where sites might fall in the overall settlement pattern or seasonal round.

The project area may only take in part of a prehistoric population's territory, and the sites within the project area may only represent a portion of a much larger settlement system. Understanding settlement patterns would require chronological control to ascertain which sites were occupied during the same periods. In addition to preservation of faunal and botanical material (e.g., pollen or macrobotanical remains) that would help identify the local resource base, specialized studies of certain tool types provide important information useful for expanding on the subsistence strategies used at a site. Ground stone, for example, can be analyzed for the presence and variety of starches, phytoliths, pollen, and protein residues. These analyses potentially indicate whether ground stone tools (e.g., manos, metates, mortars) were used to process plants (seeds, roots, tubers) or animals, and provide insights about the past climate. Protein residue analysis conducted on chipped stone tools provides insights into the types of animals (usually identified to the family level, sometimes to the species level) a tool was used to process.

The project is located in an area that has been categorized as a resource procurement area for highly mobile desert groups and the more sedentary Colorado River populations. According to current knowledge, the area was used most intensively in the Late Prehistoric and Protohistoric periods (Singer 1984). Nevertheless, archaeological research in the Colorado Desert has only begun to address the use of low-yield desert pavement regions with few resources, minimal evidence of human habitation, and no nearby water (e.g. Flenniken and Spencer 2001; Singer 1984). Within the project area, remnant river terraces provided ready raw materials for stone-tool manufacture, and supported the growth of traditional plant foods, such as mesquite and saltbush, along their western flanks. While the area was clearly most important in prehistory as a transportation corridor, it was also a resource-procurement area and, on occasion, a temporary habitation locale (Schaefer 1994b).

Evidence of prehistoric agriculture being practiced within the project area is unlikely to be found, but some sites may have been occupied by agriculturalists seasonally during the flooding of the lower Colorado River floodplain. Agricultural products may also have been carried into the project area by west-bound travelers. If agricultural remains or residues (e.g., carbonized maize) can be

identified and dated at local sites, they may be able to shed light on how far back in time agriculture in general, and specific agricultural crops in particular, were in use in the region.

Site types in the project vicinity that may relate to this research domain include habitation sites, lithic scatters and flaking stations, ceramic scatters and pot drops, cleared circles, rock rings, and thermal cobble features.

5.1.5.1 Research Questions

- What was the function of the site? How are these functions evidenced by the artifact and features at the site (e.g., chipped stone, ground stone, bone tools, flaked stone tools with use wear, shell, unmodified faunal bone, or features, such as hearths, storage pits, or burials)?
- What was the subsistence economy at the site and did it change through time? Did it correlate with a specific season or seasons? Did the patterns of resource exploitation undergo significant changes during the prehistoric period, perhaps becoming more or less intensive or extensive in response to demographic changes, to shifts in the technologies available for their exploitation, or to the scheduling demands of agriculture?
- What types of chipped stone artifacts are present at the site and what cultural activities do these artifact types represent? Are these types indicative of lithic tool manufacture, retouching, and/or use?
- If utilized flakes or utilized tools are present, what resources were processed with them?
- Does the site reveal evidence of intra-regional interaction and/or mobility? Are artifacts of non-local material or type present at the site? If so, can the source of these materials be ascertained? What types of tools are made from exotic materials?
- Are patterns in site function discernable when contemporary sites are analyzed as a group? What resource procurement and mobility behaviors are suggested by this pattern? Which areas were a focus of sedentism and which were a focus of resource gathering?

5.1.5.2 Hypotheses

Hypotheses about settlement and subsistence practices in the project area must take into account the proximity of the resource-rich Colorado River corridor. Now constrained by modern engineering technology, the Colorado River during prehistoric times was a dynamic fluvial system: overflow channels and former river courses spread widely across the floodplain that is now under intensive irrigation agriculture. While the present course of the Colorado River is more than 17 km from the project area, overflow channels (which were the target of ethnographic resource procurement) would formerly have been as close as 6 km.

- Hypothesis SS-1 – Major long-term habitation sites were located closer than 6 km to the resource-rich Colorado River corridor; hence such sites are absent or very rare in the project area.

- Hypothesis SS-2 – Resource exploitation in the project area focused primarily on resources not available in the river corridor, particularly lithic materials. Evidence of subsistence resource procurement is very limited, and ground stone tools are very rare or absent.
- Hypothesis SS-3 – A demographic increase in the Colorado River Valley associated with the adoption of agriculture is also reflected in intensified use of portions of the project area for the procurement of other resources and for seasonal habitation.
- Hypothesis SS-4 – Minor amounts of agricultural crops were carried westward through the project area for exchange with Coachella Valley groups.
- Hypothesis SS-5 – Resources within the project area could have been easily exploited from habitation sites located closer to the river corridor; hence, evidence of logistical base camps and caching is absent or very rare in the project area. Domestic habitation debris is absent or very ephemeral at most.
- Hypothesis SS-6 – Hunting by mobile interior groups may have occurred, but this activity set may leave a very limited archaeological signature and may in fact not be identifiable archaeologically. Hunting blinds are not expected; discarded hunting gear will be rare or absent.

5.1.5.3 Data Requirements

The identification of features such as a midden, hearths or FAR clusters, storage pits, house floors, burials or cremations, the remains of structures, temporally diagnostic artifacts, non-local artifacts (obsidian, marine shell beads), faunal and fish bone, worked bone tools, or landscape-site associations would make important contributions to this dual research issue regarding subsistence and settlement pattern. Recovery of material from stratigraphically intact and temporally controlled contexts for laboratory analyses, such as artifact use-wear analysis, identification of macrobotanicals and pollen, or protein and blood residue analysis of stone tools or milling stones, would be required to address this research issue. Functional differences in recovered ground and chipped stone tools may provide additional evidence of diet since ground stone tools were generally used for grinding seeds and acorns and processing small mammals, whereas chipped stone tools (scrapers, choppers, projectile points, etc.) were used for plant and faunal procurement and processing.

5.1.6 Lithic Technology

Mobile hunter-gatherers and part-time agriculturalists organized the procurement, manufacture, and discard of flaked stone tools with regard to a number of factors: the relative availability and quality of toolstone within a territorial range; the intended tool functions; the extent and character of trade networks; the frequency and nature of residential moves; the organization of work groups; and the nature of labor division based on age, gender, and status (e.g., Bamforth 1990; Beck et al. 2002; Eerkens et al. 2007; Kelly 1988). Therefore, the material remains of lithic tool production, use, refurbishment, and disposal aids in the understanding of more general questions regarding group territoriality, mobility, settlement patterns, social organization, trade and exchange. For

example, research suggests that highly mobile peoples often make new tools to replace broken or exhausted tools when they encounter high-quality toolstone (Kelly and Todd 1988). In doing so they discard curated tools, often from distant sources, and create a concentration of tool-making debris.

Binford (1979) has described how lithic procurement could be "embedded" within the organization of basic subsistence strategies, being scheduled and accomplished at little cost while people were in the process of securing food resources. Embedded procurement can be contrasted to a "direct" strategy in which people made planned, specific trips to lithic source locations for the sole purpose of obtaining stone. The use of an embedded procurement strategy implies greater residential mobility and a lithic technology designed for portability and either flexibility or versatility (Kelly 1988), while direct procurement infers an importance of logistic mobility and a more diverse technology designed for reliability (Kelly 1983). Therefore, changes in toolstone procurement behavior may reflect a variety of social changes, including an intensified use of a more restricted territory, a reorganization of seasonal subsistence-related mobility, a change in social relationships between groups, or changes in the subsistence base, such as the inclusion of horticulture.

Unlike most flaked stone tools, which are relatively lightweight and easily transported, ground stone tools are heavy. Mobile groups rarely carry ground stone tools with them as they move from camp to camp, preferring to leave the tools behind at habitation locales where they intend to return. Thus, ground stone tools are often excellent indicators of relatively intensive or long-term habitation. Along the Colorado River, where river transport was possible, though, the difficulty of moving heavy ground stone tools may have been less of a limiting factor (Schneider 2006). In addition to studying ground stone tool use and disposition, archaeologists have recently investigated the production of ground stone tools along the lower Colorado River (e.g., Huckell 1986; Schneider 2006). Several quarries have been identified along the lower Colorado and Gila rivers (Ezzo and Altschul 1993; Schneider and Altschul 2000). Of these, the Bullhead City quarry lies approximately 100 miles north of the project, on the Colorado River at what is known as Big Bend. Prehistoric communities mined the quarry for a prized stone material, variously referred to as alkali-olivine basalt and andesite, which was particularly suited to the manufacture of metates (Schneider 2006). Huckell (1986) notes that the Mohave appear to have returned to the Bullhead City quarry for several centuries. Huckell further argues that the distinctive and finely made squared metates of the Mohave indicate a specialized production process geared to regional distribution and exchange, rather than simple production for personal use (1986).

Site types that may relate to this research domain include habitation sites with lithic production debris, quarry and lithic procurement sites, and lithic scatters and flaking stations.

5.1.6.1 Research Questions

- To what degree were raw lithic materials being reduced within the quarry site CA-RIV-3419? Were lithic activities at this site limited to initial cobble testing and reduction, or were production stages, such as core preparation, preform manufacture, or tool manufacture, also being performed?

- Are different core reduction technologies apparent in the lithic assemblages examined? How are these related to the size and shape of the source materials chosen for reduction? What regional patterns of material exploitation are suggested by comparing contemporary assemblages across sites?
- Is there any evidence that scatters of flaked stone are the result of ritual activities?
- What types of flaked stone tools are present? Are the tools expedient types, suggesting that they were manufactured, used and discarded on site, or were they curated types that were intended for later use elsewhere? What regional patterns of tool production and use are suggested by comparing contemporary assemblages across sites?
- Are ground stone implements present that may indicate repeated or relatively intensive habitation? Do the type and size of these implements provide evidence of the plants that were being processed or the seasons in which area was occupied? What regional patterns of ground stone tool production and use are suggested by comparing contemporary assemblages across sites?

5.1.6.2 Hypotheses

The lithic procurement sites in the project area are close to major habitation locations along the Colorado River corridor. Moreover, the clasts available within the desert pavements tend to be rather small. These observations lead to the following hypotheses:

- Hypothesis LT-1 – Site CA-RIV-3419 reflects only casual use of the available tool stone, such as might have occurred as an embedded element during travels motivated by other concerns.
- Hypothesis LT-2 – Due to the variety of lithic materials present in the desert pavements a high degree of “test blocking” is expected, that is the removal of one or two flakes to test material quality.
- Hypothesis LT-3 - With habitation sites located so close to this source, there was no need to invest time and energy in relatively complicated biface reduction. Therefore, expedient core reduction predominates, and evidence of biface reduction is very limited.
- Hypothesis LT-4 – Very intensive exploitation strategies, such as bipolar flaking of small pebbles, were not extensively used, because of the availability of alternative materials suitable for less intensive exploitation.
- Hypothesis LT-5 – The Topaz Mountain reduction technique (Flenniken and Spencer 2001) is present. This technique of bipolar reduction is useful where clast size is limited.
- Hypothesis LT-6 – Tool stone preferences throughout the prehistoric period (although subject to variations according to acquisition costs, the quality of particular sources, and specific intended uses) were, in order of decreasing preference, for obsidian, cryptocrystalline silica, volcanic rock (basalt, andesite, rhyolite, etc.), quartzite, and quartz.

- Hypothesis LT-7 – Ground stone procurement sites are absent due to the absence of suitable raw material.

5.1.6.3 Data Requirements

This research domain can be addressed primarily through the analysis of lithic materials present at the quarry sites, although any assemblage of lithic material, from single-use flaking stations to large scatters formed by numerous flaking episodes, has the potential to provide relevant data. Ground stone tools or fragments that provide data related to plant processing, mobility, and site seasonality may be present as well.

5.2 Historic-Period Archaeological Research Domains and Questions

Previous cultural surveys in the region suggested that historic-period resources are present in lower frequency than prehistoric resources in the Colorado Desert, although this has not proven accurate in the project. Not surprisingly, earlier research efforts have mainly focused on prehistory, leaving historic period research questions relatively underdeveloped (but see Schaefer et al. 1998). Based on the documented cultural resource inventory work in the region, and the preliminary results of the current survey, the research domains that appear most relevant to the project area are transportation, mining, agriculture and ranching, and military training.

5.2.1 Transportation

Sustained economic development in the Colorado Desert region did not begin until the 1870s and came to fruition in the early part of the 20th century. Development was dependent on transportation in the form of a series of overland trails and stagecoach lines created to serve the emerging mining towns. Many of these cross-country routes were modified or became obsolete with the arrival of rail service in the desert in the late 1870s. The railroads reoriented the development of trails and wagon roads that connected new mining communities to major routes of transportation. Railroad stops became destinations for wagon roads, allowing points of access to develop the remote desert interior (von Till Warren et al 1980). By the mid-1910s, the Mecca–Los Angeles Highway, now U.S. Highway 60 (Palo Verde 2005), was in place across the mesa from Black Rock to Blythe. At about this time, one main dirt road, now known as Mesa Drive (CA-RIV-9981), was blazed north-south through the project area, following a section line surveyed by the GLO in 1916/7. The road and several small roadside structures are evident in early maps of the vicinity (County of Riverside 1920s).

The main route through the Palo Verde Mesa today is the I-10 Highway, which parallels the prehistoric Coco-Maricopa Trail (CA-RIV-53T). In addition to established roads, numerous unpaved historical routes, some following prehistoric routes, are present throughout the Colorado Desert. Two-track roads, unimproved roads, and graded dirt roads often are the remnants of early wagon or automobile routes. Material culture associated with early routes is evident on the landscape as well. Historical debris from early travel across the desert is evident in the form of cans or other refuse associated with vehicle maintenance. Often, debris associated with early

automobile use is found adjacent to modern roadways, which may indicate the age and historical use of the route through time.

Site types that may relate to this research domain include transportation routes, as well as route-associated historic camps, residential structures and features, and refuse deposits. To meet the significance criteria, such sites would need to have integrity and clear historic associations or contain important information that is not readily obtainable from archival sources or surface recordation.

5.2.1.1 Research Questions

- Through additional fieldwork and archival research, can any of the unpaved historical routes within the project area be better understood within the context of regional transportation? Can these routes be associated with specific places or functions, including those associated with other research domains (e.g. they provided access to mines or agricultural areas, or were associated with military training maneuvers)?
- What does historical debris found in association with historical travel routes indicate about the age and historical use of the route, modes of transportation, and the social, ethnic, occupational, or economic identities of the people who used the route?
- What is the relationship between transportation routes and historic camps, residential structures, telephone/telegraph lines, or other evidence of habitation? Do chronological relationships among these different site and built environment classes suggest that existing transportation routes shaped subsequent use of the area (e.g., locations for camps and residences were chosen because they were accessible by existing transportation routes), or that routes were created to provide access to specific locations?

5.2.1.2 Hypotheses

Multiple roads have crisscrossed the Palo Verde Mesa and only some of those will have been mapped historically. It may be difficult to distinguish mapped from unmapped roads due to the scale of some of the maps. These observations lead to the following hypotheses:

- Hypothesis T-1 – Most of the debris along the roads will consist of general dumping; discrete concentrations with easily discernable associations will be rare.
- Hypothesis T-2 – Many of the roads will have had multiple alignments and may only exist as segments. It will be difficult in these cases to determine if a particular road appears on a map.
- Hypothesis T-3 – Recent off-road vehicle activities may make some roads difficult to identify as historic and in some cases, that determination will need to be made based on the presence of artifacts or structural remnants and examination of historic aerial photographs and maps.

5.2.1.3 Data Requirements

The identification of linear features such as roads, two-track trails, railroad tracks or grades, telephone/telegraph lines would make important contributions to the research issue of historical transportation. Historic camps, residential structures and features, and refuse deposits that are associated with these linear features can be particularly good sources of data related to dates, modes of transportation, changes in the use of transportation routes over time, and the place of a particular transportation route in the region's overall historical framework. U.S. Geologic Survey (USGS) historic maps, U.S. General Land Office (GLO) township plat maps, BLM land patent records, master title plat maps, Historical Index data sheets and other archival documents may be required to address questions of transportation route ages, route modifications, landscape modifications, and the historical relevance of associated features.

5.2.2 Mining

The first Americans to arrive in the Colorado Desert in substantial numbers were prospectors hunting for the next big gold strike. Regionally, mining and prospecting activity was most intense in the mountains and high deserts of the Mojave, but small-scale mining has been a consistent feature of the Colorado Desert for over 150 years. Although mining was not a significant endeavor on the Palo Verde Mesa, in the surrounding McCoy, Palen, Mule, and Big and Little Maria Mountains, mining has been a consistent, if limited, activity from the 1800s to the present (Butler 1998; Shumway et al. 1980). Local newspaper accounts and other historical references indicate that mining was a modestly successful activity in the region from the end of the 19th century through the 20th century. In the Palo Verde Mesa area, small-scale prospecting was most intense in the late 19th to early 20th century, and saw resurgence during the Great Depression in the 1930s. Larger-scale mining in the McCoy Mountains was focused on the extraction of copper, gypsum, and manganese, the latter of which was only profitably extracted during WWI and WWII.

Identifying prospecting and mining activities informs on the economic development of the project vicinity and the Colorado Desert region as a whole, while manganese mining activities during WWI and WWII inform on the war mobilization efforts at a regional and national level. In the immediate project vicinity, remnants of prospecting pits, claim markers (e.g., wooden stakes, rock cairns and associated cans and bottles), and scatters of food debris, tools, and hardware reflect the presence of hopeful prospectors. Along the western edge of the project and into the flanks of the McCoy Mountains, other signs of prospecting and mining include tailings, adits, shafts, machinery, large trash dumps, concrete foundations, and structures.

In the project, site types and features associated with this research domain are transportation routes, historic camps, residential structures and features, historic cairns, and refuse scatters and dumps. To meet the significance criteria, such sites would need to have integrity and clear historic associations or contain important information that is not readily obtainable from archival sources or surface recordation.

5.2.2.1 Research Questions

- What material was prospected or mined?
- During what time period did the prospecting or mining take place?
- What specific activities were performed on the site? Did they change over time?
- How were prospecting or mining techniques adapted to specific conditions? Is there evidence of innovation? Is there evidence for extensive reuse of equipment, sites, buildings, or artifacts?
- Were the mining techniques or technologies used on the site common during the time period that the site was active?
- What regional patterns of mining are suggested by comparing contemporary mining sites throughout the area? Are the mining sites concentrated around a particular topographic feature, geological formation, or in proximity to non-geological features such as surface water or existing roads?
- Do regional patterns of mining activity change over time in a regular fashion due to fluctuating mineral costs, changes in technology improvements, wartime needs, or other factors?

5.2.2.2 Hypotheses

Although mining activities can take place on relatively flat terrain, much of the more productive mining in the Colorado Desert has been done in mountainous areas. Therefore, the following hypotheses are offered.

- Hypothesis M-1 – The majority of mining activity will be confined to the mountain areas; this will also be where evidence of the use of mining technologies will be observed.
- Hypothesis M-2 – The flatter terrain will mostly contain evidence of exploratory mining, which will contain little in the way of ancillary structures.
- Hypothesis M-3 – The most plentiful evidence of mining is likely to be in the form of cairns that represent mining claims, many of which were never explored.
- Hypothesis M-4 – Mining dating to the 1930s to 1940s will be most common; it is likely that earlier evidence of mining will be primarily confined to the mountainous areas, since those were the areas richest in minerals.

5.2.2.3 Data Requirements

The presence of archaeological materials associated with prospecting, assaying, and mining, and evidence of short- to long-term habitation by miners would be required to address this research issue on a site-by-site basis. The presence of an inventory of well-dated historic artifacts would be required to address the types of mining or the variety of mining techniques used in the area over time. Creating such a dataset would be challenging since it is likely that most of the older

equipment is gone, with only an occasional part or piece of equipment remaining. Recovered artifacts would probably need to be compared with local collections or relevant documentation. Sufficiently large samples to determine technological change would thus have to come from historic documentation.

5.2.3 Agriculture and Ranching

California's agricultural economy boomed during the Gold Rush, and expanded further in the late 19th century with the passage of the Homestead Act in 1862, the California Swamp and Overflow Act of 1874, and the Desert Land Act of 1877. Passage of these acts opened vast areas of public land to private citizens who were interested in developing the land for agriculture or livestock, and allowed agriculture to develop in the Palo Verde Valley adjacent to the project area. However, agriculture did not develop in the immediate project site, as water was unavailable and the sandy soils are unsuitable to most crops. Nevertheless, agriculture continues to be the most significant contributor to the economy of the Palo Verde Valley, and a number of fallow and functional fields exist on the Mesa in the vicinity of the project.

Periodically, ambitious ranchers attempted to tame the Palo Verde Mesa, but with limited success. Early 20th century ranching attempts in the project are evident as structures, water troughs and pipes, well heads, and associated debris. The ranching-related material appears to be concentrated in the northeastern portion of the project area bordering the periodically verdant McCoy Wash. Ranching on the mesa may have been limited to short-term sheep grazing (Spencer et al. 2001) after infrequent, large flood events of the McCoy Wash (Palo Verde 2005).

Site types and features potentially relevant to this research domain are historic camps, residential structures and features of various kinds (including wells, fences, privies, ramps, and other features), and refuse scatters and dumps. To meet the significance criteria, such sites would need to have integrity and clear historic associations or contain important information that is not readily obtainable from archival sources or surface recordation.

5.2.3.1 Research Questions

- What evidence of historical agriculture and ranching is present in the area?
- What is the evidence for standardized technologies, "appropriate technology," or local innovation? Is there evidence for extensive reuse of equipment, sites, buildings, or artifacts?
- What evidence is available that can provide additional information related to the agricultural or ranching context and function of the site?
- What are the technological changes (e.g., horse-drawn, self-propelled) as well as the interrelated changes?
- How is the irrigation technology/history of this site unique to other area farmsteads? Did it rely on a well, pump, or canal delivery system?

- Do undisturbed historic deposits/features contain evidence of a specific social, ethnic, or economic group?
- Is there evidence of poverty, status, or wealth in the deposit?
- How does this analysis contribute to the existing literature concerning this resource type? How do agriculture and ranching sites throughout the area reflect or diverge from regional or national trends related to changing land use laws, environmental fluctuations, technological innovations, or other factors?

5.2.3.2 Hypotheses

Evidence of ranching and agriculture in the Colorado Desert has generally been ephemeral in nature. The following hypotheses apply to this theme.

- Hypothesis AR-1 – The most common evidence of ranching is likely to be watering troughs or cisterns meant to provide water for animal consumption.
- Hypothesis AR-2 – The remnants of ranching and agriculture is likely to represent the use of locally available materials; for instance, a barbed wire fence may be held up with ocotillo or other locally available plant material.

5.2.3.3 Data Requirements

The presence of an inventory of well-dated historic artifacts would be required to address the types of agriculture and ranching performed in the area as a whole, as well as to examine variation in the social, ethnic, or economic makeup of the area's farmers and homesteaders. Creating such a dataset would be challenging since it is likely that most of the older agricultural, irrigation, and ranching equipment is gone, with only an occasional part or piece of equipment remaining. Individual artifacts (e.g., imported fine porcelain, mass-produced items), associated faunal remains (e.g., comparison of the quality of the animal parts or species represented), and the refuse contained in privies or dumps may define the economic structure related to homesteading and contribute to this research issue. Recovered artifacts would probably need to be compared with local collections or relevant documentation. USGS historic maps, GLO township plat maps, BLM land patent records, master title plat maps, Historical Index data sheets and other archival documents may be required to address questions of land ownership, claims, and landscape modification.

5.2.4 Military Training

The most significant historical research domain for the project is the area's use as a military training facility during WWII and again in 1964, before the country's entry into the Vietnam War. The history of the WWII-era DTC/C-AMA has been well documented (see Bischoff 2009; Bischoff et al. 2010; Henley 1989; Meller 1946), but the use and nature of the actual maneuver areas outside of the field camps is not well known. The DTC/C-AMA was the largest military training facility ever operated by the United States. By July 1943, the DTC/C-AMA encompassed 35 million acres and was larger than the entire country of England (Captain Herbert Chase 1943, as

quoted in Baty and Maddox 2004). Physical evidence of divisional camps, controlled-fire ranges, mock maneuvers, and temporary encampments is visible throughout the region (Bischoff 2009; Bischoff et al. 2010). These various uses and activities may be identified through the careful analysis of the scattered material remains preserved within the former DTC/C-AMA. Presently, the least explored sites and features associated with the operation of the DTC/C-AMA are the remnants of maneuvers, including numerous tank tracks, fortified positions, bivouac areas, and scattered refuse deposits.

WWII-era military activity was not the only military use of the project area. Subsequent to the abandonment of the DTC/C-AMA facility, in May 1964, the U.S. armed services came back to the region to conduct an extensive joint Army–Air Force exercise, code-named Exercise Desert Strike (see Section 3.3.5.2). The exercise was conceived as a realistic training event testing the tactical coordination of Army and Air Force resources in the nuclear age (Time Staff 1964; U.S. Army, n.d.). Enormous in scope, Exercise Desert Strike was the most expensive military training exercise of its time, incorporating almost 90,000 men and roughly 8,000 wheeled and tracked vehicles, and 800 aircraft. Due to its expense and perceived lapses in prior planning, Exercise Desert Strike was judged to be a limited success (U.S. Army n.d.). Since that time, the lessons learned in the western deserts during the summer of 1964 and the WWII years have continued to inform U.S. military training and tactics (Gorman 1992).

Site types that might be interpreted with reference to this research domain include historic camps, including divisional camps, temporary camps (bivouacs), and campsites; maneuver areas and small unit training areas; air facilities and crash sites; ranges; railroad sidings and depots; and hospitals and medical facilities. Features that may occur within or apart from these site types include anti-tank ditches, camouflage areas, emplacements, minefields, observation positions, obstacles, refuse scatters and dumps containing a variety of military-issue and non-military artifacts; roads; rock features including cairns, walls, unit insignias, and hearths; slit trenches; tank tracks; and tank traps (Bischoff et al. 2010:123-169). Energy Commission staff has suggested that remains of the DTC/C-AMA contribute to a historically significant cultural landscape (CEC 2010). Hence, the evaluation program will need to assess any related materials in the context of this larger cultural landscape.

In the DTCCL historic context, Bischoff and others (2010:170-189) have identified five major research themes that are relevant to the DTC/C-AMA: U.S. preparation for World War II, U.S. military training, leadership of significant American Military figures, experience of the American soldier, and environmental consequences. These research themes can be used to guide the research questions and hypotheses that are applied to project data, and to assist in the interpretation of those data.

5.2.4.1 Research Questions

- To what period or phase of the military's use of the area (DTC, C-AMA, and/or Exercise Desert Strike) do sites and other material remains date? Is there evidence that the Palo Verde Mesa area hosted large-scale maneuvers during the period of WWII after 1942?

- What do the type and distribution of artifacts and features suggest about the specific activities that occurred on site? What do they indicate about overall site function? How does the site relate to others in the area in terms of function?
- Do sites associated with military training include any evidence of the social, ethnic, occupational, or economic identities of the soldiers who created them? What type of unit (e.g., infantry, armor, air forces, medical, etc.) may have created the site?
- Can the details of specific maneuvers or training exercises be reconstructed through the use of extant features and deposits such tank tracks, fortified positions, bivouac areas, and refuse scatters? Can these maneuvers and exercises be associated with specific training methodologies? Can they be associated with changes in battlefield procedures and strategy that occurred during World War II?
- To what extent did military personnel interact with adjacent civilian populations, including residents of Blythe? To what extent did they have access to civilian items? Is there evidence of unofficial or black market exchange (e.g., illicit alcohol consumption and prostitution)?
- What kind of equipment, weapons, and material was used? To what degree did soldiers deviate from standard-issue supplies and rations? Was the equipment used in training up to date, or antiquated? Is there evidence of supply shortages, such as equipment substitution and modification?
- How was trash disposed of in the DTC/C-AMA? To what extent were camps or training areas cleaned up at the termination of activities? Is there evidence of organized trash disposal (including burial), refuse burning, feature demolition, or the abandonment of supplies?
- To what extent did the landscape dictate the types of activities that took place there? Were certain activities selected for particular topographic features? Does the dispersal of sites and features across the landscape suggest a particular military strategy? Does it indicate adherence to or deviation from standard army protocols?

5.2.4.2 Hypotheses

Military activities in the Colorado Desert have taken different forms, ranging from highly organized camp arrangements, to more expansive maneuver areas. Vehicle activity in the maneuver areas can appear to be chaotic due to modern off-road vehicle activity. Therefore, the following hypotheses are offered.

- Hypothesis MY-1 – Military use of the project area was limited to the brief window between the departure of General Patton in the summer of 1942 and the re-alignment of the Desert Training Center as the California–Arizona Maneuvers Area in the fall of 1943.
- Hypothesis MY-2 – Military sites in the project area will consist primarily of bivouacs and evidence of maneuvers/training.

  - Hypothesis MY-2a – As temporary encampments where soldiers rested and ate, the hallmark of bivouac sites will be informal dumps of military ration cans. These sites will also contain evidence of defensive positions, including emplacements.
  - Hypothesis MY-2b – The primary evidence of maneuvers and training will consist of vehicle tracks and defensive positions (e.g., emplacements, anti-tank ditches, etc.).emplacement

- Hypothesis MY-3 – Because of its proximity to Blythe Army Air Base, military sites in the project area will have evidence of use by air forces, as well as infantry and armor units.
- Hypothesis MY-4 – Because of its proximity to the town of Blythe, military refuse deposits will contain substantial quantities of civilian items, particularly food and beverage containers.

5.2.4.3 Data Requirements

Artifacts and features relevant to this research domain include tank tracks, military ration cans, oil and fuel cans, beer cans, munitions, aircraft parts, and land-modification features like tent pads and fortified positions. While metal cans tend to have wide dates of manufacture, several identifiable features, such as opening methods and size, have been extremely useful in distinguishing between early mining and ranching activities, WWII-era military training, and later activities. Cans are often overlooked in terms of their potential to yield information about a site, especially when artifacts like bottles are more easily dated. This can lead archaeologists to ignore or incompletely record the details of can artifacts (Busch 1981). Nonetheless, the proper identification and documentation of cans have proven critical in more precisely dating the use of historic-period archaeological sites.

6.0 CRMMP Administration and Implementation

Monitoring and mitigation comprise a number of required activities under the Energy Commission's license for the project, activities which may (1) prescribe measures to ensure avoidance of resources, or (2) compensate for the loss of significant cultural resources due to unavoidable impacts resulting from the project's construction, operation, maintenance, or decommissioning. Mitigation measures are implemented by means of license conditions, or CoCs which are designed to minimize project impacts to any kind of significant cultural resource, whether an element of the built environment, an ethnographic property, or an archaeological resource. Projects whose design cannot be changed to avoid known significant cultural resources have CoCs that specify detailed mitigation activities. Mitigation measures for discoveries are addressed in Section 9.1.5 and described in **CUL-17**.

This section of the CRMMP describes the protocols and procedures pertaining to cultural resources to be enacted to meet the requirements of the Energy Commission CoCs (**CUL-1** through **CUL-19**). These Conditions are attached as Appendix A.

6.1 Cultural Resources Personnel

Pursuant to CoC **CUL-3**, prior to the onset of ground disturbance, as defined, the project owner shall obtain the services of a Cultural Resources Specialist (CRS), one or more alternate CRSs, if alternates are needed, a project Prehistoric Archaeologist (PPA) and a project Historical Archaeologist (PHA). The CRS, alternate CRS(s), PPA, and PHA shall meet the minimum qualifications specified in the U.S. Secretary of Interior Professional Qualifications Standards, as published in 36 Code of Federal Regulations (CFR) Part 61, as well as the minimum qualifications specified in **CUL-3**, and must be approved by the CPM no less than 75 days prior to the start of ground disturbance. The resumes of the CRS, alternate CRS, the PPA, and the PHA shall include the names and telephone numbers of contacts familiar with the work of these persons on projects referenced in the resumes and demonstrate to the satisfaction of the CPM that these persons have the appropriate training and experience to undertake the required research.

Dr. Stacey Jordan-Connor has been approved (7/21/2014) as the CRS for this project. Experienced in both prehistoric and historic sites, Dr. Jordan-Connor is a Registered Professional Archaeologist (RPA), and exceeds the specified minimum qualifications. The alternate CRS approved (7/21/2014) for this project is Mr. Matthew Tennyson. Mr. Tennyson is also an RPA and exceeds the specified minimum qualifications. Mr. Tennyson is also approved (11/20/2014) as the PPA and PHA for this project, meeting the specified minimum qualifications for these roles the project. Mr. Andrew York will serve as the approved (11/20/2014) alternate PPA for this project; he is a prehistoric archaeologist who exceeds the specified minimum qualifications detailed in **CUL-3**.

The CRS shall oversee, manage and coordinate the administration and implementation of this CRMMP. This effort shall include, but not be limited to, all cultural resources mitigation, monitoring, curation, and reporting activities in accordance with the CoCs, including data recovery for identified historical resources and recommendations regarding the eligibility for listing in the

California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be impacted in an unanticipated manner. The CRS shall also coordinate the documentation and possible National Register of Historic Places (NRHP) nomination programs for the PTNCL and DTCCL with the Energy Commission and its designated consultants. This coordination will ensure that the historic contexts prepared for these landscapes, and for the newly identified PRGTL, are fully integrated into subsequent mitigation efforts, and that this and other data generated by the research described in this CRMMP are made available to Energy Commission staff and, upon the CPM's request, its designated consultants, and are also incorporated into the CRR required under **CUL-18**.

No ground disturbance shall occur prior to CPM approval of the CRS and alternates, unless such activities are specifically approved by the CPM. Per **CUL-3**, the approval of the CRS and the other Technical Specialists may be denied or revoked for reasons that include, but are not limited to, behavior that the CPM deems to be inconsistent with the intent or the letter of the license conditions for this project or those of any other Energy Commission project. Following CPM revocation of a CRS's approval, or project owner termination, resignation, or other manner of release of the CRS, the project owner shall submit the resume of a proposed new CRS to the CPM for review and approval. At the same time, the project owner shall, pursuant to **CUL-4**, also provide to the proposed new CRS the AFC and all cultural resources materials generated by the project.

The CRS may obtain the services of additional cultural resources personnel including field crew members, cultural resources monitors (CRMs), and a specialist backhoe operator to assist in mitigation, monitoring, and curation activities; all additional cultural resources personnel must meet the minimum requirements set forth in **CUL-3**. The CRS shall provide the CPM a letter naming anticipated field crew members and CRMs for the project and attesting that they meet the minimum qualifications at least 20 days prior to data recovery on known archaeological sites. At least five days prior to additional CRMs beginning on-site duties during the project, the CRS shall provide subsequent letters to the CPM identifying the new monitors and attesting to their qualifications. The CRS shall verify that the following designated CRMs meet the requirements of condition **CUL-3**.

6.2 Project Documents for Cultural Resources

Pursuant to CoC **CUL-4**, no less than 60 days prior to the start of ground disturbance, the project owner shall provide the CRS, the PPA, and the PHA with copies of the AFC, data responses, confidential cultural resources documents, the Revised Staff Assessment (RSA), and the RSA Supplement/Errata, if any, for the project. The project owner shall also provide the CRS, the PPA, the PHA, and the CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all laydown areas no less than 60 days prior to the start of ground disturbance. Maps shall include the appropriate USGS quadrangles and maps at an appropriate scale (e.g., 1:24000 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. If there are changes to any project-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS, PPA, PHA, and CPM

at least 15 days prior to the start of ground disturbance. Staff shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless such activities are specifically approved by the CPM. Release of cultural resources information will be pending BLM approval.

If construction of the project proceeds in phases, maps and drawings not previously provided shall be provided to the CRS, the PPA, the PHA, and the CPM at least 15 days prior to the start of each phase. Written notice identifying the proposed schedule of each project phase shall be provided to the CRS and CPM.

To ensure that NAMs have the most recent cultural resources information for the project area and understand the latest changes in project design and schedule, the CRS shall provide timely notification to the Lead NAM or designated NAM representative of the receipt of any cultural resources information from the project owner under **CUL-4**, in addition to any other cultural resources information that the project owner or agency staff may provide the CRS as construction proceeds. Such information shall be provided not less than 72 hours prior to a change, subject to unanticipated changes in construction schedule, activities or level of effort, in response to which the CRS shall immediately upon receipt of such information notify the lead NAM or designated NAM representative of the change. The CRS shall copy the CPM on all such notifications. The CRS shall, at the time of notification and to the best of their ability, make all such information easily available for review by the Lead NAM or designated NAM representative. The CRS, at the request of the Lead NAM or designated NAM representative, shall provide hard copies of any of the documents that contain any of the information described immediately above. The CRS shall also coordinate the review of the same information with any affiliated Native American tribal entity that requests such a review. The CRS shall provide to the requesting Native American tribal entity(ies) any hard copies of any of the documents that contain any of the information described above in accordance with the confidentiality limitations to which both the Energy Commission and BLM are subject.

6.3 Workforce Education

Prior to and for the duration of ground disturbance, all new workers on the facility site, along the project's linear facility routes, and in the project's laydown and other ancillary areas will be subject to on-site training, within their first week of employment, on the recognition of cultural resources and the proper procedures to follow in the event that cultural resources are encountered during project construction. As outlined in **CUL-15**, the worker environmental awareness program (WEAP) education will focus, at a minimum, on the following:

1. A discussion of applicable laws and penalties under the law;
2. Samples or visuals of artifacts that have been found in the near ($\leq$ 25 mi.) vicinity of the project;
3. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;

4. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;
5. Instruction that the CRS, alternate CRS, and CRMs have the authority to halt ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;
6. Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS.

These procedures will be outlined in an informational brochure that identifies reporting procedures in the event of a discovery and provides easy-reference images of the artifacts presented during the training module. A video will be prepared by the CRS, to be used for preconstruction training on an as-needed basis. Pursuant to **CUL-15**, any member of the archaeological team may conduct the presentation to workers. The CRS will be available in person or by telephone to answer any worker questions arising from the presentation. Crew members that have completed the training will receive a sticker for their hard hats and will sign an acknowledgment form stating their training was completed.

6.4 Investigatory and Curation Standards

In compliance with **CUL-5**, the cultural resources team will have a full complement of equipment and supplies necessary for site mapping, photography, and recovery of all cultural resource materials (that cannot be treated prescriptively) from known CRHR-eligible archaeological sites and from CRHR-eligible sites that are encountered during ground disturbance.

The CRS or alternate CRS will obtain all additional technical specialists, if needed, for this project per **CUL-3**. These will include a qualified project Prehistoric Archaeologist (PPA) to conduct the research specified in **CUL-6** and **CUL-7** and a qualified project Historical Archaeologist (PHA) to conduct the research specified in **CUL-8** through **CUL-11**. Additional specialists may also be versed in the analysis of ground stone, shell beads, bone tools, ceramic types, items of adornment, etc. Further, it is anticipated that other laboratory analyses, such as sediment analysis, obsidian sourcing, radiocarbon dating, and hydration dating may be applicable to a thorough study of any cultural resources materials recovered from significant sites to address questions within the research design.

Pursuant to **CUL-17**, all cultural resources encountered in the field during the monitoring program will be appropriately recorded on DPR series 523 forms, mapped, and photographed. Cultural resources will be collected for analysis pursuant to the general Research Design contained in this document or the PQAD research design, as appropriate. As identified in the general Research Design, archaeological team members will map and field-record all prehistoric artifacts present as appropriate, and collect any significant and/or diagnostic artifacts, obsidian artifacts, ceramic artifacts, botanical and faunal remains, and other samples appropriate for chronological, sourcing,

and residue studies (i.e., radiocarbon samples) for laboratory analysis, special studies, and curation.

In compliance with **CUL-5**, all material retained as a result of the archaeological investigations (e.g., monitoring, testing, data recovery) pursuant to the Research Design shall be cataloged, subjected to appropriate analyses, and prepared for eventual curation in accordance with the State Historical Resources Commission's "Guidelines for the Curation of Archaeological Collections." The material will then be placed into a retrievable storage collection in a public repository or museum. The project owner will assume responsibility for any funding requirements related to curation. Any agreements concerning curation will be retained and available for audit for the life of the project.

6.5 Cultural Resources Report (CRR)

Pursuant to **CUL-18**, upon completion of all project monitoring, data recovery, and all artifact analysis and any external scientific studies (radiocarbon dating, obsidian hydration dating, etc.), a detailed Cultural Resources Report (CRR) of the findings will be prepared. The CRR shall be written by or under the direction of the CRS and submitted to the CPM for review and comment and to the BLM Palm Springs archaeologist for review and approval.

The final CRR shall report on all field activities including dates, times and locations, results, samplings, and analyses. The report will incorporate a discussion of the scope and location of monitoring and data recovery, methodology and results, as well as tables and illustrations resulting from the study's analyses. The CRR will incorporate the results of the reports that were prepared for the data recovery efforts mandated by **CUL-6** through **11**. All revised and final DPR 523 forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as appendices to the final CRR.

In compliance with **CUL-18**, the project owner will submit the CRR to the CPM for review and approval and to the BLM Palm Springs Field Office archaeologist for review and approval within 180 days after completion of ground disturbance (including landscaping). If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification: of receipt shall be included in an appendix. Within 10 days after the CPM and the BLM Palm Springs Field Office archaeologist approve the CRR, the project owner will provide documentation to the Energy Commission CPM that copies of the CRR have been provided to the SHPO, the CHRIS, the curating institution, if archaeological materials were collected, and to the Tribal Chairpersons of any Native American groups requesting copies of project-related reports.

Pursuant to **CUL-18**, should the project owner request a suspension of ground disturbance and/or construction activities, the CRS will submit a draft CRR. The draft CRR will cover all cultural resources activities associated with the project and shall be prepared by the CRS and submitted to the CPM and to the BLM Palm Springs archaeologist for review and approval on the same day as the suspension/extension request. The draft CRR shall be retained at the project site in a secure facility until ground disturbance or construction resumes or the project is withdrawn. If the

project is withdrawn, then a final CRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

6.6 Compliance with BLM's Section 106 Programmatic Agreement

Pursuant to **CUL-19**, if provisions in the BLM Blythe Solar Power Plant Programmatic Agreement and associated implementation and monitoring programs conflict with or duplicate these CoCs, the BLM provisions shall take precedence. Provisions in these conditions that are additional to or exceed BLM provisions and represent requirements under the Energy Commission's CEQA responsibilities shall continue to apply to the project's activities, contingent on BLM's approval.

7.0 Historical Resources Treatment Plans

Multiple specific treatment plans are required under the project's amended CoCs, addressing resources ranging from individual archaeological sites to broader regional-level cultural landscapes. As described in Section 7.1 below, the plans for project-specific treatment of two cultural landscapes, the PTNCL (and the PRGTL, of which it is a part) and the DTCCL, include the contribution of monies on a per-acre basis to mitigation funds administered by the Energy Commission to advance research on these two respective resources. A separate plan for treatment of the potential Prehistoric Quarries Archaeological District (PQAD) includes evaluation and data recovery to assess the CRHR eligibility of the district by formulating a research design to identify the relationship between known individually contributing sites as well as potential subsurface contributors. Specifics of that plan are presented in Section 7.1.3 below. The treatment plan for small prehistoric archaeological sites is described in Section 7.2.1, and consists of detailed in-field mapping of flaked stone lithic scatters or the completion of surface recording and implementation of surface scrapes in sites with artifact types other than flaked stone. Historic-period sites with features (Section 7.2.2.1) will be treated with in-field documentation, and historic-period sites with structural remains (Section 7.2.2.2) will be treated with in-field documentation and a metal detector survey with associated ground-truthing of detected anomalies. Section 7.2.2.3 outlines the treatment plan for historic-period dump sites, including detailed documentation of 1 m x 1 m sample unit. Section 7.2.2.4 presents the treatment plan for historic-period refuse scatter sites, consisting of in-field documentation and a metal detector survey with associated ground-truthing of detected anomalies. Built environment resource treatment plans are presented in Section 7.3. These plans include historic research to recover additional information on two historic-period roads within the project as well as on the Blythe Army Air Base reservoir pipeline and a radio communication facility in the indirect effects PAA of the amended project.

7.1 Cultural Landscape Treatment Plans

The project owner shall submit a document to the CPM that establishes the amount of the previously undisturbed acreage in the amended project area for which the project owner must fund PTNCL and DTCCL mitigation programs. To establish that acreage amount, the project owner shall provide, in addition to a prose presentation of this issue, a figure depicting the areas of the original project area that were disturbed during the original project owner's initial phases of construction in 2010 and 2011, how those areas relate spatially to the amended project area, and the remaining undisturbed areas for which the project owner must provide mitigation funds. The document with the accompanying figure shall be subject to the review and approval of the CPM. No further funds shall be accepted to comply with CUL-1 and CUL-2 without the CPM's prior approval of said document.

7.1.1 Prehistoric Trails Network Cultural Landscape (PTNCL) Documentation and Possible NRHP Nomination

The Project owner will contribute to a special fund set up by the Energy Commission to finance the completion of the PTNCL Documentation and Possible NRHP Nomination program for the PTNCL portion of the PRGTL, in the amount specified in CUL-1, and submit the appropriate

documentation to the CPM. If, for any reason described in CUL-1, a Project owner does not participate in funding the PTNCL documentation and possible NRHP nomination program, the other project owner(s) may consult with the CPM to adjust the scale of the PTNCL documentation and possible NRHP nomination program research activities to match available funding. A Project owner that funds the PTNCL documentation and possible NRHP nomination program then withdraws from participation will be able to reclaim their monetary contribution, to be refunded on a prorated basis.

7.1.2 Desert Training Center California-Arizona Maneuver Area Cultural Landscape (DTCCL) Documentation and Possible NRHP Nomination

The Project owner will contribute to a special fund set up by the Energy Commission to finance the completion of the Documentation and Possible NRHP Nomination program in the amount specified in CUL-2, and submit the appropriate documentation to the CPM. If, for any reason described in CUL-2, a project owner does not participate in funding the DTCCL documentation and possible NRHP nomination program, the other project owner(s) may consult with the CPM to adjust the scale of the DTCCL documentation and possible NRHP nomination program research activities to match available funding. A project owner that funds the DTCCL documentation and possible NRHP nomination program then withdraws from participation will be able to reclaim their monetary contribution, to be refunded on a prorated basis.

7.1.3 Prehistoric Quarries Archaeological District (PQAD) Evaluation and Data Recovery Plan

As stated in CoC **CUL-6**, prior to the start of ground disturbance, the CRS, the PPA, and archaeological team members shall implement this PQAD Evaluation and Data Recovery Plan. The CRS's and CPM's post-decision agreement of June 13, 2011 to the CRS's May 18, 2011 proposals to modify the implementation of the *Evaluation and Data Recovery Methodology* subsection of **CUL-6** are set aside, and the CRS, on behalf of the project owner, shall implement **CUL-6**, in its entirety, as written in the Commission's January 21, 2014 *Commission Decision* for the Blythe Solar Power Project Amendment.

The goals of the PQAD Evaluation and Data Recovery Plan, as set out in **CUL-6**, are to assess the CRHR eligibility of the PQAD district by investigating and establishing the relationships among all potential PQAD contributors by formulating research questions answerable with data from the contributors; to identify additional potential contributors in subsurface contexts through geophysical or mechanical survey; and to conduct data recovery from a sample of the contributors. These efforts shall be documented in a technical report and may support the development of one or several CRHR nominations, if appropriate. Potential contributors to the district include quarry site CA-RIV-3419 and thermal cobble feature CA-RIV-9812. The data recovery plan shall also be implemented for one isolated potential thermal cobble feature that is not included in the PQAD; this feature is located at multicomponent site CA-RIV-9979. If the PQAD is found to be ineligible for the CRHR, the CRS and/or PPA shall evaluate the eligibility of the thermal cobble features as a separate archaeological district consisting of a thermal cobble feature cluster.

Changes in the Project area may occur as a result of late stage design modifications. In the event that such modifications exclude major portions of the proposed PQAD from the Project area, the implementation of **CUL-6** will shift from a focus on the potential district as a whole to a consideration of whether a smaller portion of the proposed district remaining within the Project would or would not contribute to the eligibility of the district as a whole. If compliance with **CUL-6** leads to the consideration of a smaller potentially contributing area, the implementation of steps of the **CUL-6** program will be scoped to a level of effort appropriate to the smaller area under consideration.

The data recovery plan shall abide by the timeline and verification parameters elucidated in **CUL-6**. The plan shall include, but is not limited to, the following tasks:

7.1.3.1 Research Design

Pleistocene Age of the Pebble Terraces

A recent USGS study of the Palo Verde Mesa characterized it as late Miocene to Holocene surficial deposits (Stone 2006). The area within the project site is composed of finer alluvium derived from the McCoy Mountains or sediments of varying size deposited by the Colorado River. The two large pebble terraces rising above the desert pavement along the east of the project are examples of deposits left by the Colorado River. The oldest surface deposits are locally derived Miocene-age gravels. These are present in the deeply dissected slopes and ridges adjacent to the McCoy Mountain range. Pleistocene-age landforms include the smooth, varnished pavements and the pebble terraces.

In the project area, recent Holocene alluvium is relatively rare and largely concentrated to the north along the McCoy Wash and along the eastern flanks of the Pleistocene-era pebble terraces. These raised terraces consist of several-meters-deep beds of river rocks (Flenniken and Spencer 2001). The terraces run perpendicular to the general slope of the terrain and act as dikes, damming and diverting the natural flow of water. Washes that typically flow unrestricted from the northwest to the southeast are redirected and consolidated behind the pebble terraces, depositing sandy silty sediments of unknown depth. Within this setting and below the prehistorically used terraces, the survey identified a number of prehistoric thermal features buried in the sands. Some of these features were exposed in the sidewalls of washes (Keller 2010). Others manifest as rock concentrations on the surface.

All of the sites that are potential PQAD contributors have the potential to provide data related to chronology, and may also provide data related to cultural affiliation and ritual activity. In addition, quarry site CA-RIV-3419 has the potential to inform on the prehistoric themes of lithic technology and travel and trade; the cobble sites CA-RIV-9812, and possibly features within CA-RIV-9979 have the potential to provide information relevant to the theme of settlement and subsistence.

Chronology

Chronology is of basic importance to any archaeological research endeavor because it provides a context for addressing many other research issues. Thus, the precision and accuracy of dates are critical since they form the baseline for other research topics. For example, chronological data

could potentially establish relationships among sites within the PQAD or in the broader region, or could contribute to our understanding of the nature and timing of population movements in the area. Chronological determinations may also assist in refining regional or local culture historical sequences.

Chronology building continues to be a major research emphasis in the Colorado Desert. Most of the sites known in the region are surface sites consisting of small quantities of lithic and ceramic artifacts. Stratified sites of any kind are very rare in the Colorado Desert and along the lower Colorado River (Cleland and Apple 2003; Schaefer 1994b), and therefore sites with potential subsurface components, such as the potential PQAD contributors that include thermal cobble features, may yield important chronological data. The prehistoric concentration of population along the banks of the Colorado River has meant that the majority of intensive habitation sites have been removed from the archaeological record by seasonal flooding. Thus, various factors have conspired to hinder the development of an adequate cultural chronology of the region.

One of the most important research goals of any prehistoric research program in the Colorado Desert, therefore, should be the refinement of the regional chronological framework. Any site that contains organic cultural remains suitable for radiocarbon dating could prove useful in this endeavor, as would any site with chronologically sensitive artifacts such as projectile points and ceramics. Sites with thermal cobble features have a good likelihood of containing organic remains, and any of the potential PQAD contributors may have assemblages that include chronologically diagnostic artifacts. Other key chronological topics for the region are (1) the reliability of regional dating methods, (2) the earliest phases of human occupation of the region, (3) the poorly understood Archaic period occupation, and (4) a refinement of the regional ceramic sequence.

Absolute dating techniques are preferable to relative dating of diagnostic artifacts, since absolute dating is an independent assessment of the age of the site. Radiocarbon dating is an extremely accurate and reliable method for establishing the age of organic materials (e.g., charcoal, wood, burned floral remains, bone, shell, organic-rich soil). Obsidian hydration is an alternative means of dating that can provide relatively reliable results provided the source of the material is known and multiple samples are submitted to omit any outliers. Thermoluminescence dating of ceramics, fire affected rock, and rock rings is a less common method for establishing absolute dates, but it can be effective and reliable when sample sizes are sufficiently large; if datable organic materials and obsidian are absent, thermoluminescence dating of thermal cobble features may provide the useful chronological data for PQAD. Additionally, the repatination of worked surfaces on lithic artifacts may serve as a relative dating tool.

If there is no material appropriate for establishing absolute dates for a site, a relative chronology may be established by linking temporally diagnostic artifact types (e.g., projectile points, ceramics, shell beads, etc.) present at the site to the regional culture history. This latter relative dating method would, however, be much less precise. Ideally, relative dating results from the site would support absolute dating results, so that ages obtained through radiocarbon, obsidian hydration or thermoluminescence techniques can be used in conjunction with diagnostic time-marker artifacts to assess the overall age of a site.

The early- to middle-Holocene chronological sequences that are widely accepted for the Mojave Desert and southwestern Great Basin are largely based on changing projectile point forms, along with some other artifactual data, such as the increasing importance of milling technology, possible changes the degree of formality in tools, and changing lithic raw material preferences. In contrast to the situation farther north, recognized middle-Holocene sites in the Colorado Desert are notably uncommon. Early- and middle-Holocene sites in the area are most likely to be recognized by diagnostic flaked lithic tools such as projectile points, as well as the absence of late prehistoric materials. When such sites are identified, finding appropriate strategies to arrive at absolute dates for such remains will be crucial.

The signature archaeological elements of Late Prehistoric occupations include human cremation (in place of inhumation), small projectile points (indicating the replacement of the atlatl and dart by the bow and arrow), and pottery. Well-dated sites in the Coachella Valley support the proposition that pottery was not widely used until ca. A.D. 1000, although the tradition is presumed to have been present on the Colorado River by ca. A.D. 500. One aspect to be considered in the introduction of ceramics is the attraction of Lake Cahuilla for groups living on the lower Colorado River; the lake undoubtedly afforded greater opportunity for cultural interaction, which may have included the sharing of Colorado River pottery and pottery traditions. Absolute dating of archaeological deposits that contain diagnostic Late Prehistoric remains, as well as late Holocene deposits that lack some or all of these diagnostic materials, will be the key to refining the regional chronology. Relative dating, for instance, based on intra-site vertical superposition or inter-site horizontal contrasts, may also shed light on the sequence in which the Late Prehistoric innovations occurred.

Research Questions

- When was each potential PQAD contributor utilized? Which cultural period (Paleoindian, Early or Late Archaic, Late Prehistoric/Protohistoric) or complex (San Dieguito, Pinto, Amargosa, Patayan) do the sites represent? Do the sites consist of single or multiple components?
- Do chronological data provide evidence that the quarry sites and the sites containing thermal cobble features were utilized at the same time? Is there evidence that the nature of resource procurement and processing within the PQAD area or the changed over time?
- Do the chronological data at the site contribute to our understanding of the relationships between different periods or phases within established cultural sequences, or between archaeological sites or districts in this region?
- Does patination provide a useful relative dating tool?
- Are the chronological sequences that have been developed for the Mojave Desert and the Great Basin (e.g., “Lake Mojave,” “Pinto,” and “Gypsum” periods) also applicable to the PQAD? Alternatively, are early and middle Holocene sites notably scarce in this region, or do distinctive local patterns of change need to be recognized?

- When did the changes in material culture that distinguish the late prehistoric period manifest themselves in the PQAD area? Did these changes appear simultaneously, or did their adoption span a period of several centuries, or even longer?

Hypotheses

As discussed in the General Research Design (above) hypotheses in the Chronological Research domain focus on testing regional models of culture history.

- Hypothesis Chron-1 – The intensity of lithic reduction activities in the PQAD is directly related to the overall intensity of human occupation of the region, i.e. regional population density. Since the PQAD area is near the boundary of the Mojave and Colorado desert culture areas, occupational intensity is assumed to be intermediate with respect to these two areas. The culture history of these two areas is perhaps most different during the Archaic Period, a time when sites were rare in the Colorado Desert but more abundant in the Mojave Desert, particularly during the late Archaic. In view of this, a key test implication of this hypothesis is that Archaic period materials will be found to be more abundant at PQAD than is typical of the Colorado Desert.
- Hypothesis Chron-2 – There will be no evidence of an occupation predating 12,500 radiocarbon years ago. The dating of the earliest entry of human into the New World remains a key broad research topic in North American archaeology. In both the Colorado Desert and the Mojave Desert, there have been claims of “pre-Clovis” occupations; however, confirmation of such early dates is still lacking. Recent evidence along the southern California coast, is suggestive that the western North American coast may have served as an early (pre-Clovis) entry corridor. Thus, very early material may be found in the interior, but the PQAD area is not considered a likely target of the earliest occupation of the region.
- Hypothesis Chron-3 – Cultural patterns recognized in the Mojave Desert and the southwestern Great Basin, such as Lake Mojave, Pinto, and Gypsum, are fully applicable and adequate to characterize the early and middle Holocene cultural patterns in the PQAD area.
- Hypothesis Chron-4 – The majority of datable sites will occur during the Late prehistoric period. This prediction is due to the proximity of the project area to the Colorado River corridor. While this corridor would have been attractive to humans throughout all of prehistory, its most intensive occupation appears to have occurred after the introduction of agriculture, about 1500 years ago. The PQAD area would have been an easily accessed resource zone for Late period populations practicing floodplain agriculture.

Data Requirements

The presence of organic materials suitable for radiocarbon dating (e.g., charcoal, wood, burned floral remains, faunal bone, marine shell, organic-rich soil), obsidian artifacts for hydration analysis, ceramics, rock rings, or fire-affected rock for thermoluminescence dating, and temporally diagnostic artifacts (e.g., projectile points, ceramics, shell beads) and would make important

contributions to this research issue. Additionally, systematic data should be gathered on the degree of patination on worked lithic surfaces.

Culture History

Culture history and the cultural affiliation of material remains is a significant research domain in all of the Americas, but in the Palo Verde Valley and Mesa area, it is particularly relevant due to the number of documented linguistic and ethnic groups that laid claim to, passed through, and otherwise used the area. The ethnographically documented culture groups most closely associated with the Palo Verde Mesa through historical use and oral history include the Yuman-speaking Mohave, Halchidhoma, and Quechan, and Numic-speaking Chemehuevi along the lower Colorado River, and the Takic-speaking Cahuilla in the deserts and mountains west of the project (Bean 1972; Bean and King 1974; Bean and Vane 1978; Fowler and Fowler 1971; Laird 1976; Rogers 1939, 1966; Schaefer 2003; Singer 1984). None of these groups are documented to have lived permanently in the PQAD vicinity on the Palo Verde Mesa, but they all used the many resources of the greater region and traveled along traditional trails that cross cut the mesa. They all had trading relationships with groups to the east and west, most notably the Cahuilla around historical Lake Cahuilla. The Cahuilla, as well, traversed the area visiting their river neighbors

The timing and nature of the arrival of these ethnic groups to the region is poorly understood. Estimates have varied widely as to the timing of the entry of Uto-Aztecan or Northern Uto-Aztecan speakers (ancestral to Takic, Numic, and Tübatulabal groups) into the deserts of southern California, as well as for the direction from which they came. A best guess would probably put the arrival of Uto-Aztecan speakers no earlier than the breakup of Northern Uto-Aztecan, or after perhaps 2500-1000 B.C. The division of Core Yuman into its three branches (River, Delta-California, and Pai) may have occurred sometime between ca. 1000 B.C. and A.D. 700, and the division of River Yuman into its constituent languages (including Mohave, Quechan, Maricopa, and, presumably, Halchidhoma) may have occurred around ca. A.D. 500-1000. Either of these linguistic events may correspond to the initial arrival of Yuman speakers to the lower Colorado River Valley and their use of areas to the west, including PQAD.

Disentangling ethnic and linguistic affiliations from artifactual and other archaeological remains is notoriously difficult (see recent work by Lightfoot [2005] and Silliman [2004]). Nevertheless, recent ceramic analyses suggest that there are notable distinctions between the pottery created in the vicinity of Lake Cahuilla, presumably by the Cahuilla, and that made along the Colorado River, presumably of Yuman manufacture (Schaefer 1994b). One possible set of archaeological signatures for ethnic changes in PQAD might be found in any changes in the prevailing technology or strategy of resource use. Such changes might reflect peculiarities carried from the newcomers' region of origin, and they might have constituted the competitive adaptive advantages that allowed the newcomers to expand their territory at the expense of the prior inhabitants. Other data classes that might shed light on this research domain include projectile points, ground stone implements, rock art, ornamental items, and subsistence and settlement patterns. The last data class would be particularly useful in distinguishing the Chemehuevi, who retained many of their more mobile hunter-gatherer ways, from the Yuman groups who had long led a more sedentary, horticultural life.

Research Questions

- What materials indicative of specific linguistic and/or ethnic groups are present?
- Do archaeological materials present within PQAD suggest that the chert quarries were exploited by one or more specific ethnic groups? Is there evidence of territorialism, or did the quarries constitute a common pool resource?
- Do ethnographic data or oral histories provide information about groups that used the site or the surrounding area?
- Is it possible to recognize archaeologically the initial appearance of Uto-Aztecan or Yuman speakers within PQAD? If so, are there any clues as to the direction from which they arrived and the identity of their predecessors?
- If present, can non-local lithics (e.g., obsidian) or non-lithic materials (e.g., marine shell, ceramics) be sourced? Does the source of any non-local materials change over time? Are there any associated stylistic changes?
- Do the stylistic attributes of features (e.g., geoglyphs, rock art) or artifacts (e.g., pottery, basketry, projectile points, ground stone implements, or ornamental items) offer any evidence of cultural affiliation? Is there variability among these attributes that may indicate use of the site by two or more culture groups, either concurrently or over time?
- If present, do burials or cremations offer any evidence of cultural affiliation?

Hypotheses

The PQAD is not expected to yield much data relevant to this research theme. Nonetheless the hypotheses suggested in the General Research Design (above) would be applicable:

- Hypothesis CH-1 – A significant degree of discontinuity in material culture and in biological descent (as measured primarily by mtDNA) occurred in the region around the beginning of the first millennium B.C., potentially reflecting the initial arrival of Uto-Aztecan speakers in the region. Remains subsequent to that discontinuity will share greater similarities with pre-discontinuity remains in the Mojave Desert, the southwestern Great Basin, and the southern Colorado Plateau than with remains in regions to the south of PQAD.
- Hypothesis CH-2 – A significant degree of discontinuity in material culture (in addition to the introductions of small projectile points, ceramics, and cremation) and in biological descent occurred in the area during the second half of the first millennium A.D., potentially reflecting the initial arrival of Yuman speakers in the region. This discontinuity will coincide chronologically with the appearance of agriculture in this portion of the lower Colorado River Valley.
- Hypothesis CH-3 – Cultural and human biological remains in the PQAD dating from the early portion of the Late Prehistoric period (possibly representing the initial Yuman inhabitants) show greater similarities with earlier remains that are found farther south in

the lower Colorado River Valley and in northern Baja California than with earlier remains in areas to the west, north, or east of PQAD.

- Hypothesis CH-4 – Remains attributable specifically to the Mohave, the "Panya" (the Halchidhoma, Maricopa, and/or Bahacecha), and the Quechan, based primarily on differences in ceramic types and traits but potentially also shell beads, rock art, mtDNA, and other characteristics, are present in PQAD and date exclusively from the second millennium A.D.
- Hypothesis CH-5 – Remains attributable to Takic (Cahuilla and/or Serrano) groups, based on similarities to assemblages in areas farther west, appeared in the area during the first half of the second millennium A.D.
- Hypothesis CH-6 – Remains attributable to Numic (Chemehuevi) groups, based primarily on similarities to assemblages found farther north and northeast but also on materials imported from the north, did not appear in the area until after ca. A.D. 1600.
- Hypothesis CH-7 – Lithic arrow points, particularly Desert Side-notched points, are from sources that would have been accessible to Numic groups. This hypothesis is based on the rarity of stone arrow points at Patayan sites, and the ethnographic observation that river groups typically did not use stone-tipped arrows.

Data Requirements

Addressing this research domain requires archaeological materials that exhibit stylistic attributes (i.e., decoration, distinctive manufacturing styles or shapes) that allow them to be assigned to specific linguistic or ethnic groups. These materials might include pottery, basketry, projectile points, ground stone implements, rock art, or ornamental items. The presence of non-local cultural material, such as obsidian, marine shell (shell beads and ornaments), or exotic ceramics, may indicate use of the area by groups with core territories that are located elsewhere. These kinds of materials should be recovered for laboratory analyses (e.g., x-ray fluorescence sourcing of obsidian or neutron activation analysis for ceramics). If present, human remains (as either burials or cremations) and associated grave goods are particularly effective indicators of cultural affiliation.

Ritual Activity

Much of the recent research in the Colorado Desert has focused on sites and trails associated with what might generally be termed ritual activities (Altschul and Ezzo 1994; Ezzo and Altschul 1993). The region contains a remarkable number of geoglyphs, petroglyphs, cairns, and shrine sites, as well as a trail system along which these features tend to cluster (Altschul and Ezzo 1994; Cachora 1994; Johnson 1985; McGuire and Schiffer 1982; Pendleton et al. 1986; Pigniolo et al. 1997; Reed 1981a; Rogers 1939; Schaefer 1994a, 1994b; von Werlhof 1987). Desolate stretches of desert pavement like that of the project may seem uninhabited and insignificant, but as corridors of physical and spiritual travel, they remain important to modern-day Native American groups.

Unsurveyed portions of the PQAD, including unsurveyed areas in quarry site CA-RIV-3419, have the potential to contain trails and other evidence of ritual activity. In the project vicinity, north-south running trails have been associated with a specific mourning ritual, or keruk, following the path of the first mourning ritual that involved a pilgrimage between two powerful peaks: Akikwalal at Pilot Knob near Yuma, and Avikwami in the Newberry Mountains near Needles (Ezzo and Altschul 1993). Any archaeological research program in the lower Colorado River region that encounters trails or other ritual-related features and sites has the potential to contribute to our understanding of this research domain. Additionally, it is important to note, as described in the General Research Design (above), that modern Colorado River tribes ascribe traditional cultural significance to lithic scatters that may be associated with ritual activities; indeed, some lithic debitage may result from the breaking of certain types of stone, particularly white quartz, in a ritual context or from ritual offerings.

Research Questions

- What features or artifacts indicative of ritual activity are present?
- Do ethnographic data or oral histories provide information about ritual activity within PQAD or the surrounding area?
- Can key landscape features be associated with specific ethnographically documented culture groups or rituals?
- Is there stylistic variability among ritual features (e.g., cairns, geoglyphs, or rock art) or portable objects (e.g., pendants or incised stones) that may indicate shared use of the site by two or more culture groups, or changes in the nature of ritual activity over time?
- When were ritual features utilized? Is there evidence of extended ritual use over time?
- Is there any indication of ritual associations with flaked stone scatters?

Hypotheses

Altschul and Ezzo (1994) describe archaeological evidence for major and minor centers of ritual activity in the Colorado Desert. These centers are often associated with trail networks. Hypotheses under the Ritual Activity Research Domain are derived in part from their observations, plus more recent Native American consultation programs.

- Hypothesis RA-1 – Evidence of a major ceremonial center as described by Altschul and Ezzo (1994) will be absent from the PQAD. Major ceremonial centers tend to occur in associated with key events in Yuman cultural narratives and are marked archaeologically by the presence of major concentrations of ground figures, rock art panels, cleared circles, and/or constructed rock features. There is no evidence to suggest that such a center is located at the project site.
- Hypothesis RA-2 – Evidence of small scale ritual activity will be found in the PQAD. Native American oral history suggests that ritual activities were widespread throughout the California deserts and were associated with a variety of human activities, including

lithic reduction. It should be noted that distinguishing ritual activities in the context of abundant lithic procurement activities will be difficult archaeologically.

Data Requirements

The presence of archaeological features such as trails, cairns, rock alignments, cleared circles or rock art are usually associated with this research issue. Additionally, flaked quartz scatters may be associated with ritual activities, depending on the context. Certain portable artifacts such as pendants, incised stones, crystals and pigments may also be indicators of ritual activity. Ethnographic data play a vital part in the analysis and interpretation of ritual sites. Ethnographic research and Native American consultation can be particularly important in determining whether site types associated with multiple research domains (e.g. trails, cairns, cleared circles, and rock rings) served ritual as well as secular functions.

Lithic Technology

Mobile hunter-gatherers and part-time agriculturalists organized the procurement, manufacture, and discard of flaked stone tools with regard to a number of factors: the relative availability and quality of toolstone within a territorial range; the intended tool functions; the extent and character of trade networks; the frequency and nature of residential moves; the organization of work groups; and the nature of labor division based on age, gender, and status (e.g., Bamforth 1990; Beck et al. 2002; Eerkens et al. 2007; Kelly 1988). Therefore, the material remains of lithic tool production, use, refurbishment, and disposal aids in the understanding of more general questions regarding group territoriality, mobility, settlement patterns, social organization, trade and exchange.

Binford (1979) has described how lithic procurement could be “embedded” within the organization of basic subsistence strategies, being scheduled and accomplished at little cost while people were in the process of securing food resources. Embedded procurement can be contrasted to a “direct” strategy in which people made planned, specific trips to lithic source locations for the sole purpose of obtaining stone. The use of an embedded procurement strategy implies greater residential mobility and a lithic technology designed for portability and either flexibility or versatility (Kelly 1988), while direct procurement infers an importance of logistic mobility and a more diverse technology designed for reliability (Kelly 1983). Therefore, changes in toolstone procurement behavior may reflect a variety of social changes, including an intensified use of a more restricted territory, a reorganization of seasonal subsistence-related mobility, a change in social relationships between groups, or changes in the subsistence base, such as the inclusion of horticulture.

Lithic raw material procurement sites can take the form of quarries where rock was dug and chiseled out of the ground, and free deposits of rock, typically transported and aggregated through water or glacial action. In the PQAD, quarry site CA-RIV-3419 represents the long pebble terraces associated with the Pleistocene course of the Colorado River; these terraces were frequented by prehistoric groups who used the river cobbles to create flaked stone tools of various types. Much of the initial work of removing the weathered outer cortex of the cobbles was completed where the

cobbles were found on the pebble terraces. Thus, the pebble terraces contain clear evidence of their use for lithic raw material procurement and tool production.

The PQAD sites also have the potential to contain ground stone artifacts. Unlike most flaked stone tools which are relatively light-weight and easily transported, ground stone tools are heavy. Mobile groups rarely carry ground stone tools with them as they move from camp to camp, preferring to leave the tools behind at habitation locales where they intend to return. Thus, ground stone tools are often excellent indicators of relatively intensive or long-term habitation.

Research Questions

- To what degree were raw lithic materials being reduced within PQAD? Were lithic activities limited to initial cobble testing and reduction, or were production stages, such as core preparation, preform manufacture, or tool manufacture, also being performed?
- Are different core reduction technologies apparent in the lithic assemblages examined? How are these related to the size and shape of the source materials chosen for reduction?
- Is there any evidence that scatters of flaked stone are the result of ritual activities?
- Is there evidence of a functional relationship between the quarry sites and the thermal cobble features that constitute PQAD? Do the thermal cobble features show evidence that they were chert heat-treatment hearths? Do the cobble features represent the remains of “support camps” for groups who were exploiting the quarries?
- What types of flaked stone tools are present? Are the tools expedient types, suggesting that they were manufactured, used and discarded on site, or were they curated types that were intended for later use elsewhere?
- Are ground stone implements present that may indicate repeated or relatively intensive habitation? Do the type and size of these implements provide evidence of the plants that were being processed or the seasons in which PQAD and the site were occupied?

Hypotheses

The General Research Design (above) noted that the lithic procurement sites in the project area are close to major habitation locations along the Colorado River corridor. Moreover, the clasts available within the desert pavements tend to be rather small. These observations lead to the following hypotheses:

- Hypothesis LT-1 – Site CA-RIV-3419 reflects only casual use of the available tool stone, such as might have occurred as an embedded element during travels motivated by other concerns.
- Hypothesis LT-2 – Due to the variety of lithic materials present in the desert pavements a high degree of “test blocking” is expected, that is the removal of one or two flakes to test material quality.

- Hypothesis LT-3 - Expedient core reduction will predominate; biface reduction will be very limited. With habitation sites located so close to these sources, there would be no need to invest time and energy in relatively complicated biface reduction.
- Hypothesis LT-4 – Very intensive exploitation strategies, such as bipolar flaking of small pebbles, were not extensively used, because of the availability of alternative materials suitable for less intensive exploitation.
- Hypothesis LT-5 – The Topaz Mountain reduction technique (Flenniken and Spencer 2001) will be present. This technique of bipolar reduction is useful where clast size is limited.
- Hypothesis LT-6 – Ground stone procurement sites will be absent due to the absence of suitable raw material.
- Hypothesis LT-7 – Early-stage core reduction debitage will be associated with thermal cobble features. Thermal cobble feature sites represent short-term camps for groups who were exploiting the lithic procurement sites.
- Hypothesis LT-8 – Heat-altered chert shatter will be present in thermal cobble features, indicating that these features functioned as chert heat-treatment hearths.

Data Requirements

This research domain can be addressed primarily through the analysis of lithic materials present at the quarry sites, although any assemblage of lithic material, from single-use flaking stations to large scatters formed by numerous flaking episodes, has the potential to provide relevant data. Ground stone tools or fragments that provide data related to plant processing, mobility and site seasonality may be present at any of the potential PQAD contributors.

Travel and Trade

Travel and trade have been documented throughout California during the prehistoric and ethnohistoric periods, including between the coast and the desert region. Travel was conducted for warfare, sociality, and even out of sheer curiosity (Kelly and Fowler 1986; Pendleton et al. 1986), and travel for the purpose of trade was likely an important adaptive strategy that allowed acquisition of raw materials and goods not otherwise available in their home territory. During the Late Prehistoric and Protohistoric period, long-distance travel became increasingly important in the lifeways of lower Colorado River groups. Increased travel and interaction can be seen archaeologically in the form of a greater quantity and variety of exotic items including marine shell from the Pacific Coast and the Gulf of California, obsidian and other non-local toolstones, unusual pottery types, and the adoption of foreign artifact types and technologies. Trade of plant and animal materials during prehistory may have mitigated food shortages, and although ethnographic information documents trade in a wide variety of foods, most evidence is not readily preserved in the archaeological record (with the exception of materials like shell and stone food-processing implements). Additionally, traditional River Yuman culture, as reflected in ethnographically recorded oral narratives, seems to have attached a high value on personal travel and geographical knowledge as ends in themselves. The lower Colorado River area was also the focus of a system of exceptionally intensive and extensive intercommunity or interethnic warfare

and military alliances; desert trails may have served both as avenues for raids against enemies and as routes to bypass the territories or settlements of potentially hostile groups.

Throughout the Protohistoric and historical periods, the Palo Verde Mesa was part of a long-distance transportation corridor from the Colorado River to the Pacific Coast (Bean and Vane 1978, Davis 1961, King 1981, Sample 1950, Singer 1984), and acted as "basically a through-way," rather than as a habitation zone (von Werlhof 2004). A segment of the well-documented Coco-Maricopa Trail (CA-RIV-53T) runs east-west just south of the project plant site, and parallel to the modern I-10 highway. Several other prehistoric trails have been recorded in the area running both north-south, paralleling the river, and east-west, between the Colorado River, the McCoy Mountains and beyond (McCarthy 1982, 1993). As mentioned above, these prehistoric trails are sometimes associated with ritual landscape features like geoglyphs, petroglyphs, and cairns, but not all travel along them was necessarily, or exclusively, ritual in character.

Research Questions

- What materials indicative of trade/exchange are present?
- If present, can non-local lithics be sourced (e.g., obsidian)?
- If present, what is the point of origin of non-local non-lithic materials (e.g., marine shell, ceramics)?
- Does the source of any non-local materials change over time? Are there any associated stylistic changes?
- Do the materials present at the site add to our understanding of the nature of resource procurement and distribution networks operating in the overall economic system of the region during the Prehistoric Period?
- To what extent was east-west travel motivated by interregional travel rather than the acquisition of local resources within PQAD?
- To what extent were prehistoric trails used for purposes of social interaction, ceremonial activities, or warfare, rather than for economic exchange between communities? Such non-utilitarian uses of trails are reported in the ethnographic and ethnohistoric records– did these uses occur in prehistory, or were they strictly very late phenomena?

Hypotheses

Research hypotheses for the PQAD with regard to Trade and Travel follow those of the General Research Design (above), and recognize that the presence of a major east-west trail just south of the project area is a key factor to consider. Additionally, north-south oriented trade and travel corridors in the project vicinity would be expected lie closer to the Colorado River.

- Hypothesis TT-1 – The PQAD area is far enough removed from the known east-west trail that exotic goods and other evidence of trade will be rare or absent.

- Hypothesis TT-2 – To the degree that exotic goods or other evidence of trade is present in the PQAD area, goods derived from the east-west trade axis will predominate. Test implications of this hypothesis would suggest, for example, that Pacific coast shells may be present, but Gulf of California shells absent. Additionally, any exotic toolstones found will be from distant sources east and west but not north and south. For example, central Nevada obsidian, present in in the northeastern Mojave, will be absent from PQAD as will material from Obsidian Butte, located south of the project area. Coso obsidian, sourced to the northwest, may be present (but in very limited quantities) in view of the fact that this type of material may have entered east-west exchange relationships along the Mojave River, and possibly further south.
- Hypothesis TT-3 –Multiple, parallel or converging trail routes through the east-west corridor were the rule rather than the exception, to the extent that the routes were not closely constrained by passes or fixed natural destinations, such as springs.
- Hypothesis TT-4 – Camps identifiable as travel camps rather than habitation bases or extractive camps occur in association with major east-west routes but not with secondary east-west routes or with north-south routes within PQAD.
- Hypothesis TT-5 – Trails, including dead-end routes, are conspicuously associated with non-utilitarian features, such as petroglyphs, pictographs, geoglyphs, and cairns.
- Hypothesis TT-6 – There is archaeological evidence for prehistoric visits to major landscape vantage points, such as accessible crests of hills or mountains, lacking any evident utility for resource procurement.

Data Requirements

The presence of non-local cultural material, such as obsidian, marine shell (shell beads and ornaments), and ceramics, would be required to address this research domain. Recovery of material for laboratory analyses (e.g., x-ray fluorescence sourcing of obsidian or neutron activation analysis for ceramics) would be beneficial, preferably from stratigraphically intact and temporally controlled contexts. The presence of curated lithic artifacts such as bifacial cores or tool preforms suggests that local toolstone sources played a part in the regional economic system, and may indicate that these artifacts were being manufactured as trade items.

Subsistence and Settlement

The content of an archaeological site provides information regarding its cultural affiliations, temporal periods of use, functionality, and other aspects of its occupation history. Generally, the range and variability of artifacts present in a site may permit reconstruction of various aspects of prehistoric culture, including, among other topics, ethnic affiliation, diet, and social structure. Site function (e.g., habitation, temporary camp, task-specific procurement or processing site, etc.) is integral to evaluating the role of the site within a broader regional landscape pattern.

Beyond the depositional and cultural historical considerations, the recordation and excavation of sites potentially provides valuable information regarding prehistoric behaviors. Here, the focus is

on elucidating aspects of the subsistence economy and settlement strategies on a seasonal basis. Such analyses provide a context to better understand the diet of the prehistoric inhabitants at a site, as well how they positioned themselves in relation to the biotic resource structure (plants, animals) on a seasonal basis. Understanding the season during which, for example, plant resources were ripe and available for processing can shed valuable information on settlement strategies. Such analyses provide clues to which resources were available and when the project area likely had the most food resources seasonally available, and can provide an estimate as to where sites might fall in the overall settlement pattern or seasonal round.

The sites within PQAD likely represent only a portion of a much larger settlement system. Understanding settlement patterns would require chronological control to ascertain which sites were occupied during the same periods. In addition to preservation of faunal and botanical material (e.g., pollen, macrobotanical remains) that would help identify the local resource base, specialized studies of certain tool types provide important information useful for expanding on the subsistence strategies used at a site. Ground stone, for example, can be analyzed for the presence and variety of starches, phytoliths, pollen, and protein residues. These analyses potentially indicate whether ground stone tools (e.g., manos, metates, mortars) were used to process plants (seeds, roots, tubers) or animals, and provide insights about the past climate. Protein residue analysis conducted on chipped stone tools provides insights into the types of animals (usually identified to the family level, sometimes to the species level) a tool was used to process.

PQAD is located in an area that has been categorized as a resource procurement area for highly mobile desert groups and the more sedentary Colorado River populations. According to current knowledge, the area was used most intensively in the Late Prehistoric and Protohistoric periods (Singer 1984). Nevertheless, archaeological research in the Colorado Desert has only begun to address the use of low-yield desert pavement regions with few resources, minimal evidence of human habitation, and no nearby water (e.g. Singer 1984; Flenniken and Spencer 2001). Within PQD and the surrounding area, remnant river terraces provided ready raw materials for stone-tool manufacture, and supported the growth of traditional plant foods, such as mesquite and saltbush, along their western flanks. While the area was clearly important in prehistory as a resource-procurement area, it was also a transportation corridor and, on occasion, a temporary habitation locale (Schaefer 1994b).

Evidence of prehistoric agriculture being practiced within PQAD is unlikely to be found, but some sites may have been occupied by agriculturalists seasonally during the flooding of the lower Colorado River floodplain. Agricultural products may also have been carried into PQAD by west-bound travelers. If agricultural remains or residues (e.g., carbonized maize) can be identified and dated at local sites, they may be able to shed light on how far back in time agriculture in general, and specific agricultural crops in particular, were in use in the region.

Research Questions

- What are the functions of the sites that are potential PQAD contributors? How are these functions evidenced by the artifact and features at the sites (e.g., chipped stone, ground

stone, bone tools, flaked stone tools with use wear, shell, unmodified faunal bone, or features, such as hearths, storage pits, or burials)?

- What was the subsistence economy at PQAD and its contributing sites, and did it change through time? Did it correlate with a specific season or seasons? Did the patterns of resource exploitation undergo significant changes during the prehistoric period, perhaps becoming more or less intensive or extensive in response to demographic changes, to shifts in the technologies available for their exploitation, or to the scheduling demands of agriculture?
- Is there evidence to suggest that quarry exploitation was embedded in a larger procurement strategy?
- What types of chipped stone artifacts are present at the potential PQAD contributors, and what cultural activities do these artifact types represent? Are these types indicative of lithic tool manufacture, retouching, and/or use?
- If utilized flakes or utilized tools are present, what resources were processed with them?
- Does the site reveal evidence of intra-regional interaction and/or mobility? Are artifacts of non-local material or type present at PQAD? If so, can the source of these materials be ascertained? What types of tools are made from exotic materials?

Hypotheses

As noted above, the PQAD would have functioned within the context of larger, time-sequential settlement systems that incorporate large arid areas to the west of the subsistence-resource-rich Colorado River corridor.

- Hypothesis SS-1 – Major long-term habitation sites would be located closer to the resource-rich Colorado River corridor; hence such sites would be absent or very rare in the PQAD area.
- Hypothesis SS-2 – Resource exploitation in the project area would focus primarily on resources not available in the river corridor, and thus would be focused primarily on the acquisition of lithic materials. Evidence of subsistence resource procurement should be very limited. Ground stone tools will be very rare or absent.
- Hypothesis SS-3 – A demographic increase in the Colorado River Valley associated with the adoption of agriculture is also reflected in intensified use of portions of PQAD for the procurement of other resources and for seasonal habitation.
- Hypothesis SS-4 – Lithic resources in the PQAD could be easily exploited from habitation sites located closer to the river corridor; hence, evidence of logistical base camps and caching should be absent or very rare in the PQAD. Domestic habitation debris would be expected to be absent or very ephemeral at most.
- Hypothesis SS-5 – Toolstone acquisition embedded in the hunting practices of highly mobile interior groups may have occurred, but this activity-set may leave a very limited

archaeological signature and may in fact not be identifiable archaeologically. Hunting blinds are not expected; discarded hunting gear will be rare or absent. However, worn-out tools discarded by highly mobile hunting groups may be expected to reflect distant sources within the territorial range of that group.

Data Requirements

The identification of features such as a midden, hearths or FAR clusters, storage pits, house floors, burials or cremations, the remains of structures, temporally diagnostic artifacts, non-local artifacts (obsidian, marine shell beads), faunal and fish bone, worked bone tools, or landscape-site associations would make important contributions to this dual research issue regarding site function and settlement pattern. Recovery of material from stratigraphically intact and temporally controlled contexts for laboratory analyses, such as artifact use-wear analysis, identification of macrobotanicals and pollen, or protein and blood residue analysis of stone tools or milling stones, would be required to address this research issue. Functional differences in recovered ground and chipped stone tools may provide additional evidence of diet since ground stone tools were generally used for grinding seeds and acorns and processing small mammals, whereas chipped stone tools (scrapers, choppers, projectile points, etc.) were used for plant and faunal procurement and processing.

7.1.3.2 CRHR-eligibility assessment criteria

The overall goal of the evaluation program will be to assess each of the potential PQAD contributors listed in **CUL-6** in terms of the full range of values that could make it eligible for the CRHR, and to assess the CRHR eligibility of the PQAD district by investigating and establishing the relationships among all potential PQAD contributors. It should be noted that contributors to an eligible PQAD district need not be individually CRHR-eligible. Generally, cultural resources are assessed for historical significance on the basis of their historical associations (e.g., CRHR Criteria 1 and 2), aesthetic or architectural values (e.g., CRHR Criterion 3) or informational values (e.g., CRHR Criterion 4). The assessment of the historical significance of the district as a whole and the assessments of the individual district potential contributors under Criteria 1 through 3 will be addressed through Native American consultation. The CPM, CRS and PPA have and shall continue to seek the input of affiliated Native American tribal entities during the field implementation of the PQAD Evaluation and Data Recovery Plan, and during the subsequent development of the assessments of historical significance for the district and its potential contributors under Criteria 1 through 3. Assessments of historical significance under Criterion 4 will evidence consideration of the information potential of each site in terms of the regional research issues, identified above, issues germane to potential contributors to the PQAD, as well as consideration of Native American perspectives on the interpretation of such potential contributors.

As is the case with most prehistoric archaeological sites that lack rock art or other landscape modification (and therefore may be eligible under Criterion 3), the eligibility of PQAD and its contributing members is most likely to be assessed in the context of Criterion 4, which is met if the district or site is considered likely to yield information important in prehistory or history. This

criterion is most clearly satisfied when evaluation efforts determine that the site or district has the potential to address research questions that are relevant on at least a regional level. The following research questions are associated with the six research domains described above and are aimed at establishing links between the PQAD contributors and the surrounding region. These are provided as examples of questions which, if answered by data collected during evaluation, may be sufficient by themselves or in combination with one another to meet Criterion 4.

Chronology: Do the chronological data contribute to our understanding of the relationships between different periods or phases within established cultural sequences, or between archaeological sites or districts in this region? The presence of archaeological materials that will give absolute dates (e.g., organic materials for radiocarbon dating) are generally required if eligibility criteria to be met by chronological data.

Cultural Affiliation: Do archaeological materials present within PQAD suggest that the chert quarries were exploited by one or more specific ethnic groups? Is there evidence of territorialism, or did the quarries constitute a common pool resource? Addressing this research domain requires archaeological materials that exhibit stylistic attributes (i.e., decoration, distinctive manufacturing styles or shapes) that allow them to be assigned to specific linguistic or ethnic groups. If present, human remains (as either burials or cremations) and associated grave goods are particularly effective indicators of cultural affiliation.

Ritual activity: What features or artifacts indicative of ritual activity are present? Can these ritual indicators be associated to other ritual sites in the area, by trails or other means? Answering these questions requires archaeological features or artifacts that are unequivocal indicators of ritual activity, and may also require ethnographic or oral history data.

Lithics: To what degree were raw lithic materials being reduced within PQAD? Were lithic activities limited to initial cobble testing and reduction, or were production stages, such as core preparation, preform manufacture, or tool manufacture, also being performed? The presence of artifact types such as bifacial cores or tool preforms may suggest trade.

Travel and Trade: Are materials present at the site that add to our understanding of the nature of resource procurement and distribution networks operating in the overall economic system of the region during the Prehistoric Period? Trade may be suggested presence of non-local materials such as obsidian or shell, or by bifacial cores or tool preforms.

Subsistence and Settlement: What was the subsistence economy at PQAD and its contributing sites, and did it change through time? Does the site reveal evidence of intra-regional interaction and/or mobility? Are artifacts of non-local material or type present at PQAD? If so, can the source of these materials be ascertained?

Eligibility Criteria for Thermal Cobble Features

In the context of PQAD and the project the presence of intact subsurface deposits within sites containing thermal cobble features constitutes sufficient data potential for that site to meet Criterion 4. Therefore, features with subsurface deposits will be considered register-eligible, and

data recovery will ensue. Thermal cobble features found to be limited to a surface expression would be register ineligible and the existing recordation, updated to reflect the test excavation, will be adequate data recovery.

Criteria for Districts

Contributing elements of a district must be linked historically by function, theme, or physical development, and must be capable of yielding important information relevant to the significance of the district. Therefore, a clear association must be shown between the two site classes (quarry sites and thermal cobble features) that make up PQAD's potential contributors. Establishing these links will require chronological data demonstrating that the two site classes were utilized at the same time, as well as evidence of a functional relationship between the quarry sites and the thermal cobble features. The CRS should investigate whether the thermal cobble features were chert heat-treatment hearths, and/or whether the cobble features represent the remains of "support camps" for groups who were exploiting the quarries.

If the PQAD is found to be ineligible as a CRHR district, the thermal cobble features' eligibility as a separate archaeological district consisting of a thermal cobble feature cluster will be considered.

7.1.3.3 Program for Evaluation, Data Recovery, and Possible Nomination

This section presents a program for evaluation, data recovery and CRHR nomination that is intended to explain how the data sets that are anticipated for the PQAD will contribute to knowledge of the prehistoric and historic-period Native American themes of the research design and answer particular research questions; to set out the purposes and methods of the several field phases of the PQAD evaluation, data recovery program, and concomitant material analyses; and to describe the required reports of investigations, the resource registrations (if appropriate), and the process of producing them.

7.1.3.4 PQAD Arbitrary Provisional Boundary Definition

Prior to the initiation of evaluation and data recovery efforts, the CRS, PPA, and CPM shall derive and agree upon, in consultation, the precise location of an arbitrary provisional PQAD boundary on the surface of the plant site and in the vicinity of the linear facilities corridor.

7.1.3.5 Evaluation and Data Recovery Methodology

Quarry

The quarry site protocol addresses the simultaneous recovery of data from the potentially impacted portions of quarry site CA-RIV-3419 and allows an assessment of the significance of the impacts of the project to the quarry site and an assessment of the validity of the PQAD concept. The CRS, PPA, and/or CRMs will record the quarry site using the methods described in **CUL-6**, part 4, including survey, mapping, and field-recording data and collecting obsidian artifacts for dating and source analysis. The protocol will facilitate the recognition of any differential distributions of artifacts on the surface of the quarry site and specify the recordation methods

which cultural resources personnel will use to document any such patterns. The protocol will also provide for the recordation of field observations that would help substantiate or refute different explanations for the origins and the taphonomy of the found distributions. The protocol will, in addition, facilitate the assessment of the integrity of the quarry site relative to the particular aspects of integrity that convey the values for which the site is thought to be historically significant, and will cite the field observations on which those assessments are based.

The quarry site protocol includes a survey of a one percent sample of randomly selected 10 x 10 m units on the unimpacted portion of the quarry site. The CRS will conduct this survey upon the approval of the BLM. Resultant survey data will be compared to those gathered in the project-impacted parts of the site to draw conclusions on whether the parts of the quarry site that would be destroyed by the project contribute significantly to the CRHR eligibility of the site. Further, the CRS and PPA will, if possible, draw conclusions from the collected data on whether the merging of the quarry and the thermal cobble feature site CA-RIV-9812 in a district is valid based on historical relationships evidenced between the individually recorded resources, including characteristics that give coherence to the potential district, assessments of intrusions or disturbances, and coherence of the potential district's historic context, as defined by clearly identifiable theme, period of significance and geographic scope (OHP 1995:15-16).

Thermal Cobble Features

The archaeological team members will follow the protocol for data recovery and evaluation of the thermal cobble features detailed in **CUL-6**, part 4, including Phase I identification of possible additional subsurface contributors and compressed Phase II-Phase III evaluation and data recovery from a sample of intact sites or from all of the surface sites, whether intact or not.

Phase I is geophysical and/or mechanical testing to determine the horizontal and vertical extent of the distribution of the thermal cobble features, to identify any buried intact examples within the area subject to project impacts, and to determine if morphological differences are present among the features. Phase II-Phase III (evaluation and data recovery) would be conducted under the assumption that features consisting only of surface assemblages would be CRHR ineligible. In these cases the existing recordation, updated to reflect the test excavation, would constitute adequate data recovery. Features with subsurface deposits are assumed to be CRHR eligible, and would undergo data recovery.

Geophysical Test and Survey for Subsurface PQAD Contributing Thermal Cobble Features

Geophysical testing and survey will follow protocols described in **CUL-6**, part 4. Cultural resources personnel will first test the efficacy of magnetometry to locate buried thermal cobble features. This test survey will be conducted on a 1-acre parcel located within 30 meters of known thermal cobble features, and will include ground-truthing of a minimum 25 percent sample (but no more than five individual anomalies) of the anomalies identified in the test survey. Note that a negative result in this test survey would not necessarily indicate that magnetometry is ineffective, as the selected survey area may simply lack buried thermal cobble features.

If the CRS and CPM agree that magnetometry appears to be reasonably effective, the PPA will proceed with a broader magnetometry survey of the area within the PQAD provisional district boundary. The survey will address a single stratified random sample area representing a minimum of 10 percent (a maximum of 2 acres) of the total district area on the plant site. Cultural resources crews will ground truth by hand or mechanical excavation the lesser of 10 percent or 10 individual anomalies of those identified in the magnetometer test survey.

Mechanical Survey for Subsurface PQAD Contributing Thermal Cobble Features

If the CRS and CPM agree that magnetometry appears to be ineffective in locating buried thermal cobble features, the PPA will submit, for CPM review and approval, the CRS's and PPA's plan and methods for a mechanical subsurface survey of the PQAD. Surveys will be conducted on a sample area representing a minimum of 2.5 percent of the total PQAD area within the plant site, using construction equipment such as a road grader or a backhoe that can work in 5-cm lifts. The sampling and survey efforts will be conducted according to protocols provided in **CUL-6**, part 4.

Data Recovery from Thermal Cobble Features

Cultural resources personnel will recover data from a sample of the individual thermal cobble features located within the arbitrary provisional PQAD boundary and at the one non-PQAD thermal cobble feature (site CA-RIV-9979) using the procedures described in **CUL-6**, part 4. The purpose of Phase II-Phase III evaluation and data recovery is to describe the physical variability of the thermal cobble features, document the artifacts and ecofacts found in them, and to interpret the methods of construction and the potential uses of the features. A sample of 20 percent of thermal cobble features (not to exceed 10 features) will be excavated, drawn from all of the thermal cobble features found during pedestrian, geophysical and mechanical surveys, with preference given to data recovery from intact, buried examples. The cultural resources personnel will keep adequate records, including drawings, photographs, and field notes, and will retain samples of each excavated layer sufficient to submit for radiocarbon assays and other analyses. In addition, the PPA or CRS will complete and submit draft DPR 523C site forms for sites where data recovery is completed.

Data Recovery from Former Land Surfaces Surrounding Thermal Cobble Features

Cultural resources personnel will recover data from a sample of buried land surfaces adjacent to buried thermal cobble features that were identified during the geophysical or mechanical subsurface surveys. The development of a sampling strategy and subsequent data recovery will follow protocols described in **CUL-6**, Section 4. The purpose of this data recovery is to document the material culture assemblages and other evidence of behavior that may be found on such buried surfaces.

Cultural resource personnel will recover data from at least four large (3 x 3 m) block exposures using appropriate excavation methods and retain samples of each layer sufficient to submit for radiocarbon assays and other analyses. The CRS, PPA and/or CRMs will keep adequate records, including drawings, photographs, and field notes, sufficient to acquire the complete complement of

data necessary for the description of the distributions of artifacts and ecofacts across each surface, and the interpretation of the use of each surface, to the satisfaction of the CPM

7.1.3.6 Materials Analyses

The presence of large, expansive artifact scatters such as quarries, when combined with the strong possibility that subsurface materials will be found within thermal cobble features, suggests that a variety of perishable and non-perishable archaeological materials may be collected during testing and data recovery efforts. It is anticipated that artifact assemblages will include chipped stone, ground stone, ceramics, faunal remains, and floral remains. This section describes a number of analytical methods that may be applied to these artifact classes to produce data relevant to the PQAD research themes and questions.

Chipped Stone Analysis

Initial surveys have shown that quarry site CA-RIV-3419 appears to represent evidence of activities associated with raw tool stone procurement and early-stage lithic reduction. Evaluation and data recovery efforts, including surface and subsurface surveys of the portions of the quarry located outside the project area, may show that later-stage core and biface reduction, tool manufacture and heat treatment of chert were also being conducted on site. Analyses of chipped stone artifacts will focus on two basic goals: to determine the extent to which raw tool stone was processed on site; and to attempt to place projectile points and other chronologically diagnostic tools within the local culture historical framework.

Chipped stone analysis will examine the artifact type, material type and color, portion, and maximum measurements (length, width, thickness, and weight) for each artifact. The analysis will include classifying lithic artifacts into broad technological/morphological categories such as flakes, cores, tested nodules, bifaces, unifaces, and scrapers. Flakes will be tallied according to their size, material type, and the presence or absence of exterior cortex from the original nodule for purposes of discriminating between early and late stages of reduction. Modified lithic artifacts will be similarly tallied, and will be examined for evidence of use wear.

Metric data will be collected for the stylistic attributes (e.g., projectile point shoulder and base morphology) and size of projectile points and other chronologically diagnostic tools. These artifacts will be assigned to types whenever possible, and will be examined within the framework of the regional culture history in order to develop a chronology for PQAD.

Ground Stone Analysis

Ground stone analysis will examine each artifact’s material type, portion, shape, number of ground surfaces, and maximum measurements (length, width, thickness, and weight). In addition, evidence of degree of use wear, secondary use, and formal shaping will be recorded. Ground stone artifacts will be classified into the following kinds: manos, metates, mortars, pestles, and non-diagnostic ground stone artifacts such as fragments of implements.

Ceramic Analysis

Ceramic pot sherds will be measured for length, width, and thickness, and color. Surface indications of manufacturing technique (coil-scrape/paddle-anvil/hand modeled; wiping marks and direction; polished/smooth/rough/stucco surface finish; visible non-plastics, scum coat, etc.); decoration type (paint/incising), elements, and location on the vessel; use (scratches, chipped edges, deposits); and post-depositional factors (sand-abrasion or scouring; exfoliation; mineral deposits), will be noted for the exterior and the interior surface of each sherd.

Each sherd will be examined for possible refits (other specimens that could be conjoined) within a provenience and across each site. Refitting can assist in understanding site taphonomy. Desert ceramics often derive from surface scatters that are subject to trampling and wind abrasion, which results in small-sized sherds with altered surface textures and colors. Refitting small sherd fragments has the additional benefit of producing a larger sherd for the analysis, providing a better indication of vessel size and shape characteristics. Refitted sherds will be glued with water-soluble white glue so that the glue can be dissolved after analysis. The refits included one vessel rim fragment from each site.

Sherds will be examined microscopically to observe paste characteristics, gross clay and non-plastic percentages, the degree of mixing, grain shape and size, and mineral content. Sherds will be assigned ceramic types when possible. Rim sherd profiles will be drawn, and vessel diameters estimated from rim fragments that are sufficiently large to project curvature against a rim sherd gauge.

Faunal Analysis

Vertebrate faunal material will be sorted to the lowest possible taxonomic category based on morphologic attributes. Identified mammal specimens will be further sorted by size into categories like small-medium (rabbit-sized) or medium (fox-sized) mammal. Each specimen will be examined and identified to element, portion of element, side, and age (based on epiphysial fusion) when possible. Specimens will also be examined for evidence of cultural modifications such as fragmentation, burning, butchering, or artifact manufacturing.

The resulting data will be tabulated to determine the relative occurrence of each identified taxonomic category. Tabulations should include total number of specimens (NISP) and minimum number of individuals (MNI), and the total weight and percent weight for each taxonomic category.

Macrofloral Identification

Macrofloral analysis involves the extraction of carbonized plant remains from sediment using flotation and the visual identification of these remains. The sediment samples should be taken from thermal cobble features or units that have been excavated to a relatively substantial depth. Sediment samples should be floated to obtain light and heavy fractions prior analysis. These samples may be sent to a specialized lab for identification.

Obsidian Source Determination

X-Ray Fluorescence (XRF) analysis is a nondestructive technique that establishes the provenance (geologic source) of obsidian artifacts by identifying a sample's trace elements and matching their proportions to those of control samples from obsidian sources. These samples may be sent to a specialized lab for sourcing.

Protein Residue Analysis

Protein residue analysis is used to identify the presence of prehistoric proteins from both animals and plants, and is most often applied to lithic artifacts and ground stone. These samples may be sent to a specialized lab for analysis.

Fourier Transform Infrared Spectroscopy

Fourier Transform Infrared Spectroscopy (FTIR) analyzes the bonds between molecules, allowing the identification of food residues (lipids, fats, proteins, and carbohydrates) and other organics. Sediments, ceramics, fire-affected rock (FAR), and other porous items such as charcoal all may absorb residues that are identifiable. These samples may be sent to a specialized lab for analysis.

7.1.3.7 Material Dating Methods

One of the most important research objectives for this or any archaeological study is to establish dates for archaeological sites and assemblages – this allows the researcher to view the site within a larger, regional context and to investigate how occupation or use of the site may have changed over time. Radiocarbon dating, obsidian hydration analysis, and thermoluminescence dating are three dating techniques that may be appropriate for artifacts recovered from the PQAD area.

Radiocarbon Dating

Radiocarbon dating uses the known rate of decay of radioisotope carbon-14 (^{14}C) to determine the age of carbonaceous materials that represent the preserved remains of deceased organisms. The resulting date reflects the date of the organism's death and is expressed in radiocarbon years before present (RCYBP). This uncorrected date is calibrated to reflect calendar years using dendrochronology (tree ring date) and other data. The resulting date is presented in calendar years with a range of statistical error. Although radiocarbon dating is limited to organic materials such as charcoal and bone, it is a particularly relevant dating method for the PQAD area because there is a high likelihood that organic materials will be found in association with thermal cobble features in subsurface contexts.

The carbon samples should be collected during field excavations using a clean and dry pointed trowel, and placed into clean and dry aluminum foil, then placed into a zip-top bag labeled with the provenience. Sample selection should focus on sizeable charcoal samples from interpretable, subsurface contexts. When multiple samples are available, preference will be given to in situ samples, those associated with features, and those that would overlap with samples being submitted for other dating techniques or temporally diagnostic artifacts. Obtaining multiple,

overlapping, and interpretable dates should be a research priority. These samples may be sent to a specialized lab for dating.

Obsidian Hydration Analysis

Obsidian hydration analysis measures the accumulated moisture (the hydration rind) on the exterior of a volcanic glass artifact. This is accomplished by incising the artifact and measuring the hydration rind under magnification. Environmental moisture diffuses into a freshly broken obsidian surface at a regular rate; the thickness of the resulting hydration rind acts as an indicator of the time that has passed since an artifact was broken. Ideally, the last breakage represents the artifact's initial manufacture or a resharpening event; undetected post-depositional breakage will produce a date that is too recent. The rate of water absorption varies considerably between different geochemical source materials and in differing burial conditions (e.g., soil temperature and humidity), so both of these aspects must be known or assumed to derive a hydration date. Because of this, obsidian hydration analysis is generally performed in conjunction with XRF source determination. Obsidian hydration analysis can provide dates for a site when no organic or fire-affected materials are present, or when the archaeological context of those materials is unclear. These samples may be sent to a specialized lab for dating.

Thermoluminescence Dating

Thermoluminescence (TL) dating measures the accumulated radiation within a sample containing crystalline minerals since it was last heated to a high temperature, for example when a ceramic artifact is manufactured through firing or a piece of fire-affected rock (FAR) is heated in a hearth. The analysis is accomplished by reheating the sample and measuring the light that is emitted, which is proportional to the radiation that has accumulated within the sample since its last firing. Although it is less accurate than radiocarbon dating, TL will be a valuable tool for dating thermal cobble features if no organic materials are present.

Each artifact submitted for thermoluminescence dating should be placed into its own zip-top (4 mil) bag. A small amount of soil (approximately 50 g) should be taken from each excavation level that yielded an artifact for analysis; these "background sediments" act as control samples for the TL analysis. Sample selection should focus on ceramic samples from a variety of contexts and FAR samples from intact hearth features. When multiple samples are available, preference should be given to in situ samples, those associated with features, and those that would overlap with samples being submitted for other dating techniques or temporally diagnostic artifacts. Obtaining multiple, overlapping, and interpretable dates should be a research priority. These samples may be sent to a specialized lab for dating.

7.1.3.8 Report of Investigations

Following the completion of fieldwork and material analyses the CRS and the PPA shall prepare and submit for the review and approval of the CPM the PQAD Evaluation and Data Recovery Report. The CRS shall also transmit the initial draft of the report to affiliated Native American tribal entities for their review and comment. The CPM shall be available to consult with any of the

affiliated Native American tribal entities about the subject draft, upon any entity's request. The consultation period for this report shall end with the CRS's and PPA's joint issuance of the second draft report, and shall in no case exceed 30 days beyond the affiliated Native American tribal entities receipt of the initial draft. The CRS shall transmit final copies of the PQAD Evaluation and Data Recovery Report to the affiliated Native American tribal entities.

This technical report, the PQAD Evaluation and Data Recovery Report, will present the study's goals, project setting, methods, and results, and will provide CRHR eligibility recommendations for PQAD, for a separate thermal cobble feature archaeological district (if appropriate), and for each resource, as well as management recommendations for these resources.

The PQAD Evaluation and Data Recovery Report will be organized into the following sections:

- Section 1, Introduction, describes the goal of the study and the purpose of the PQAD Evaluation and Data Recovery Report. This section will also offer a Regulatory Framework that describes all applicable federal, state, and local regulations.
- Section 2, Environmental Setting, describes the study location and existing conditions and provides prehistoric, ethnographic, and historic contexts for the PQAD area and for the larger Palo Verde Mesa region. This section will offer a brief summary of the entire range of human history in the region, focusing on information that is relevant to the research domains, questions and hypotheses described above.
- Section 3, Methods, describes the schedule and methods associated with evaluation and data recovery, including additional surface survey, subsurface survey through magnetometer testing and mechanical excavation, sampling strategies, surface artifact collection, hand excavation, feature recording and analysis, laboratory material analyses, cataloging and curation.
- Section 4, Results, describes the findings of the evaluation and data recovery efforts, including technical descriptions of excavated archaeological features and buried land surfaces that present the highest resolution of technical data that can be derived from the data recovery field notes, plan and, as appropriate, profile drawings and photographs of excavated archaeological features and buried land surfaces, and technical descriptions and appropriate graphics of the stratigraphic contexts of excavated archaeological features and buried land surfaces. The section will also present results of laboratory artifact analyses, including dating and material source analyses.
- Section 5, Discussion and Recommendations, will provide CRHR eligibility recommendations for PQAD, for a separate thermal cobble feature archaeological district (if appropriate), and for each archaeological site, as well as management recommendations for these resources. This section will also address the findings of the study within the region's larger historic framework, and will provide recommendations for further research within the study area.
- Section 6, References, lists all the documentation used for the report, including journals, books, internet sources, and as-needed consultation with experts.

- All new and updated DPR 523 series forms
- Resumes of lead archaeologists
- Locations of archaeological sites and isolates, including 1:24,000 scale maps depicting the location of resources and district boundaries
- Catalog of collected artifacts

Three hard copies and three electronic copies on CD of the first draft of the PQAD Evaluation and Data Recovery Report shall be submitted to the CPM for review and comment, and one hard copy and one electronic copy shall be transmitted to each affiliated Native American tribal entity no later than 90 days after the completion of all construction-related ground disturbances. Within 30 days of receipt of any Energy Commission staff and Native American comments from the CPM, which shall in no case exceed 30 days beyond the affiliated Native American tribal entities receipt of the initial draft, the CRS and the PPA shall respond to said comments and shall resubmit to the CPM three hard copies and three electronic copies on CD of subsequent drafts and the final PQAD Evaluation and Data Recovery Report.

7.1.3.9 Provision of Results to the PTNCL Principal Investigator

The CRS will provide the data and results of the PQAD Evaluation and Data Recovery Plan to the PTNCL Principal Investigator (PI) for incorporation into the PTNCL NRHP nomination.

7.1.3.10 California Register of Historical Resources (CRHR) Nominations

Upon CPM approval of a joint CRS and PPA recommendation that the PQAD appears to be eligible for listing on the CRHR, the PPA will prepare a CRHR nomination for the PQAD, including both the contributors located within the boundaries of the project and such contributors, entire and partial, located beyond the boundaries of the project, as are known or posited. The nomination will incorporate the PPA's best estimate of a boundary for the district, a boundary that the PPA shall derive on the basis of the results of the PQAD evaluation and data recovery program and present in the PQAD Evaluation and Data Recovery Report. The CRS will submit the CRHR nomination to the Bureau of Land Management for submittal to the State Historic Resources Commission, or will submit the nomination directly on behalf of the BLM at BLM's request, for formal consideration of eligibility no later than 60 days after the receipt of comments by the CPM related to the draft evaluation and data recovery report. The CRS will track and facilitate the review of the nomination to acceptance or rejection.

7.1.3.11 Outreach Initiatives if PQAD Not Eligible

If PQAD is determined to be not eligible for the CRHR, the CRS and/or PPA will prepare a research paper and present it at a professional conference to inform the professional archaeological community about the PQAD and to interpret its implications for our understanding of the prehistory and early history of Native American life in the region. The paper will be completed no longer than 90 days after the end of all construction-related ground disturbance, and the CRS will provide the CPM with three copies of the final product of that effort.

Pursuant to CoC **CUL-6**, the CRS shall prepare and submit for approval of the CPM a public outreach product no longer than 90 days after the end of all construction-related ground disturbance. Upon the CPM's approval of the latter product, the CRS shall ensure, as appropriate, the product's installation, implementation, or display.

7.2 Individual Archaeological Site Treatment Plans

7.2.1 Treatment Plans for Data Recovery on Small Prehistoric Sites

Pursuant to CoC **CUL-7**, prior to the start of ground disturbance within 30 meters of the site boundaries of each of the resource type "small prehistoric sites," consisting of CA-RIV-9795, CA-RIV-9801 and CA-RIV-9623, the PPA and/or archaeological team members will implement the following data recovery plan, if allowed by the BLM. This site list may be revised only with the agreement of the CRS and the CPM.

Where appropriate, the archaeological team members will follow protocols detailed in the California Office of Historic Preservation (OHP) 1988 publication *California Archaeological Resource Identification and Data Acquisition Program: Sparse Lithic Scatter; A Program For The Identification And Management Of An Archaeological Resource Class* (CARIDAP). CARIDAP provides a method by which sparse lithic scatters can be adequately and systematically defined, recorded, and managed. The field methods detailed in the OHP publication include instructions regarding the criteria for classifying a site as a sparse lithic scatter and methods for minimum data recovery at sites that have been so classified. Sites that are eligible for CARIDAP protocols must contain only flaked-stone, lack a substantial subsurface deposit, cover an area smaller than 10,000 m^2, and contain no more than three flaked stone items per square meter. Data recovered from sparse lithic scatters using CARIDAP methods is sufficient to evaluate their NRHP and CRHR eligibility and to assure sufficient collection of data.

For sites where CARIDAP does not apply, the plan shall include, but is not limited to, the tasks described in detail in **CUL-7** and summarized below. The cultural resources personnel will use GPS location recordation equipment that has the latest technology with sub-meter accuracy to add to the original site maps the following features: seasonal drainages, site boundaries, location of each individual artifact, and the boundaries around individual artifact concentrations. The PTNCL geoarchaeologist or equivalent qualified person will identify the specific landform for each site. The archaeological team members will map and field-record all prehistoric artifacts present, and collect any obsidian artifacts, ceramic artifacts and botanical and faunal remains for laboratory analysis and curation; in addition, they will map any differential distribution of artifacts and suggest explanations for the distribution.

Following surface recordation, the archaeological team will surface scrape to a depth of 5 cm a 5 x 5-m area and excavate the appropriate number of 1 x 1 m units centered on the artifact concentration(s) (as specified in **CUL-7**). For each scrape/excavation unit, the cultural resources personnel will map and field-record all prehistoric artifacts, and retain the obsidian and ceramic artifacts and botanical and faunal remains for laboratory analysis and curation. The cultural resources personnel will assess the integrity of the site and provide the evidence substantiating

that assessment, notify the CPM by telephone or e-mail that subsurface deposits were or were not encountered, and make a recommendation on the site's CRHR eligibility. If no subsurface deposits were encountered and the CPM agrees the site is not eligible for the CRHR, data recovery is complete.

If subsurface deposits are encountered, the archaeological team members will test the horizontal limits of the site by excavating additional 1 x 1 m excavation units in 10-cm levels until the unit reaches a depth of 20 cm below any anthropogenic materials, using a shovel or hand auger, or other similar technique, at four spots equally spread around the exterior edge of each site, recording the locations of these units on the site map. They will sample the encountered features or deposits by excavating additional 1 x 1 m excavation units in anthropogenic layers (if present; if not, then in 10-cm levels) within the feature/deposit until the units reach a depth of 20 cm below any anthropogenic materials. The number and placement of these units will be designed to establish the vertical and horizontal extent of each feature/deposit and collect a 50 percent sample of the constituent materials. Ideally, this will be achieved by bisecting and fully excavating one half of each feature/deposit. The archaeological team members will record the feature/deposit locations on the site map. They will retain samples and all artifacts for professionally appropriate laboratory analyses (e.g., radiocarbon, macrobotanical, palynological, geochemical) and curation until data recovery is complete.

The PPA and the CRS shall provide the initial results of each **CUL-7** data recovery in one or several letter reports which shall serve as preliminary technical reports, and which the project owner shall submit to the CPM for review and approval within one week of the completion of data recovery work for each site. The CRS shall also transmit any future initial draft(s) of letter report(s) under **CUL-7** to affiliated Native American tribal entities for review and comment. The CPM shall determine the length of this consultation period which shall in no case exceed 15 days. The letter report shall be a concise document that provides 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, a map showing the location of excavation units including topographic contours and the site landforms, and a discussion of the CRHR eligibility of each site and the justification for that determination. When the CPM approves the letter report, ground disturbance may begin at this site location. The archaeological team will also update the existing Department of Parks and Recreation (DPR) 523 site form for these sites, including all new data, and the eligibility determination of each site. The PPA or CRS will present the final results of data recovery at these prehistoric sites in the CRR, as described in **CUL-18**.

7.2.2 Treatment Plans for Data Recovery on Historical Archaeological Sites

7.2.2.1 Historic-Period Sites with Features Data Recovery

The CRS, PHA and/or archaeological team members will execute the data recovery plan detailed in **CUL-8** for the resource type "historic-period archaeological sites with features" (sites CA-RIV-9540, CA-RIV-9668, CA-RIV-9672, and CA-RIV-9674), prior to the commencement of ground disturbance within 30 meters of the boundaries of any of these sites, if allowed by the BLM. This site

list may be revised only with the agreement of the CRS and the CPM. The plan includes, but is not limited to, the following actions, which will be supervised by the PHA.

Prior to beginning the field work, the PHA and the crew chief 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. In addition, field crew members will be trained in the consistent and accurate identification of the full range of late nineteenth and early-to-mid-20th century can, bottle, and ceramic diagnostic traits prior to beginning the field work.

The cultural resources personnel will use GPS location recordation equipment that has the latest technology with sub-meter accuracy to update the original site maps to include landform features, any human-made features, and the limits of any artifact concentrations and features. The archaeological team will conduct a systematic metal detector survey at each site, investigate each hit, and map, measure, photograph, and fully describe all artifacts and features thus found. The field crew will conduct a detailed in-field analysis of all artifacts including documenting types of seams and closures for each bottle and all cans and taking photographs of any text or designs. The PHA and/or other archaeologists may collect unusual or unidentifiable artifacts for further analysis. This analysis may include standard archaeological laboratory processing (i.e., cleaning, measuring, and cataloging) and archival research (using historic catalogs, archaeological literature, collectors' guidebooks, etc.) designed to identify and fully describe these artifacts. The cultural resources personnel will record all features and a qualified historical archaeologist will excavate features that have subsurface elements; all features and contents will be mapped, measured, photographed, and fully described in writing. Post-field analysis will include additional archival research into the history and significance of the artifacts and features that were encountered during the fieldwork.

The CRS or PHA will present the details of what is found at each site in a letter report which shall serve as a preliminary report, and which the project owner will submit to the CPM for review and approval within one week of completing data recovery at a site. The letter report shall 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 site landforms; letter reports may address one site, or multiple sites depending on the needs of the CRS. When the CPM approves the letter report, ground disturbance may begin at the site location(s) that are the subject of the letter report.

The PHA will analyze all recovered data and write or supervise the writing of a comprehensive final report. This report shall be included in the CRR, as described in **CUL-18**. Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**). The CRS shall ensure that the data collected from the field work shall be

provided to the DTCCL Historical Archaeologist to assist in the determination of which, if any, of the 12 historic-period sites with features are contributing elements to the DTCCL.

7.2.2.2 Historic-Period Sites with Structural Remains Data Recovery

In accordance with **CUL-9**, prior to the start of ground disturbance within 30 meters of the site boundaries of CA-RIV-9663, the PPA and/or archaeological team members will implement the following data recovery plan, if allowed by the BLM. This site list may be revised only with the agreement of the CRS and the CPM. The plan includes, but is not limited to, the tasks described in detail in **CUL-9** and summarized below.

A qualified historian will research the locations of the site and attempt to determine its origins and functions from the historical record, and the PHA will supervise the field work. Prior to beginning the field work, the PHA and crew chief 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. In addition, prior to beginning the field work, the field crew members are trained in the consistent and accurate identification of the full range of late nineteenth and early-to-mid-20th century can, bottle, and ceramic diagnostic traits.

The cultural resources personnel will use GPS location recordation equipment that has the latest technology with sub-meter accuracy to update the original site maps to include landform features, any human-made features, and the limits of any artifact concentrations and features. The archaeological team will conduct a systematic metal detector survey at each site, investigate each hit, and map, measure, photograph, and fully describe all artifacts and features thus found. The field crew will conduct a detailed in-field analysis of all artifacts including documenting types of seams and closures for each bottle and all cans and taking photographs of any text or designs. The PHA and/or other archaeologists may collect unusual or unidentifiable artifacts for further analysis. This analysis may include standard archaeological laboratory processing (i.e., cleaning, measuring, and cataloging) and archival research (using historic catalogs, archaeological literature, collectors' guidebooks, etc.) designed to identify and fully describe these artifacts. The cultural resources personnel will record all features and a qualified historical archaeologist will excavate features that have subsurface elements; all features and contents will be mapped, measured, photographed, and fully described in writing. Post-field analysis will include additional archival research into the history and significance of the artifacts and features that were encountered during the fieldwork.

The CRS or PHA will present the details of what is found at each site in a letter report which shall serve as a preliminary report, and which the project owner will submit to the CPM for review and approval within one week of completing data recovery at a site. The letter report shall 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 site landforms; letter reports may address one site, or multiple sites depending on the needs of the CRS. When the CPM approves the letter report, ground disturbance may begin at the site location(s) that are the subject of the letter report.

The PHA will analyze all recovered data and write or supervise the writing of a comprehensive final report. This report shall be included in the CRR, as described in **CUL-18**. Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**). The CRS shall ensure that the data collected from the field work shall be provided to the DTCCL Historical Archaeologist to assist in the determination of which, if any, of the three historic-period sites with structural remains are contributing elements to the DTCCL.

7.2.2.3 Historic-Period Dump Sites Data Recovery

Prior to the start of ground disturbance within 30 meters of any of the site boundaries of the resource type "historic-period dump sites," the CRS, PHA, and/or other cultural resources personnel will implement the data recovery plan described in **CUL-10**, if allowed by the BLM. This resource type includes sites CA-RIV-9565, CA-RIV-9570, CA-RIV-9662, CA-RIV-9662, CA-RIV-9679 on the proposed plant site and site CA-RIV-9768 along the linear facilities corridor if impacts to the latter cannot be avoided by spanning it. This site list may be revised only with the agreement of the CRS and the CPM. The plan includes, but is not limited to, the following actions, which will be supervised by the PHA.

Prior to beginning the field work, the PHA and the crew chief 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. In addition, field crew members will be trained in the consistent and accurate identification of the full range of late nineteenth and early-to-mid-20th century can, bottle, and ceramic diagnostic traits prior to beginning the field work.

The cultural resources personnel will use GPS location recordation equipment that has the latest technology with sub-meter accuracy to update the original site maps to include landform features, any man-made features, and the limits of any artifact concentrations and features. In addition, they will also ensure that each dump is entirely mapped, measured, photographed, and fully described in writing.

The field crew will apply a 1 x 1 m grid to each dump, randomly select 10 percent of the units, and then do a detailed in-field analysis of all artifacts in each selected unit. Such analysis will include documenting types of seams and closures for each bottle and all cans. Further, the archaeological team will take photographs of maker's marks on bottles, any text or designs on bottles and cans, and of decorative patterns and maker's marks on ceramics. The PHA and/or other archaeologists may collect unusual or unidentifiable artifacts for further analysis. This analysis may include

standard archaeological laboratory processing (i.e., cleaning, measuring, and cataloging) and archival research (using historic catalogs, archaeological literature, collectors' guidebooks, etc.) designed to identify and fully describe these artifacts. The cultural resources personnel will record all features and a qualified historical archaeologist will excavate features that have subsurface elements; all features and contents will be mapped, measured, photographed, and fully described in writing. Post-field analysis will include additional archival research into the history and significance of the artifacts and features that were encountered during the fieldwork.

The CRS or PHA will present the details of what is found at each site in a letter report which shall serve as a preliminary report, and which the project owner will submit to the CPM for review and approval within one week of completing data recovery at a site. The letter report shall 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 site landforms; letter reports may address one site, or multiple sites depending on the needs of the CRS. The letter report for each site shall present preliminary conclusions regarding the period(s) of use of the dump and suggest who the possible users were in each represented period. When the CPM approves the letter report, ground disturbance may begin at the site location(s) that are the subject of the letter report.

The PHA will analyze all recovered data and write or supervise the writing of a comprehensive final report. This report shall be included in the CRR, as described in **CUL-18**. Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**). The CRS shall ensure that the data collected from the field work shall be provided to the DTCCL Historical Archaeologist to assist in the determination of which, if any, of the five historic-period dump sites are contributing elements to the DTCCL.

7.2.2.4 Historic-Period Refuse Scatter Sites Data Recovery

Pursuant to **CUL-11**, prior to the start of ground disturbance within 30 meters of the site boundaries of each of the resource type "historic-period refuse sites," (CA-RIV-9558, CA-RIV-9560, CA-RIV-9656, CA-RIV-9657, and CA-RIV-9676), the CRS, PHA, and/or archaeological team members will implement the following data recovery plan, if allowed by the BLM; the purpose of this plan is to upgrade the recordation of these six sites in order to determine if they can be attributed to the DTC/C-AMA use of the region and are therefore contributors to the DTCCL. This site list may be revised only with the agreement of the CRS and the CPM. The plan includes, but is not limited to, the following actions, which will be supervised by the PHA.

Prior to beginning the field work, the PHA and the crew chief 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. In addition, field crew members will be trained in the consistent and accurate identification of the full range of late

nineteenth and early-to-mid-20th century can, bottle, and ceramic diagnostic traits prior to beginning the field work.

The cultural resources personnel will use GPS location recordation equipment that has the latest technology with sub-meter accuracy to update the original site maps to include landform features, any human-made features, and the limits of any artifact concentrations and features. The archaeological team will conduct a systematic metal detector survey at each site, investigate each hit, and map, measure, photograph, and fully describe all artifacts and features thus found. Further, the archaeological team will take photographs of maker's marks on bottles, any text or designs on bottles and cans, and of decorative patterns and maker's marks on ceramics. The PHA and/or other archaeologists may collect unusual or unidentifiable artifacts for further analysis. This analysis may include standard archaeological laboratory processing (i.e., cleaning, measuring, and cataloging) and archival research (using historic catalogs, archaeological literature, collectors' guidebooks, etc.) designed to identify and fully describe these artifacts. The cultural resources personnel will record all features and a qualified historical archaeologist will excavate features that have subsurface elements; all features and contents will be mapped, measured, photographed, and fully described in writing. Post-field analysis will include additional archival research into the history and significance of the artifacts and features that were encountered during the fieldwork.

The CRS or PHA will present the details of what is found at each site in a letter report which shall serve as a preliminary report, and which the project owner will submit to the CPM for review and approval within one week of completing data recovery at a site. The letter report shall 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 site landforms; letter reports may address one site, or multiple sites depending on the needs of the CRS. The letter report for each site will make a recommendation on whether each site is a contributor to the DTCCL. When the CPM approves the letter report, ground disturbance may begin at the site location(s) that are the subject of the letter report.

The PHA will analyze all recovered data and write or supervise the writing of a comprehensive final report. This report shall be included in the CRR, as described in **CUL-18**. Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**). The CRS shall ensure that the data collected from the field work shall be provided to the DTCCL Historical Archaeologist to assist in the determination of which, if any, of the six historic-period refuse scatter sites are contributing elements to the DTCCL.

7.3 Built-Environment Treatment Plans

7.3.1 Data Recovery on Historic Period Roads

There are two historic-period dirt roads located within the project area. Both roads were characterized as well-traveled early 20th century roads that run north-south through the project area. They both appear to be in their original locations, and are currently in use.

CA-RIV-9983 is described as unnamed two-track dirt road and narrow-gauge pipeline that runs from I-10 to Arlington Mine Road. It may have been constructed as an access road during WWI to the then-active Blackjack Mine, adjacent to the WWII-era Arlington Mine. In the mid-20th century, a pipeline was constructed along the edge of CA-RIV-9983 to service the growing gypsum-mining community of Midland.

CA-RIV-9981 is characterized as a two-track road dirt, currently named Mesa Drive, running north-south along a 1917 USGS survey section line from Blythe Army Air Base to an unnamed road south of the McCoy Wash. The road leads to a ranch site (CA-RIV-9663) and is presumably associated with ranching activities. General refuse deposits, often containing vehicle parts, are scattered along the sides of the road.

Historic research should be conducted to answer important questions about the two roads. Research should include information on each road's construction date, alterations (including realignments), previous uses, landowners and associations with important events. Specifically, archival research should be focused around local events and economic activities including ranching and mining, and use of the area for training maneuvers for the U.S. Army during World War II. Research should include but is not limited to a review of historic maps, aerial photographs, land surveyor plans and notes, mining records, oral histories, transportation logs and assessor parcel records. At a minimum, the following organizations and repositories should be contacted to determine if they can provide relevant documentation that will assist with this task:

1. BLM field office in Palm Springs
2. Palo Verde Historical Society
3. Palo Verde Irrigation District
4. General Patton Memorial Museum at Chiriaco Summit

Upon completion of the archival review, a report will be prepared and submitted to the DTCCL PI-Historian, for possible inclusion in a larger, regional historic context and significance evaluation. The report will summarize the results of the historic research and any conclusions made regarding the data. All work prepared under this task will be conducted by a qualified architectural historian who meets Secretary of the Interior's Professional Qualifications Standards as a historian. The report will be completed prior to the commencement of any ground disturbance within the vicinity of the roads.

7.3.2 Archival Research on Blythe Army Air Base Reservoir Pipelines

The initial background research for the project revealed the potential presence of underground water pipelines that once carried water to the Blythe Army Air Base from a connected reservoir, located in the foothills of the McCoy Mountains. Prior to the commencement of any ground disturbance within this area, a qualified architectural historian will conduct historic research to: (1) identify the location of the pipeline and; (2) determine if the underground water conveyance system is extant.

Archival research should be conducted to answer important questions about the existence and location of the pipelines. Specifically, research should locate all relevant documents that reveal the exact location, dimensions, alignment, depth and alterations (including demolition or removal) of the water pipelines. Research should include but is not limited to a review of historic maps, aerial photographs, land surveyor plans and notes, engineering plans, drawings, and associated documents. At a minimum, the following organizations and repositories should be contacted to determine if they can provide relevant documentation that will assist with this task:

1. Blythe Airport
2. Edwards Air Force Base (formerly Muroc Army Base, which controlled Blythe Air Base)
3. BLM field office in Palm Springs
4. Palo Verde Historical Society
5. Palo Verde Irrigation District
6. Water Resources Institute, California State University, San Bernardino
7. General Patton Memorial Museum at Chiriaco Summit

Upon completion of the archival research, a report will be prepared. The report will summarize the results of the historic research and any conclusions made regarding the data. Should the research confirm the existence of the pipelines, the architectural historian will also include a section in the report detailing how the pipelines will be avoided during the course of the project. The draft report will be submitted to the CPM for review and comment. The final report will be submitted to the DTCCL PI-Historian for possible inclusion in a larger, regional historic context and significance evaluation. All work prepared under this task will be conducted by a qualified architectural historian who meets Secretary of the Interior's Professional Qualifications Standards as a historian. The report will be completed prior to the commencement of any ground disturbance within the vicinity of the pipelines.

7.3.3 Archival Research on Radio Communications Facility

A qualified architectural historian will conduct archival research and evaluate the radio communications facility for listing in the California Register of Historical Resources. Built circa 1950, the radio communications facility is a one-story concrete block building with a square plan and a circular roof with instruments installed around the flat eaves. Distinguishing features on the building include its utilitarian shape and the radio instruments installed on it. Initial research

indicates that the transportation and communications corridor through the vicinity was significant in the development of the region, particularly in the field of aviation.

Archival research will be conducted to establish the history and significance of the radio communications facility. Research should include information on the facility's construction date, alterations, previous uses, ownership history and associations with important events. Research should include but is not limited to a review of historic maps, aerial photographs, building permits, news clippings, architectural plans and drawings, other literature, and previously prepared documents and reports. At a minimum, the following organizations and repositories should be contacted to determine if they can provide relevant documentation that will assist with this task:

1. Blythe Airport
2. Edwards Air Force Base (formerly Muroc Army Base, which controlled Blythe Air Base)
3. BLM field office in Palm Springs
4. Palo Verde Historical Society
5. General Patton Memorial Museum at Chiriaco Summit

The facility will be recorded and evaluated on California Department of Parks & Recreation (DPR) series 523 forms, including the following forms: Primary, Location map, BSO and Continuation Sheets, (as needed). The results of the archival research will be summarized in the BSO form, which will include the results of the building's significance evaluation. The DPR forms will be submitted to the CPM for review and comment. If the radio communications facility is found eligible for listing in the California Register, the architectural historian will also prepare a memo which summarizes how they propose to avoid or mitigate, to a less than significant level, the project's impacts to the integrity of the historical resource. The DPR forms will be included as an appendix to the document. Upon approval by the CPM, the documentation shall be submitted to the CRS for approval. All work prepared under this task will be conducted by a qualified architectural historian who meets Secretary of the Interior's Professional Qualifications Standards as a historian. The documentation will be completed prior to the commencement of any ground disturbance within the vicinity of the radio communications facility.

8.0 Construction Monitoring Plan

8.1 Construction Monitoring Plan

8.1.1 Construction Monitoring Oversight, Notification and Limits

Pursuant to **CUL-16**, the CRS, alternate CRS, and CRMs shall monitor, on a full-time basis, all ground disturbance within select project areas and project activities, subsequent to the CPM's issuance of any notice to proceed (NTP), limited or otherwise. Prior to the commencement of any ground disturbance under any NTP, limited or otherwise, that is expected to be issued by the CEC after finalization of this CRMMP, the project owner shall notify every affiliated Native American tribal entity of the anticipated start date for work, provide a list of the construction activities to be conducted under the NTP and provide each entity the CRS's and/or Alternate CRS's contact information should an entity have questions or concerns about the work to be authorized under the NTP. The project owner shall also notify every affiliated Native American tribal entity upon receipt of any NTP. The select areas and activities under the present license include, at a minimum, the following:

1. all areas associated with construction-related grading and other earthwork,
2. the trenches for underground communication lines and the natural gas pipeline,
3. the holes for the transmission line support structures,
4. the part(s) of site CA-RIV-3419 that the project will grade away, in the area inside the project's boundaries within 1,000 feet of the margins of archaeological site CA-RIV-3419 and within 300 feet of all known and discovered examples of thermal cobble features, and
5. the jack-and-bore tunneling for underground conductor or cable lines or pipelines. Horizontal directional drilling (HDD) may be utilized in lieu of the jack-and-bore method (see below).

Weekly, until ground disturbance is completed, the project construction manager shall provide to the CRS and CPM a schedule of project activities for the following week by letter, e-mail, or fax, including the identification of area(s) where ground disturbance will occur during that week. The project owner shall notify the CRS and the CPM in writing of any changes to the scheduling of the construction phases within five days of the schedule changes.

8.1.1.1 Jack-and-Bore Tunneling and Horizontal Directional Drilling (HDD) Monitoring, Screening, and Log Preparation

The archaeological monitoring of the jack-and-bore tunneling will include monitoring the excavation of the jack-and-bore entry and exit pits. It will also include examining, logging, and screening auger backdirt samples using the following protocol:

1. Each backdirt pile created by the tunneling process will be first inspected by a CRM for the presence of cultural material.

2. If no cultural material is observed, the CRM will fill three, 5-gallon buckets with soil from each backdirt pile, subsequently dry-screen this soil and collect any cultural materials that are present.
3. If a backdirt pile is created over the course of more than one work day, the CRM will fill and screen three, 5-gallon buckets each work day that fresh soil is added to this pile.
4. Dry screening will be performed on-site by the CRMs, using a portable 1/8-inch screen.

This sampling method and volume may revised by the CRS, in consultation with the CRS, based upon the results of the sampling process. If cultural materials are observed in any backdirt, the procedures related to the discovery of cultural resources, described below, will be followed.

For some applications, such as the installation of fiber optic communication line or gas pipeline, Horizontal Directional Drilling (HDD) may be used in lieu of the jack-and-bore tunneling method. When HDD is used, backdirt piles created by the drilling process should be inspected and tested through dry-screening according to the same methods described above for auger backdirt.

The monitoring of the jack-and-bore tunneling and HDD processes shall be documented using a paper log, which shall be maintained in the field by the CRM(s). This log shall be updated each day that jack-and-bore or HDD monitoring takes place, recording the number and location of each monitored tunnel or drill hole, the presence or absence of cultural resources, and a detailed description of the sedimentary units (including, among other characteristics, Munsell colors, sedimentary textures and structures, any inclusions, and evidence of soil development) that were present in the tunnel or drill hole backdirt. Particular attention should be paid to the presence of A horizon soils and playa lake clays, as these have the highest potential to include cultural resources.

8.1.2 Level of Construction Monitoring

The purpose of construction monitoring is to reduce damage to historical resources discovered during construction and to ensure that known resources are not impacted in a previously unanticipated manner. This monitoring is intended to identify, at the time of discovery, any archaeological materials exposed during ground disturbance, and to minimize further construction damage to such materials while the CRS makes and provides to the CPM, for review and approval, recommendations on the eligibility of found resources for listing on the CRHR.

For the purposes of this CRMMP, archaeological construction monitoring is defined as on-the-ground, close-up observation by a CRS, alternate CRS, PPA, PHA, or CRM meeting the qualifications prescribed in **CUL-3**, who shall watch for any kind of archaeological remains that might be exposed during ground-disturbing construction activities. These activities include, but are not limited to, mechanical boring, grubbing, scraping, grading, and excavating. The CRS, alternate CRS, PPA, PHA, or CRM attempts to identify and define any discovered archaeological materials, halts construction in the vicinity of a find to define and assess it, and keeps a daily log of construction activities observed and any archaeological remains found. The CRS, alternate CRS, PPA, 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 (see Discovery Protocol of subsection 9.1.2 below). The monitor checks that the flagging and fencing remain visible and effective barriers until all construction activity has been completed in the vicinity of the resource.

Full-time archaeological monitoring for this project shall be the archaeological monitoring of ground disturbance of native soils across the project area, with particular attention paid to each of the areas listed above, for as long as the activities are ongoing. Where excavation equipment is actively removing dirt and hauling the excavated material farther than fifty feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation and a second monitor shall inspect the dumped material. For excavation areas where the excavated material is dumped no farther than fifty feet from the location of active excavation, one monitor shall both observe the location of active excavation and inspect the dumped material. If more than one piece of construction equipment is in operation within an area of monitoring, multiple monitors may be required to observe the activity. In addition, the CRS or alternate CRS will be on-site as needed to assess resources discovered during construction or to oversee or conduct monitoring of ground disturbance if necessary.

Cultural resources monitors, taken broadly, will inspect, from a safe distance during excavation activities, mechanical trenching, backdirt piles, or associated ground disturbance for evidence of prehistoric, historic, or other culturally sensitive materials. If warranted by their observations or if their effective observation of excavation is any manner obstructed, the monitors may temporarily halt or redirect construction and examine soils or the interior of a trench. As feasible, considering safety issues, monitors will inspect trench sidewalls for cultural remains and stratigraphy. When excavation exceeds depths where observations can be made without appropriate shoring and other safety precautions, shoring and other safety precautions shall periodically be emplaced to facilitate cross-section observation sufficient to accurately assess the presence or absence of archaeological deposits. Sediments indicative of human habitation will be screened on-site using 1/8-inch screens. The CRS, alternate CRS, PPA, PHA, and CRMs will remain on-call throughout the project to deal with any unexpected discoveries.

8.1.3 Authority to Halt Construction

The project owner has granted the CRS, the alternate CRS, the PPA, the PHA, and the CRMs the authority to halt any ground-disturbing activity near newly discovered cultural resources. Pursuant to condition **CUL-17**, any ground-disturbing activity shall be halted if there is a discovery of new cultural materials greater than 50 years of age (or if younger, determined to be exceptionally significant), or impacts to such a resource can be anticipated. The CRS, Alternate CRS, and CRMs shall also be responsive to requests from NAMs to halt construction to facilitate the visual inspection and assessment of cultural or natural resources which may be of value to Native Americans. Halting or redirection of ground disturbance will be accomplished under the direction of the construction supervisor, in in response to instructions from the CRS. A 50-foot buffer zone will be maintained until the CRS has been able to evaluate the historical significance of the discovered cultural material. This buffer zone is meant to include the immediate vicinity of the

discovery sufficient to ensure that the resource is protected from further construction damage. If any of the cultural resources personnel granted the authority to halt construction under **CUL-17** determine that a 50-foot buffer zone is insufficient to ensure that a resource is protected from further destruction, then said personnel have the authority to enlarge the buffer to whatever distance they deem adequate to accomplish this temporary protection goal. Monitoring and daily reporting, as provided in other conditions, shall continue during the project's ground-disturbing activities elsewhere. The halting or redirection of ground disturbance shall remain in effect until the CRS has visited the discovery, and all of the applicable procedures described in Section 9.0 are complete.

Only the project owner or construction supervisor, with the assurance from the CRS that all CPM-required mitigation has been completed, can authorize the reinitiation of ground-disturbing activity in an exclusion zone. 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 activity in the area of the discovery and notify the CRS, alternate CRS, PPA, PHA or CRM, whomever is present on the site.

The CRS acts as the primary responsible party for cultural resources issues. 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 shall be considered non-compliance with these Conditions. CRMs will report directly to the CRS or to the alternate CRS if the CRS is not available. Pursuant to condition **CUL-17**, the halting or redirection of construction will remain in effect until the CRS and the project owner or construction supervisor have conferred with the CPM, and the CPM has determined the historical significance of the discovery and approved mitigation, if warranted. If mitigation is warranted, ground-disturbing activities will not resume near the discovery until the CPM-approved mitigation has been completed.

8.1.4 Native American Participation

Pursuant to **CUL-16** of the Amended CoCs, a Native American monitor shall be obtained to monitor all ground disturbance described above. Contact lists of interested Native Americans and guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that shall be monitored. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

As part of the originally licensed project, a list of concerned Native Americans was requested from the Native American Heritage Commission (NAHC). AECOM sent contact letters to 20 Native American groups and individuals, requesting input and information (Keller 2010). Several Native American contacts expressed interest in the project. Mr. Joseph R. Benitez, a Chemehuevi Tribe member, noted that the Chemehuevi and Halchidhoma used locations in the project vicinity "as gathering places." Based on existing ethnographic information, social functions, ceremonial activities, and resource collection may not be meaningfully separated from one another in a Native

American context. Additional information gathered from Native American stakeholders as part of the outreach process suggested that the area was used as an area for social functions and ceremonial activities, as the area is in proximity to major ethnohistorical trail networks and was likely the site of resource collection and tool making activities – some of which may have had a ceremonial context. Ms. Diana Chihuahua, Cultural Resource Coordinator for the Torres-Martinez Desert Cahuilla Indians, requested that all cultural investigations and ground disturbing activities at the project site include a Native American monitor and a qualified archaeologist, and that both the coroner and NAHC be contacted if human remains are encountered. Further, she asked that all cultural resources documentation be made available to interested tribes. No additional Energy Commission-related outreach has been conducted since the Energy Commission issued its Amended Decision as part of the relicensing of the amended, reduced impact project.

Preference in the selection of NAMs shall be given to Native Americans with traditional ties to the area to be monitored, as stated in **CUL-16**. If efforts to obtain the services of a qualified NAM are unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow ground disturbance to proceed without a NAM.

Subsequent to finalization of this CRMMP and pursuant to subsection 8.1.1 above, the Project owner shall have notified every affiliated Native American tribal entity of the CPM's issuance of any NTP prior to the commencement or continuation of project construction. The CRS shall respond to any questions or concerns that arise in response to such notification and shall coordinate the efforts of the NAMs with those of the CRMs as construction monitoring proceeds.

If human remains are discovered during the course of the monitoring or mitigation activities, then the specific procedures outlined by the NAHC, in accordance with Section 7050.5 of the California Health and Safety Code and Section 5097.98 of the Public Resources Code, will be followed. If human remains are encountered, Section 7050.5(c) of the California Health and Safety Code requires that construction be halted and that the county coroner be contacted. Under typical circumstances, the County Coroner notifies the NAHC, who in turn notifies a Native American Most Likely Descendant (MLD). The County Coroner has two working days to determine if the remains are subject to his/her authority or are of Native American origin pursuant to Health and Safety Code, Section 7050.5(b). If the remains are determined to be ancient, the Coroner must notify the NAHC within 24 hours. The MLD then has seven calendar days to make recommendations to the project owner regarding treatment and disposition of the identified remains.

Pursuant to the verification section of **CUL-16**, the project owner will submit to the CPM within 30 days following the discovery of any Native American cultural materials copies of letters providing requested information to the Chairperson(s) of Native American tribes or groups. The project owner will also provide the CPM with copies of all subsequent responses to Native American tribes or groups requesting notification, consultation, reports, and/or records.

8.2 Reporting Procedures—Daily Log, Weekly Status Report, and Monthly Reports

Pursuant to **CUL-16**, a daily log will be completed by the on-site CRM(s) for each day of monitoring or other cultural resource activities conducted during the monitoring period. The format of the daily monitoring log will be provided to the CRS by the CPM prior to the start of any ground-disturbing activity. The logs will track the cultural resources monitoring program, detail any cultural resources discovered during construction, describe any actions taken, and any instances of non-compliance with the Conditions or applicable LORS. The CRS shall provide electronic copies of daily monitoring logs to the CPM and any other Energy Commission staff which the CPM designates.

The CRS shall submit a daily report to the CPM and any other Energy Commission staff which the CPM designates on the status of the cultural resources–related activities at the construction areas. As long as no cultural resources are found, the CRS' daily report will include the statement that "no cultural resources over 50 years of age were discovered." The daily report will be provided as an e-mail or in some other form of communication acceptable to the CPM. The CRS may ask the CPM to reduce or discontinue the daily reporting of monitor activities, following the format specified in **CUL-16**.

Weekly, during jack-and-bore tunneling or HDD drilling for the underground gas transmission line and fiber optic communications lines, the CRS will provide the CPM with electronic copies of the soil and sediment descriptions and auger-backdirt screening logs kept by the cultural resources monitors, broadly taken.

The CRS will summarize the daily monitoring logs in a monthly monitoring summary report, which will be provided to the CPM. Any new DPR 523A forms that are completed for finds treated prescriptively will be appended to this monthly report. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended. The CRS may informally discuss cultural resource monitoring and mitigation activities with Energy Commission technical staff.

In further compliance with **CUL-16**, the CRS or the project owner will notify the CPM by telephone or e-mail within 24 hours of recognition of a non-compliance issue. The CRS will recommend corrective action(s) and the steps being taken to resolve the problem and achieve compliance with the Conditions. After the issue is resolved, the CRS will submit a report that describes the issue, resolution of the issue, and the effectiveness of the resolution measures; such report will be provided in the next Monthly Compliance Report (MCR).

Pursuant to the verification section of **CUL-15**, the project owner will provide in the MCR a list of persons who have completed WEAP training in the prior month and a running total of all persons who have completed training to date.

9.0 Discovery Plan

9.1 Treatment of Discoveries

9.1.1 Cultural Resources that May be Encountered

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 apparent 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 (projectile points, ceramic sherds, shell beads, etc.);
    - Habitations (house pit depressions, shell and/or midden deposits, FAR, heat-treated rock, manuports, etc.);
    - Features (hearths, stone features, artifact caches, etc.); and
    - 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), which 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; and
    - Isolated artifacts or isolated clusters of artifacts (metal cans, glass bottles, ceramic vessels, etc.).

9.1.2 Discovery Protocols

As described above, the CRS, alternate CRS, PPA, PHA, and/or CRM can each temporarily halt project activity in the area around any cultural resource discovery. The CRS, alternate CRS, PPA, PHA, or CRM will assess whether a find is cultural. If the find(s) is/are cultural, then the alternate CRS, PPA, PHA, or CRM, under the direction of the CRS, will follow the procedures in this CRMMP. The CPM will authorize the CRS or project owner to continue work only after the entire **CUL-17** protocol has been completed and appropriate mitigation has been implemented.

Construction in the vicinity of a cultural resources discovery shall not resume until all potential components of the find have been properly assessed. Construction personnel shall treat *as historically significant* all cultural resources which may be components of a broader find, including potential, yet unverified cultural resources, until the CRS, alternate CRS, or CRM can, pursuant to Protocols A and B of the *Primary Initial Discovery Protocol* below, observe the finds and complete all requisite assessments and determinations. If cultural resources eligible for listing in the CRHR are present and cannot be avoided, then the CRS shall assess the project's potential impacts on the discovery and recommend potential mitigation measures to the CPM.

The Energy Commission intends to consult with affiliated Native American Tribal entities on the identification and the evaluation of those cultural resources discovered during construction which can reasonably be attributed to Native American lifeways and which are relatively uncommon, and, where warranted, on the assessment of the project's effects on such resources and the development of treatment for those which staff believes to be historical resources under CEQA. The Energy Commission will engage in such consultation in accordance with the notification protocol set out in the BLM's *Plan for Archaeological Monitoring, Post-Review Discovery, and Unanticipated Effects for the Revised Blythe Solar Project* (BLM Plan). Pursuant to **CUL-19**, NextEra shall have the responsibility to participate in said consultation in accordance with the BLM Plan, and shall coordinate their participation in the consultation with the CPM. The outcome of any consultation on a discovery under the BLM Plan does not relieve NextEra of any cultural resources obligations under the Energy Commission's conditions of certification.

Notwithstanding anything in this section, per **CUL-19** of the Amended CoCs, should the BLM choose to require discovery protocols or treatment measures offering greater protection to the resources described herein, the Energy Commission will not object to the implementation of those protocols or measures.

9.1.2.1 Primary Initial Discovery Protocol, Protection of a Discovery and Who to Notify

The protocols below establish the process and communication channels for notification of discoveries, with the exception of those resources identified as eligible for prescribed treatment in sections 9.1.3.2.1 and 9.1.3.2.2. The protocol for the prescribed treatment of qualifying resources is described in section 9.1.3.2. Because all ground disturbing activities will be subject to full-time monitoring by CRMs, a communication flowchart reflecting only Protocol B, Cultural Resources Personnel on Site at the Time of Discovery, is provided as Figure 7.

9.1.2.1.1 Protocol A, No Cultural Resources Personnel on Site at the Time of Discovery

In the event that a potential cultural resource is uncovered during construction and the CRS, alternate CRS, PPA, PHA, or CRM are *not* on-site, the following procedures shall be followed:

1. All ground disturbance within 15 m (50 ft) of the found cultural resource shall immediately cease.
2. The most senior construction employee present at the discovery locale shall immediately attempt to notify the CRS, or, if unavailable, the alternate CRS.

3. The most senior construction employee present at the discovery locale shall also immediately notify the site or area foreman or inspector, or other appropriate supervisory construction personnel of the potential cultural resources find.

4. Concurrent with the notifications of the CRS and the site or area foreman or inspector, a preliminary exclusion zone boundary shall be staked out 360 degrees around the found resource such that the subject boundary is at least 15 m (50 ft) beyond every artifact, ecofact, archaeological feature, anthropogenic sediment deposit, or ruin that is a component of the find. To "stake out" means to drive into the ground wooden or metal stakes or fence posts. After the said boundary has been staked, the exclusion zone shall be more clearly delineated with the use of fluorescent flagging or plastic netting, or barbed wire strung between the boundary stakes or posts to construct a conspicuous barrier.

5. A CRM shall immediately be detailed to guard the integrity of the exclusion zone whenever any construction personnel or equipment comes within 500 ft of the exclusion zone boundary. The CPM shall document each failure to comply with this requirement as a separate act of noncompliance with the terms of the license. A CRM who has been so detailed to guard the integrity of an exclusion zone may also monitor other construction-related ground disturbance in the vicinity of the exclusion zone, as long as the CRM's distance from the exclusion zone does not preclude effective monitoring of the work going on around it.

6. The stop work provision, the erection and maintenance of an exclusion zone, and the requirement that a CRM guard the integrity of a zone shall remain in force and effect until the CPM provides the project owner with written authorization to dismantle the exclusion zone and proceed with construction. The conditions under which the CPM would issue such an authorization vary with the character of each particular discovery (see resource-specific protocols, below).

7. Upon notification of a cultural resources find, the CRS or alternate CRS shall proceed immediately to the construction site to inspect, and assess the potential historical significance and integrity of the find. A further critical assessment which the CRS or alternate CRS needs to make at the time of the initial inspection of the cultural resources find is whether any component of the find includes human remains. The CRS shall share, under Protocol A subparts 8 and 9 below, with the CPM, each affiliated Native American tribal entity notified pursuant to **CUL-17**, and the project owner the results of this initial inspection, the initial assessments of the potential historical significance and integrity of the find, and a determination as to whether human remains are present. The CRS or alternate CRS shall also adjust, if warranted, the preliminary exclusion zone boundary on the basis of this information and thereby establish a more useful protective boundary.

8. The CRS shall notify the CPM no later than 24 hours after the initial discovery.

9. Within 48 hours of the initial discovery, the CRS shall notify each affiliated Native American tribal entity which has expressed a desire to be notified in the event of any discovery which may be of interest to them. "Of interest" is here interpreted to include any type of material culture or landscape element which each affiliated Native American tribal

entity defines explicitly as being of interest to them, or, in the absence of any such explicit identifications, any object or artifact, or archaeological feature or deposit which can reasonably be argued to be the result of Native American acquisition, use, modification, manufacture, or discard, either purposive or inadvertent.

9.1.2.1.2 Protocol B, Cultural Resources Personnel on Site at the Time of Discovery

When a potential cultural resource is uncovered during construction and the CRS, alternate CRS, or CRM is on site, the following procedures shall be followed:

1. All ground disturbance within 15 m (50 ft) of the found cultural resource shall immediately cease.
2. The CRM shall immediately notify the CRS, or, if unavailable, the alternate CRS, if not present at the time of discovery.
3. The CRS, alternate CRS, or CRM, whoever is present, shall also immediately notify the site or area foreman or inspector of the potential cultural resources find.
4. The CRS, alternate CRS, or CRM shall, concurrent with the notification of the site or area foreman or inspector, construct a preliminary exclusion zone boundary. The boundary shall be staked out 360 degrees around the found resource such that the subject boundary is at least 15 m (50 ft) beyond every artifact, ecofact, archaeological feature, anthropogenic sediment deposit, or ruin that is a component of the find. To “stake out” means to drive into the ground wooden or metal stakes or fence posts. After the said boundary has been staked, the exclusion zone shall be more clearly delineated with the use of fluorescent flagging or plastic netting, or barbed wire strung between the boundary stakes or posts to construct a conspicuous barrier.
5. A CRM shall immediately be detailed to guard the integrity of the exclusion zone whenever any construction personnel or equipment comes within 500 ft of the exclusion zone boundary. The CPM shall document each failure to comply with this requirement as a separate act of noncompliance with the terms of the license. A CRM who has been so detailed to guard the integrity of an exclusion zone may also monitor other construction-related ground disturbance in the vicinity of the exclusion zone, as long as the CRM’s distance from the exclusion zone does not preclude effective monitoring of the work going on around it.
6. The stop work provision, the erection and maintenance of an exclusion zone, and the requirement that a CRM guard the integrity of a zone shall remain in force and effect until the CPM provides the project owner with written authorization to dismantle the exclusion zone and proceed with construction. The conditions under which the CPM would issue such an authorization vary with the character of each particular discovery (see resource-specific protocols, below).
7. Upon the discovery or notification of a cultural resources find, the CRS or alternate CRS shall immediately inspect, and assess the potential historical significance and integrity of the find. A further critical assessment which the CRS or alternate CRS needs to make at

the time of the initial inspection of the cultural resources find is whether any component of the find includes human remains. The CRS shall share, under Protocol A subparts 8 and 9 below, with the CPM, each affiliated Native American tribal entity notified pursuant to **CUL-17**, and the project owner the results of this initial inspection, the initial assessments of the potential historical significance and integrity of the find, and a determination as to whether human remains are present. The CRS or alternate CRS shall also adjust, if warranted, the preliminary exclusion zone boundary on the basis of this information and thereby establish a more useful protective boundary.

8. The CRS shall notify the CPM no later than 24 hours after the initial discovery.
9. Within 48 hours of the initial discovery, the CRS shall notify each affiliated Native American tribal entity which has expressed a desire to be notified in the event of any discovery which may be of interest to them. “Of interest” is here interpreted to include any type of material culture or landscape element which each affiliated Native American tribal entity defines explicitly as being of interest to them, or, in the absence of any such explicit identifications, any object or artifact, or archaeological feature or deposit which can reasonably be argued to be the result of Native American acquisition, use, modification, manufacture, or discard, either purposive or inadvertent.

9.1.2.2 Discovery Protocol for Human Remains

If the find(s) *does* appear to be human remains or burial(s), as determined by the CRS or alternate CRS:

1. Follow subparts 1-7 of, as appropriate, either Protocol A or Protocol B of the Primary Initial Discovery Protocol and, in addition, temporarily cover the remains either with a protective material and culturally sterile soil or plywood, or with steel plating. If vandalism can reasonably be considered to be a threat, the area shall be secured with a security monitor to guard the remains after working hours.
2. The project owner or his/her authorized representative (usually the CRS) shall immediately contact the County Coroner (Coroner contact is priority one) subsequent to the CRS’s or Alternate CRS’s determination that human remains are present:

   RIVERSIDE COUNTY CORONER’S BUREAU
   Phone: 951-443-2300
   Investigations Fax: 951-443-2303
   800 South Redlands Avenue
   Perris, CA 92570
   http://www.riversidesheriff.org/coroner/
3. Implement subparts 8 and 9 of, as appropriate, either Protocol A or Protocol B of the *Primary Initial Discovery Protocol*.
4. The Coroner will have two (2) working days to examine the remains after being properly notified.

5. Work will not continue in that area until the Coroner notifies the CRS or project owner of the status of the remains (whether the remains are considered prehistoric or a modern crime scene), the CPM transmits an acknowledgement to the project owner that the CPM has been briefed on the results of the Coroner's assessment and the CPM has issued a written authorization to dismantle the exclusion zone and proceed with construction.

6. If the Coroner judges the remains to be Native American, then the sequences discussed above in Section 8.1.4 (Native American Participation) and below in subsection 9.1.4 (Treatment of Human Remains) shall be followed.

9.1.3 Treatment Protocols for Cultural Resources Devoid of Human Remains

If a discovery does not appear to include human remains, as determined by the CRS or alternate CRS, or has had such remains appropriately removed, the CRS shall ensure that it is disposed of in accordance with any of the qualifying treatment protocols below.

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

All of the materials listed below are less than 50 years of age and, unless of exceptional significance, as defined for the CRHR, will not be considered cultural resources which merit further consideration. 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 under **CUL-17**, unless exceptional:

- Plastic products limited to Styrofoam® and other foamed polystyrene products, Velcro®, Teflon®-coated cookware, polyvinylchloride (PVC) 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 and car parts
- Recent 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

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

All cultural resources over 50 years of age will be recorded on DPR 523 forms, mapped, and photographed. Not all cultural resources over 50 years of age discovered during construction, however, are significant historical resources under CEQA. Non-significant cultural resources, ineligible for nomination to the CRHR due to 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 over 50 years of age (as discussed below) consists of the following:

- Construction is halted in the immediate vicinity of the find.
- The cultural resources monitor, taken broadly, records the find on a DPR 523A form, 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 of discovery, or (a) by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning or (b) by the following working day if the discovery is made preceding a recognized Federal holiday. The notification includes a description of the resource, an image(s), as appropriate, of it, a rationale, based on articulated field observation, that the resource qualifies for prescribed treatment, and a statement that the treatment has been completed.
- Construction can resume when the CPM acknowledges notification of the discovery and the accompanying information required in Bullet 2.
- The project owner's ability to use this treatment protocol is at the discretion of the CPM. Grounds for the CPM to deny the project owner's continued use of the protocol would include, but not be limited to, three instances during project construction where the CPM disagreed with the CRS's rationale that cultural resources qualified for prescriptive treatment.

9.1.3.2.1 Classes of Prehistoric Archaeological Resources Eligible for Prescribed Treatment

- Small, sparse (less than three pieces per square meter) scatters of lithic debitage (i.e., whole flakes, flake fragments, and shatter) that lack depth (less than 10 cm), where such depth has been quantitatively assessed. If the project area has low-density sites that have research potential, then such sites cannot be treated in accordance with this procedure, but will be treated under protocols in Section 7.2.1.
- Small archaeological deposit remnants (smaller than 1 x 1 m), defined by some combination of criteria such as soil color, lithic debitage, thermal affected cobble fragments, or faunal remains; and that lack depth (less than 10 cm). If datable charcoal, bone, or other diagnostic elements are present in the deposit, or the deposit is

exceptional (more than 3,000 years old) as determined from associated artifacts, the deposit and associated diagnostic elements will be treated under protocols in Section 7.2.1.

- Small clusters (less than 1 x 1 m in size) of whole or fragmented shell that is unidentifiable due to fragmentation and/or weathering, and is without a context that indicates a cultural origin. If artifacts, manuports, or other materials are found, the shell and associated deposit will be treated under protocols in Section 7.2.1.
- Non-diagnostic isolated (spatially and temporally) prehistoric artifacts (see Section 9.1.3.3 for treatment of certain isolated prehistoric finds).

9.1.3.2.2 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 apparent potential for subsurface deposit.
- Concrete, brick, or other building materials that lack structural integrity and are part of a documented disturbed (secondary) context.
- Metal, concrete, or ceramic pipes, conduits, or culverts that lack structural integrity.
- Non-diagnostic isolated historic artifacts (see Section 9.1.3.3 for treatment of certain isolated historic finds).
- Any cultural resources deposits containing human remains cannot be treated prescriptively (see Section 9.1.4).

9.1.3.3 Treatment of Diagnostic and Exceptional Isolated Finds

Certain isolated finds are subject to special treatment. They include diagnostic prehistoric artifacts, intact, unusual diagnostic historic-period artifacts more than 50 years old, and other exceptional artifacts (high-quality, unique, or labeled examples, e.g., 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. Exceptional artifacts may be less indicative of a particular time or cultural group but they are or their presence in a particular context is nonetheless rare or unusual.

Diagnostic or exceptional artifacts will be treated as follows:

- Construction is halted in the immediate vicinity, while the CRS/CRM records the find on a DPR 523A form, 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 Bullet 3.
- A copy of the completed DPR 523 is submitted to the CPM within the time period specified in **CUL-7**.
- All isolates will be listed, described, and interpreted in the CRR.

Examples of diagnostic or exceptional 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
    - Portable art—petroglyphs or incised designs on pebbles, cobbles, or portable boulders, non-ceramic figurines
    - Worked bone or shell—beads, ornaments, tools
- 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
    - Any mass-produced product or material which appears to have been subject to aboriginal craftsmanship

9.1.3.4 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 9.1.3.1, 9.1.3.2 and 9.1.4, 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, also depicted in Figure 7:

1. The CRS, alternate CRS, PPA, PHA, or CRM halts construction near the find. If there is no CRS, alternate CRS, PPA, PHA, or CRM on site, the workmen stop work in the area and notify the CRS and the site/area foreman or construction manager. Excavation work or any other ground disturbance within 50 feet, or greater, if deemed necessary by the CRS to protect the resource, will be halted or redirected.
2. If the CRS is not on site, the alternate CRS, PPA, PHA, or CRM notifies the CRS and the site/area foreman or construction manager of the find.
3. If the CRS determines that the discovery qualifies for prescribed treatment, then the CRS, alternate CRS, PPA, PHA, or CRM follows the procedures outlined in Section 9.1.3.2.
4. If the CRS determines that the discovery does not qualify for prescribed treatment, then the CRS or the project owner notifies the CPM of the find within 24 hours, per **CUL-17**.
5. NextEra Blythe Solar will consider the discovery location relative to Project construction plans to assess whether avoidance is feasible and the CRS will submit a written assessment of feasibility to the CPM. If complete avoidance is infeasible, NextEra Blythe Solar will ascertain whether partial avoidance is feasible so as to minimize further disturbance of the find, which will likewise be submitted by the CRS in writing to the CPM. As soon as practicable, the CRS will submit to the CPM a written assessment as to whether (a) the find can be avoided, or (b) partial avoidance is feasible, or (c) the find cannot be avoided by Project construction. Within five (5) working days of receipt of this written assessment the CPM will determine whether the resource can be completely avoided, partially avoided, or cannot be avoided.
6. If the find can be avoided, (a) the CRS will submit to the CPM an avoidance plan within five working days, (b) the CPM will review and comment on the draft plan within five working days following receipt and consult with the Tribes in that same five-day period if the resource has Native American association; (c) following CPM review, the CRS will revise the plan, if requested, within three working days following receipt of the Energy Commission's comments on the draft, and produce a final version for approval; and (d) the CPM will then approve the final plan upon receipt. The avoidance plan shall explicitly detail the avoidance measure(s) to be implemented, a defensible rationale for the anticipated effectiveness of each measure, a timeframe for the measure(s) implementation, and a commitment from the project owner that the said measure(s) shall be carried out in the said timeframe. 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 9.1.4).
7. Upon the approval of the CPM, a resource avoidance plan shall be implemented in the timeframe specified in the plan. Construction activity may resume in the vicinity of a cultural resource under the protection of an avoidance plan, subsequent to 1) the project owner's submission of evidence to the CPM that the plan has been implemented and the integrity of the avoidance measure(s) is subject to ongoing monitoring, and 2) written notification from the CPM to resume construction activity in the vicinity of the protected resource. The Cultural Resources section of the project owner's MCR shall report the status of each cultural resource subject to an avoidance plan.

8. If the find cannot be avoided, the CRS provides the owner and the CPM with a recommendation on the eligibility of the find for listing in the CRHR under Criteria 1 through 4, considering not only the individual eligibility of the find, but also the find's eligibility as a contributor to a potentially eligible historic district or landscape. The project owner, the CRS, and the CPM confer, and the CPM determines whether or not the find is eligible under either category.
9. If the find is not eligible for listing in the CRHR, the CRS, alternate CRS, PPA, PHA, or CRM completes a DPR 523 primary form, and the project owner submits the completed form to the CPM within the time period specified in **CUL-17**. After reviewing and approving the form, the CPM approves the resumption of construction in the area of the find.
10. If the find is eligible under Criteria 1, 2 or 3, (a) the CRS will submit to the CPM an appropriate draft property-specific treatment or mitigation plan and proposed work schedule; (b) the CPM will review and comment on the draft plan within 10 working days following receipt; (c) the CPM and/or Energy Commission staff will, as appropriate, consult with the tribes during that same 10 working days; (d) following CPM and tribal review, the CRS will revise the plan, if requested, within three working days following receipt of the Energy Commission's comments on the draft, and produce a final version for approval; and (e) the CPM will then approve the final plan within five working days following receipt. Upon the final plan's approval, the CRS will begin to implement the agreed-upon treatment measures expeditiously and in keeping with the approved schedule. 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 9.1.4). The CRS will continue to treat the portion of the find not subject to Health and Safety Code (HSC) 7050.5 and PRC 5097.98 under Section 9.1.4.
11. If the find is eligible under Criterion 4, (a) the CRS will submit to the CPM an appropriate treatment or mitigation plan within five working days; (b) the CPM will review and comment on the draft plan within five working days following receipt; (c) following CPM review, the CRS will revise the plan, if requested, within three working days following receipt of the Energy Commission's comments on the draft, and produce a final version for approval; and (d) the CPM will then approve the final plan within five working days following receipt. Upon the final plan's approval, the CRS will begin to implement the agreed-upon treatment measures expeditiously and in keeping with the approved schedule. 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 9.1.4). The CRS will continue to treat the portion of the find not subject to Health and Safety Code (HSC) 7050.5 and PRC 5097.98 under Section 9.1.4.
12. If resource avoidance has proven infeasible and a data recovery plan has been submitted to the CPM, the CPM shall review and approve the treatment or mitigation plan per steps 7 and/or 8 above, and is the plan shall carried out. The previously prepared research design (see Section 5) or the data recovery plan shall specify which artifacts are to be

collected and curated. Excavations where cultural material has been discovered will not be back-filled until the CPM approves the back-filling. If the area needs to be secured, the project owner shall arrange for plating, fencing, or other temporary measures approved by the CPM.

13. The treatment or mitigation plan is completed. The CRS completes the appropriate DPR 523 detail forms, and submits the form set to the CPM within the time period specified in **CUL-17**.
14. After reviewing and approving the form set, the CPM approves the backfilling of any open excavation units, as needed, and the resumption of construction in the area of the find.

9.1.4 Treatment Protocols for Human Remains

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

1. All excavation activities within 50 feet will immediately stop, and the area will be protected with flagging or by posting a monitor or construction worker, per the Discovery Protocols (see subsection 9.1.2 above), to ensure that no additional disturbance occurs. If the discovery occurs at the end of the work day, the area must be immediately secured by posting a guard, covering with heavy metal plates (if the human remains are found below grade), covering 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 Riverside County Coroner:

   RIVERSIDE COUNTY CORONER'S BUREAU
   Phone: 951-443-2300
   Investigations Fax: 951-443-2303
   800 South Redlands Avenue
   Perris, CA 92570
   http://www.riversidesheriff.org/coroner/
3. The CRS will notify the 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 HSC 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 MLD, who will have seven calendar days after being granted access to the location of the remains to inspect them and make recommendations for their treatment. Work will be suspended in the area of the find until the CPM approves the proposed treatment of the human remains and that treatment is complete.

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-17** to determine mitigation measures appropriate to the discovery.

9.1.5 Excavation Methods for the Identification and Evaluation of, and Data Recovery on, Buried Archaeological Deposits Found during Construction

9.1.5.1 Expansive Exposure of Discovered Resources Is Possible

Broad areas are usually accessible for archaeological investigations at the main 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 over 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 constituent composition 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 CRMMP's more general research design (refining research design if necessary).
5. The deposit will be recorded on a DPR 523 form. Include 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. The project owner would then develop a data recovery program for the review and approval of the CPM based on either the research design in the CRMMP, or a refined version of the research design which reflects the information potential identified as a result of the subsurface testing. If the CPM determines that the find is eligible for the CRHR, then all mitigation required by the CPM will be completed prior to continuation of construction in the area of the discovery.

9.1.5.2 Expansive Exposure of Discovered Resources Is Not Possible

When discoveries possibly older 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, and CPM will consult, and the CPM will determine if the access is restricted as part of the requirements of **CUL-16**. In cases where exposure of the resource is limited, evaluation of a portion of a deposit for the 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 shoring and other safety precautions shall periodically be emplaced to facilitate cross-section observation sufficient to accurately assess the character of the archaeological deposit, the content and the date of the deposit will be described, and the deposit's 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 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 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 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 or not readily identifiable cultural materials, *will be considered significant* by the crew and foreman, until the CRS, alternate CRS, PPA, PHA, or 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-17***.*

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11.0 Glossary

Artifact. Any portable object used, modified, or made by humans (Renfrew and Bahn 2000:565).

Ecofact. The nonartifactual remains found in archaeological sites, such as seeds, bones, and plant pollen (Thomas 1989:654).

Feature. A nonportable, constructed element of the human environment such as a storage or refuse pit, a posthole, or a ruined wall. Often imprecisely used to refer to more discrete archaeological deposits which may occur within a broader archaeological site, deposits such as artifact scatters or concentrations, or distinct deposits of anthropogenic sediments.

Ground disturbance. Any construction task that could potentially set in motion any type of sediment, whether the sediment originates from a native or previously undisturbed natural or man-made matrix. The use of “construction” follows the definition at Public Resources Code, section 25105(a).

Isolate. A relatively imprecise term that typically refers to an artifact for which a spatial association with other artifacts cannot be reasonably established. For the purposes of this CRMMP, an isolate is arbitrarily defined as three or fewer artifacts that are less than 5 m apart.

12.0 List of Acronyms

A.D.	Anno Domini
AFC	Application for Certification
APE	Area of Potential Effects
B.C.	Before Christ
BLM	Bureau of Land Management
BSO	Building, Structure, and Object
project	Blythe Solar Power Project (or project)
C-AMA	California-Arizona Maneuvers Area
CARIDAP	California Archaeological Resource Identification and Data Acquisition Program
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHRIS	California Historic Resource Information System
CoC	Condition of Certification
CPM	Compliance Project Manager
CRHR	California Register of Historical Resources
CRMMP	Cultural Resources Mitigation and Monitoring Plan
CRS	Cultural Resources Specialist
CRR	Cultural Resources Report
DPR	Department of Parks and Recreation
DTC	Desert Training Center
DTC/C-AMA	Desert Training Center/California-Arizona Maneuvers Area
DTCCL	Desert Training Center California-Arizona Maneuver Area Cultural Landscape
EIC	Eastern Information Center (at the University of California, Riverside)
FAR	fire affected rock
FSA	Final Staff Assessment
FTIR	Fourier Transform Infrared Spectroscopy
GLO	General Land Office
GPS	Global Positioning System
HSC	Health and Safety Code
I-10	Interstate 10
kV	kilovolt
LORS	Laws, Ordinances, Regulations, and Standards
MLD	Most Likely Descendants
MNI	minimum number of individuals
MCR	Monthly Compliance Report
MW	Megawatt
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NISP	number of identified specimens
NRHP	National Register of Historic Places

OHP	Office of Historic Preservation
PHA	Project Historical Archaeologist
PI	Principal Investigator
PPA	Project Prehistoric Archaeologist
PRC	Public Resources Code
PTNCL	Prehistoric Trails Network Cultural Landscape
PVID	Palo Verde Irrigation District
ROW	right-of-way
PQAD	Prehistoric Quarries Archaeological District
RCYBP	radiocarbon years before present
RPA	Register of Professional Archaeologists/Registered Professional Archaeologist
RSA	Revised Staff Assessment
SCE	Southern California Edison
SHPO	State Historic Preservation Officer
STG	steam turbine generator
TL	Thermoluminescence
USC	United States Code
USGS	United States Geological Survey
WEAP	Worker Environmental Awareness Program
WWI	World War I
WWII	World War II
XRF	X-Ray Fluorescence

APPENDIX A
CEC Conditions of Certification (CUL-1 through 19) from the Amendment Commission Decision, dated January 21, 2014

CONDITIONS OF CERTIFICATION

CUL-1 PREHISTORIC TRAILS NETWORK CULTURAL LANDSCAPE (PTNCL) DOCUMENTATION AND POSSIBLE NRHP NOMINATION

The project owner shall contribute to a special fund set up by the Energy Commission and/or BLM to finance the completion of the PTNCL Documentation and Possible NRHP Nomination program presented in the Blythe Solar Power Plant (BSPP) Revised Staff Assessment RSA).

The amount of the contribution shall be $35 per acre that the project encloses or otherwise disturbs. Any additional contingency contribution is not to exceed an amount totaling 20 percent of the original contribution. The contribution to the special fund may be made in installments at the approval of the CPM, with the first installment to constitute one-third of the total original contribution amount.

If a project is not certified, or if a project owner does not build the project, or, if for some other reason deemed acceptable by the CPM, a project owner does not participate in funding the PTNCL documentation and possible NRHP nomination program, the other project owner(s) may consult with the CPM to adjust the scale of the PTNCL documentation and possible NRHP nomination program research activities to match available funding. A project owner that funds the PTNCL documentation and possible NRHP nomination program, and then withdraws, will be able to reclaim their monetary contribution, to be refunded on a prorated basis.

Verification: No later than 10 days after receiving notice of the successful transfer of funds for any installment to the Energy Commission's and/or BLM's special PTNCL fund, the project owner shall submit a copy of the notice to the Energy Commission's Compliance Project Manager (CPM).

CUL-2 DESERT TRAINING CENTER CALIFORNIA-ARIZONA MANEUVER AREA CULTURAL LANDSCAPE (DTCCL) DOCUMENTATION AND POSSIBLE NRHP NOMINATION

The project owner shall contribute to a special fund set up by the Energy Commission and/or BLM to finance the completion of the Documentation and Possible NRHP Nomination program presented in the BSPP RSA.

The amount of the contribution shall be $25 per acre that the project encloses or otherwise disturbs. Any additional contingency contribution is not to exceed an amount totaling 20 percent of the original contribution. The contribution to the special fund may be made in installments at the approval of the CPM, with the first installment to constitute one-third of the total original contribution amount.

If a project is not certified, or if a project owner does not build the project, or, if for some other reason deemed acceptable by the CPM, a project owner does not participate in funding the DTCCL documentation and possible NRHP nomination program, the other project owner(s) may consult with the CPM to adjust the scale of the DTCCL documentation and possible NRHP nomination program research activities to match available funding. A project owner that funds the DTCCL documentation and possible NRHP nomination program, and then withdraws, will be able to reclaim their monetary contribution, to be refunded on a prorated basis.

Verification: No later than 10 days after receiving notice of the successful transfer of funds for any installment to the Energy Commission's and/or BLM's special DTCCL fund, the project owner shall submit a copy of the notice to the CPM.

CUL-3 CULTURAL RESOURCES PERSONNEL

Prior to the start of ground disturbance (includes "preconstruction site mobilization", "ground disturbance," and "construction grading, boring, and trenching," as defined in the General Conditions for this project), the project owner shall obtain the services of a Cultural Resources Specialist (CRS), one or more alternate CRSs, if alternates are needed, and the two technical specialists identified below in this Condition.

The CRS shall manage all cultural resources mitigation, monitoring, curation, and reporting activities in accordance with the Conditions of Certification (Conditions). The CRS shall have a primarily administrative and coordinative role for the BSPP. The project owner shall ensure that the CRS implements the cultural resources conditions, providing for data recovery from known historical resources, and shall ensure that the CRS makes recommendations regarding the eligibility for listing in the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be impacted in an unanticipated manner. The CRS may obtain the services of field crew members and cultural resources monitors (CRMs), if needed, to assist in mitigation, monitoring, and curation activities. No ground disturbance shall occur prior to CPM approval of the CRS and alternates, unless such activities are specifically approved by the CPM. Approval of a CRS may be denied or revoked for reasons including but not limited to noncompliance on this or other Energy Commission projects.

CULTURAL RESOURCES SPECIALIST

The resumes for the CRS and alternate(s) shall include information demonstrating to the satisfaction of the CPM that their training and backgrounds conform to the U.S. Secretary of Interior's Professional

Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61. In addition, the CRS shall have the following qualifications:

1. A background in anthropology and prehistoric archaeology;
2. At least 10 years of archaeological resource mitigation and field experience, with at least three of those years in California; and
3. At least three years of experience in a decision-making capacity on cultural resources projects, with at least one of those years in California, and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

REQUIRED CULTURAL RESOURCES TECHNICAL SPECIALISTS

The project owner shall ensure that the CRS obtains the services of a qualified prehistoric archaeologist to conduct the research specified in **CUL-6** and **CUL-7**. The Project Prehistoric Archaeologist's (PPA) training and background must meet the U.S. Secretary of the Interior's Professional Qualifications Standards for prehistoric archaeology, as published in Title 36, Code of Federal Regulations, part 61, and the resume of the PPA must demonstrate familiarity with similar artifacts and environmental modifications (deliberate and incidental) to those associated with the prehistoric and protohistoric use of the Palo Verde Mesa. The PPA must meet OSHA standards as a "Competent Person" in trench safety.

The project owner shall ensure that the CRS obtains the services of a qualified historical archaeologist to conduct the research specified in **CUL-8** through **CUL-11**. The Project Historical Archaeologist's (PHA) training and background must meet the U.S. Secretary of Interior's Professional Qualifications Standards for historical archaeology, as published in Title 36, Code of Federal Regulations, part 61.

The resumes of the CRS, alternate CRS, the PPA, and the PHA shall include the names and telephone numbers of contacts familiar with the work of these persons on projects referenced in the resumes and demonstrate to the satisfaction of the CPM that these persons have the appropriate training and experience to undertake the required research. The project owner may name and hire the CRS, alternate CRS, the PPA, and the PHA prior to certification.

OPTIONAL SPECIALIST BACKHOE OPERATOR

The project owner shall ensure that the CRS obtains the services of a specialist backhoe operator to conduct the activities specified in **CUL-6**, if needed. This backhoe operator shall have a resume that demonstrates previous experience using a backhoe in coordination with an archaeologist. In addition, the operator shall use a machine

with a “stripping bucket“ that is sensitive enough to remove even and consistent layers of sediment 5 centimeters thick.

FIELD CREW MEMBERS AND CULTURAL RESOURCES MONITORS

CRMs and field crew members shall have the following qualifications:

1. A B.S. or B.A. degree in anthropology, archaeology, historical archaeology, or a related field, and one year experience monitoring in California; or
2. An A.S. or A.A. degree in anthropology, archaeology, historical archaeology, or a related field, and four years experience monitoring in California; or
3. Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology, or a related field, and two years of monitoring experience in California.

Verification: Preferably at least 120 days, but in any event no less than 75 days prior to the start of ground disturbance, the project owner shall submit the resumes for the CRS, the alternate CRS(s) if desired, the PPA, and the PHA to the CPM for review and approval.

At least 65 days prior to the start of data recovery on known archaeological sites, the project owner shall confirm in writing to the CPM that the approved CRS, the PPA, and the PHA will be available for on-site work and are prepared to implement the cultural resources Conditions **CUL-6** through **CUL-11**.

Rationale: Proposed schedule change is in accordance with the project time-line.

At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval. At the same time, the project owner shall also provide to the proposed new CRS the AFC and all cultural resources documents, field notes, photographs, and other cultural resources materials generated by the project. If no alternate CRS is available to assume the duties of the CRS, a monitor may serve in place of a CRS so that ground disturbance may continue up to a maximum of three days without a CRS. If cultural resources are discovered then ground disturbance will remain halted until there is a CRS or alternate CRS to make a recommendation regarding significance.

At least 20 days prior to data recovery on known archaeological sites, the CRS shall provide a letter naming anticipated field crew members for the project and attesting that the identified field crew members meet the minimum qualifications required by this Condition.

At least 20 days prior to ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and attesting that the identified CRMs

meet the minimum qualifications for cultural resources monitoring required by this Condition.

At least five days prior to additional CRMs beginning on-site duties during the project, the CRS shall provide letters to the CPM identifying the new CRMs and attesting to their qualifications.

CUL-4 PROJECT DOCUMENTS FOR CULTURAL RESOURCES PERSONNEL

Prior to the start of ground disturbance, the project owner shall provide the CRS, the PPA, and the PHA with copies of the AFC, data responses, confidential cultural resources documents, the Revised Staff Assessment (RSA), and the RSA Supplement/Errata, if any, and the 2013 Project Amendment SA for the project. The project owner shall also provide the CRS, the PPA, the PHA, and the CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all lay down areas. Maps shall include the appropriate USGS quadrangles and maps at an appropriate scale (e.g., 1:2400 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. Staff shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless such activities are specifically approved by the CPM. Release of cultural resources information will be pending BLM approval.

If construction of the project would proceed in phases, maps and drawings not previously provided shall be provided to the CRS, the PPA, the PHA, and the CPM prior to the start of each phase. Written notice identifying the proposed schedule of each project phase shall be provided to the CRS and CPM.

Weekly, until ground disturbance is completed, the project construction manager shall provide to the CRS and CPM a schedule of project activities for the following week, including the identification of area(s) where ground disturbance will occur during that week. The project owner shall notify the CRS and the CPM of any changes to the scheduling of the construction phases.

Verification: Preferably at least 115 days, but in any event no less than 60 days prior to the start of ground disturbance, the project owner shall provide the AFC, data responses, confidential cultural resources documents, the Revised Staff Assessment (RSA), and RSA Supplement/Errata to the CRS, if needed, and to the PPA, and the PHA. The project owner shall also provide the subject maps and drawings to the CRS, PPA, PHA, and CPM. Staff, in consultation with the CRS, PPA, and PHA, will review and approve maps and drawings suitable for cultural resources monitoring and data recovery activities.

At least 15 days prior to the start of ground disturbance, if there are changes to any project-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS, PPA, PHA, and CPM.

At least 15 days prior to the start of each phase of a phased project, the project owner shall submit the appropriate maps and drawings, if not previously provided, to the CRS, PPA, PHA, and CPM.

Weekly, during ground disturbance, a current schedule of anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.

Within five days of changing the scheduling of phases of a phased project, the project owner shall provide written notice of the changes to the CRS and CPM.

CUL-5 CULTURAL RESOURCES MONITORING AND MITIGATION PLAN

Prior to the start of ground disturbance, the project owner shall submit to the CPM for review and approval draft and final versions of a Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by or under the direction of the CRS, with the contributions of the PPA, and the PHA. The CPM shall provide each draft of the CRMMP to affiliated Native American tribal entities[18] for review and comment. Subsequent iterations of the draft CRMMP and the final CRMMP shall evidence consideration of comments received from said tribal entities, where such comments have been received within 30 days for the initial draft and 7 days for each subsequent draft. The authors' name(s) shall appear on the title page of the CRMMP. The CRMMP shall specify the impact mitigation protocols for all known cultural resources and identify general and specific measures to minimize potential impacts to all other cultural resources, including those discovered during construction. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, the PPA, and the PHA, each CRM, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless such activities are specifically approved by the CPM. Prior to certification, the project owner may have the CRS, alternate CRS, the PPA, and the PHA complete and submit to CEC for review the CRMMP, except for the portions to be contributed by the PTNCL and the DTCCL programs.

[18] "affiliated Native American tribal entities" means those tribal entities with which Energy Commission staff initiated consultation under the original siting case and under the consideration of all subsequent amendments to the September 2010 Final Decision for the present project. The list of tribal entities can be found on the project's webpage at http://docketpublic.energy.ca.gov/PublicDocuments/09-AFC-06C/TN200052_20130729T101117_Blythe_Amendment_CEC_Tribal_Consultation.pdf

The CRMMP shall include, but not be limited to, the elements and measures listed below.

1. The following statement shall be included in the Introduction: “Any discussion, summary, or paraphrasing of the Conditions of Certification in this CRMMP is intended as general guidance and as an aid to the user in understanding the Conditions and their implementation. The Conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the CRMMP. The Cultural Resources Conditions of Certification from the Commission Decision are contained in Appendix A.”

2. The duties of the CRS shall be fully discussed, including coordination duties with respect to the completion of the Prehistoric Trails Network Cultural Landscape (PTNCL) documentation and possible NRHP nomination program and the Desert Training Center California-Arizona Maneuver Area Cultural Landscape (DTCCL) documentation and possible NRHP nomination program, and oversight/management duties with respect to site evaluation, data collection, monitoring, and reporting at both known prehistoric and historic-period archaeological sites and any CRHR-eligible (as determined by the CPM) prehistoric and historic-period archaeological sites discovered during construction.

3. Explicitly takes into account the perspective of affiliated Native American tribal entities with respect to in-situ or onsite reburial, (unless otherwise prohibited) for the disposition of archaeological and ethnographic resources encountered as a result of the application review process and as a result of project construction and operation.

4. A general research design shall be developed that:
   a. Charts a timeline of all research activities, including those coordinated under the PTNCL and DTCCL documentation and possible NRHP nomination programs;
   b. Recapitulates the existing paleoenvironmental, prehistoric, ethnohistoric, ethnographic, and historic contexts developed in the PTNCL and DTCCL historic context and adds to these

the additional context of the non-military, historic-period occupation and use of the Palo Verde Mesa, to create a comprehensive historic context for the BSPP vicinity;

c. Poses archaeological research questions and testable hypotheses specifically applicable to the archaeological resource types known for the Palo Verde Mesa, based on the research questions developed under the PTNCL and DTCCL research and on the archaeological and historical literature pertinent to the Palo Verde Mesa, and taking into account potential data constraints that may occur as the result of in-situ or onsite reburial of resources under subsection 3. above; and

d. Clearly articulates why it is in the public interest to address the research questions that it poses.

5. Protocols, reflecting the guidance provided in **CUL-6** through **CUL-11** shall be specified for the data recovery from known prehistoric and historic-period archaeological resource types.

6. Artifact collection, retention/disposal, and curation policies shall be discussed, as related to the research questions formulated in the research design. These policies shall apply to cultural resources materials and documentation resulting from evaluation and data recovery at both known prehistoric and historic-period archaeological sites and any CRHR-eligible (as determined by the CPM) prehistoric and historic-period archaeological sites discovered during construction. A prescriptive treatment plan may be included in the CRMMP for limited data types.

7. The implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground-disturbance and post-ground–disturbance analysis phases of the project shall be specified.

8. Person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team shall be identified.

9. The manner in which Native American observers or monitors will be included, in addition to their roles in the activities required under **CUL-1**. The procedures to be used to select them and their roles and responsibilities shall be described.

10. All impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation shall be described. Any areas where these measures are to be implemented shall be identified. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related impacts.

11. The commitment to record on Department of Parks and Recreation (DPR) 523 forms, to map, and to photograph all encountered cultural resources over 50 years of age shall be stated. In addition, the commitment to curate all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery), in accordance with the California State Historical Resources Commission's Guidelines for the Curation of Archaeological Collections, into a retrievable storage collection in a public repository or museum shall be stated.

12. The commitment of the project owner to pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the project shall be stated. The project owner shall identify a curation facility that could accept cultural resources materials resulting from BSPP cultural resources investigations.

13. The CRS shall attest to having access to equipment and supplies necessary for site mapping, photography, and recovery of all cultural resource materials (that cannot be treated prescriptively) from known CRHR-eligible archaeological sites and from CRHR-eligible sites that are encountered during ground disturbance.

14. A section that clearly and concisely sets out the flows of authority and work products for **CUL-16**, the Construction Monitoring Program, and sets out explicit communication protocols to facilitate the condition's implementation and notification of affiliated tribal entities.

15. A section that clearly and concisely sets out the flows of authority and work products for **CUL-17**, Authority to Halt Construction; Treatment of Discoveries, and sets out explicit communication protocols to facilitate the condition's implementation and notification of affiliated tribal entities.

16. The contents, format, and review and approval process of the final Cultural Resource Report (CRR) shall be described.

Verification: Preferably at least 90 days, but in any event no less than 60 days prior to the start of ground disturbance, the project owner shall submit to the CPM for review and approval draft and final versions of a Cultural Resources Monitoring and Mitigation Plan (CRMMP). The CPM shall submit each draft of the CRMMP to affiliated Native American tribal entities for review and comment. Subsequent iterations of the draft CRMMP and the final CRMMP shall evidence consideration of comments received from said tribal entities, where such comments have been received by the CPM within the time frame provided in the condition.

At least 20 days prior to the start of ground disturbance, in a letter to the CPM, the project owner shall agree to pay curation fees for any materials generated or collected as a result of the archaeological investigations (survey, testing, data recovery).

At least 30 days prior to the initiation of ground disturbance, the project owner shall provide to the CPM a copy of a letter from a curation facility that meets the standards stated in the California State Historical Resources Commission's Guidelines for the Curation of Archaeological Collections, stating the facility's willingness and ability to receive the materials generated by BSPP cultural resources activities and requiring curation. Any agreements concerning curation will be retained and available for audit for the life of the project.

CUL-6 PREHISTORIC QUARRIES ARCHAEOLOGICAL DISTRICT (PQAD) DATA RECOVERY AND DISTRICT NOMINATION

Prior to the start of ground disturbance, the project owner shall ensure that the CRMMP includes a PQAD evaluation and data recovery plan, to identify buried additional potential contributors to the district by geophysical or mechanical survey, to investigate and establish the relationships among all potential contributors by formulating research questions answerable with data from the contributors, conduct data recovery from a sample of the contributors, and write a report of investigations and possibly CRHR and NRHP nominations as well. The potential contributors include quarry site CA-RIV-3419 and thermal cobble feature SMB-P-434. This site list may be revised only with the agreement of the CRS and the CPM. The CRMMP shall also include a detailed data recovery plan for an isolated potential thermal cobble feature (not included in the PQAD) at multi-component site SMB-M-418.

The project owner shall ensure that the CRS and the PPA assess the NRHP and CRHR eligibility of the PQAD district. Additionally, if the PQAD is found to be ineligible for both registers, the thermal cobble

features' eligibility as a separate archaeological district consisting of a thermal cobble feature cluster must also be considered.

The evaluation and data recovery plan shall also specify in detail the location recordation equipment and methods to be used and describe any anticipated post-processing of the data. The project owner shall then ensure that the CRS, the PPA, the specialist backhoe operator, and archaeological team members implement the plan, with the permission of the BLM. The PQAD evaluation and data recovery plan shall provide, at a minimum, the details of each of the numbered elements below.

1. Research Design

Based on the prehistoric and ethnohistoric contexts developed for the PTNCL under the research program funded through **CUL-1**, Tasks C and D, and the archaeological and ethnohistoric literature pertinent to the Palo Verde Mesa, the research design shall reflect archaeological themes that relate to the identity and the lifeways of Native American groups on the Palo Verde Mesa in the prehistoric and historic periods. The research design shall:

a. Verify from the geological literature the Pleistocene age of the pebble terraces;

b. Formulate archaeological research questions and testable hypotheses specifically applicable to the individual contributors (for example, hypotheses regarding the function of the thermal cobble features— cooking? lithic heat treatment? or both?) and to the PQAD overall;

c. Define data sets needed to answer the formulated research questions; and

d. Develop explicit CRHR-eligibility and NRHP-eligibility assessment criteria, correlated with the research questions and specifically referencing the data sets required to answer them, for the PQAD and for the thermal cobble features as a separate potential archaeological district.

2. Program for Evaluation, Data Recovery, and Possible Nomination

The data recovery program shall:

a. Explain how the data sets that are anticipated for the PQAD will contribute to knowledge of the prehistoric and historic-period Native American themes of the research design and answer particular research questions;

b. Set out the purposes and methods of the several field phases of the PQAD evaluation and data recovery program (Geophysical

Test, Geophysical Survey/Mechanical Survey, Evaluation and Data Recovery);

c. Set out the purposes and methods of the concomitant material analyses; and

d. Describe the required reports of investigations, the resource registrations (if appropriate), and the process of producing them.

3. PQAD Arbitrary Provisional Boundary Definition

The CRS, PPA, and CPM shall derive and agree upon, in consultation, the precise location of an arbitrary provisional PQAD boundary on the surface of the plant site and in the vicinity of the linear facilities corridor.

4. Evaluation and Data Recovery Methodology

a. Quarries:

The protocol for the quarry sites simultaneously recovers data from the parts of the quarry site, CA-RIV-3419, the project would impact and allows an assessment of the significance of the impacts of the project to the quarry site and an assessment of the validity of the PQAD concept.

i. Conduct a 100 percent pedestrian survey of the parts of the quarry sites that the project activities would disturb;

ii. Map and field-record finished tools, diagnostic artifacts, ceramics, artifact concentrations and features (and the material types of each) within the impacted portions of the quarry sites. Identify and quantify artifacts within a sample of no more than 1 percent of the impacted portions of the quarry sites using 2 by 2 meter surface units. Record any differential distribution of artifacts (with suggested explanations for the distribution), and assess the integrity of the site, providing evidence on which that opinion is based;

iii Collect for dating and source analyses any obsidian artifacts;

iv. With the approval of BLM, conduct a survey of a one percent sample of randomly selected 10 x 10- meter units on the unimpacted portions of the quarry sites;

v. Gather the same data in the same way as for the impacted parts of the quarry sites;

vi. Compare these data to those gathered in the project-impacted parts of the sites

vii. With approval of BLM, conduct a sample survey of a zone 150 meters wide totaling one-half the length of the northwest boundary of CA-RIV-3419.

viii. Draw conclusions from the collected data on whether the parts of the quarry sites that would be destroyed by the project contribute significantly to the CRHR- and NRHP eligibility of the sites;

ix. Draw conclusions from the collected data, if possible, on whether the merging of the quarries and the lithic scatter in a district is valid.

x. Draw conclusions from the collected data, if possible, on whether the merging of the quarries and the thermal cobble features in a district is valid.

b. Thermal Cobble Features

The protocol for the thermal cobble features shall include Phase I identification of possible additional subsurface contributors and compressed Phase II-Phase III evaluation and data recovery from a sample of intact sites or from all of the surface sites, whether intact or not. Phase I is geophysical and/or mechanical testing to determine the horizontal and vertical extent of the distribution of the thermal cobble features, to identify any buried intact examples of thermal cobble features out 100 meters, within the area subject to project impacts, from all surface examples, and to determine if morphological differences are present among the thermal cobble features.

Phase II-Phase III (evaluation and data recovery) would reflect judgment that features only present on the surface would be register ineligible and the existing recordation, updated to reflect the test excavation, and would be adequate data recovery. Features with subsurface deposits would be register eligible, and data recovery would ensue.

c. Geophysical Test for Subsurface PQAD Contributing Thermal Cobble Features:

i. Test, in a one-acre parcel within 30 meters of known thermal cobble features, the efficacy of the use of magnetometry to locate buried examples of thermal cobble features;

ii. Ground-truth by hand or mechanical excavation a minimum 25 percent sample (but no more than five individual anomalies) of the anomalies identified in the test survey;

iii. Keep field notes and the forms for the survey areas sufficient to completely document the geophysical test;

iv. Inform the CPM of the results of the magnetometry survey and groundtruthing and consult on the efficacy of continuing this survey method;

d.Geophysical Survey for Subsurface PQAD Contributing Thermal Cobble Features:

If the CRS and CPM agree, after consultation, that the geophysical test demonstrates that the use of magnetometry appears to be reasonably effective in locating buried thermal cobble features, the project owner shall ensure that the PPA proceeds to a broader magnetometry survey of a sample of the area within the PQAD provisional district boundary. The PPA shall:

i. Develop a single stratified random sample for the PQAD that would result in a magnetometry survey of a minimum of 10 percent (a maximum of two acres) of the total district area on the plant site;

ii. Use criteria to derive the sample that the CRS, the PPA, and the CPM shall agree upon and that reflect the spatial variability in the physical material character and in the chronology of the PQAD, as such variability is presently known from the field investigations;

iii. Ground-truth by hand or mechanical excavation the lesser of 10 percent or 10 individual anomalies of those identified in the test survey;

iv. Inform the CPM of the results of the survey;

v. Keep field notes and the forms for the survey are sufficient to completely document the geophysical survey;

e. Mechanical Survey for Subsurface PQAD Contributing Thermal Cobble Features:

If the CRS and CPM agree, after consultation, that the geophysical test demonstrates that the use of magnetometry appears to be ineffective in locating buried thermal cobble features, the project owner shall ensure that the PPA submits, for CPM review and approval, the CRS's and PPA's plan and methods for a mechanical subsurface survey of the PQAD, using construction equipment, such as a road grader or a backhoe that can work in 5-centimeter lifts. The plan and methods shall include:

i. Use of transects, the proposed width and length of which the CPM would approve

ii. Removal of thin (no thicker than approximately 5 centimeters) layers to carefully expose target archaeological deposits

iii. Survey of a minimum of 2.5 percent of the total PQAD area on the plant site;

iv. Use criteria to derive the sample that the CRS, the PPA, and the CPM shall agree upon and that reflect the spatial variability in the physical and material character and in the chronology of the PQAD, as such variability is presently known from the field investigations;

v. Preservation of found archaeological deposits until the conclusion of the survey to facilitate the formulation of a representative data recovery sample;

vi. Consideration of the PPA recovering a sample of the buried land surfaces that may surround individual features or groups of features and documenting the material culture assemblages that may be found on such surfaces;

vii. Verbal report to the CPM on the results of the survey;

viii. Retention of field notes and the forms for the survey areas sufficient to completely document the mechanical survey.

f. Data Recovery from Thermal Cobble Features:

Data shall be recovered from impacted thermal cobble features. The purpose of this documentation would be to describe the physical variability of the features, to identify and inventory the artifacts and ecofacts that are found in them, and to interpret the methods of construction and the potential uses of the features. The procedures below shall be used for data recovery at SMB-P-434 and the potential thermal cobble feature at multi-component site SMB-M-418. Data recovery activities shall include:

i. Excavation would entail small (approximately 1–3 meters square) areal exposures by hand, where feasible, to remove the archaeological deposits in anthropogenic layers, if present;

ii. Retention of samples of each layer sufficient to submit for radiocarbon assays, and macrobotanical, palynological, geochemical, or other analyses;

iii. Screening of the balance of each layer through hardware cloth of no greater than 1/8-inch mesh;

iv. Recordation of these small exposures in drawings and photographs;

v. Retention of field notes and the forms for the excavated features sufficient to acquire the complete complement of data necessary for the description of each feature and the interpretation of the construction and use of each feature to the satisfaction of the CPM;

vi. Completions by PPA or CRS and submission by project owner to CPM and BLM of draft DPR 523C site forms for sites where data recovery completed.

g. Data Recovery from Former Land Surfaces Surrounding Thermal Cobble Features

Data shall be recovered from a sample of buried land surfaces assumed to be adjacent to buried thermal cobble features, if any, identified during the geophysical or mechanical subsurface survey, to document the material culture assemblages and other evidence of behavior that may be found on such surfaces. The project owner shall ensure that the PPA:

i. Develops, in consultation with the CRS and the CPM a sample of the potential buried surfaces, if any, that would be subject to excavation;

ii. Uses criteria to derive the sample that the CRS, the PPA, and the CPM shall agree upon and that reflect the spatial variability in the physical and material character and in the chronology of the PQAD, as such variability is presently known from the field investigations;

iii. Excavates by hand three large (three meters square) block exposures,

iv. Successfully recovers data from at least four block exposures, but must make no more than eight attempts to find buried surfaces around thermal cobble features.

v. Removes the archaeological deposits from the top of the surface in anthropogenic layers, if present. Excavates each block exposure as a single excavation unit rather than as nine separate, one-meter-square excavation units; the PPA may excavate three continuous, 1-metersquare excavation units together across the center of the feature to assess the presence of a surface and then excavate the other six units if a surface is present;

vi. Retains samples of each layer sufficient to submit for radiocarbon assays, and macrobotanical, palynological, geochemical, or other analyses;

vii. Screens the balance of each layer through hardware cloth of no greater than 1/8-inch mesh;

viii. Keeps field notes and the forms for the excavated features sufficient to acquire the complete complement of data necessary for the description of the distributions of artifacts and ecofacts across each surface, and the interpretation of the use of each surface, to the satisfaction of the CPM;

5. Materials Analyses

The project owner shall ensure that the PQAD evaluation and data recovery plan articulates the anticipated scope of the analyses of the artifact and ecofact collections that cumulatively result from the investigations of the PQAD, articulates the analytic methods to be used, and articulates how the data sets that such analyses will produce are relevant to the themes and questions in the research design for the PQAD.

6. Report of Investigations

The project owner shall ensure that the PQAD evaluation and data recovery plan states that a final report for the PQAD evaluation and data recovery plan Data Recovery Program is required and describes the content, production schedule, and approval process for the report.

7. Provision of Results to the PTNCL PI

The project owner shall ensure that the CRS provides the data and results of the PQAD evaluation and data recovery plan Data Recovery Program to the PTNCL PI for incorporation into the PTNCL NRHP nomination.

8. California Register of Historical Resources (CRHR) and National Register of Historic Places (NRHP) Registrations if appropriate

The project owner shall ensure that the PPA prepares a CRHR nomination and a NRHP nomination for the PQAD, including both the contributors located within the boundaries of the BSPP and such contributors, entire and partial, located beyond the boundaries of the BSPP, as are known or posited. The nominations should be the PPA's best estimate of a boundary for the district, a boundary that the PPA shall derive on the basis of the results of the PQAD evaluation and data recovery program and present in the final report for that program.

The project owner shall ensure that the CRS:

a. submits the CRHR nomination to the State Historical Resources Commission for formal consideration of CRHR eligibility,

b. submits the NRHP nomination to the State Historical Resources Commission to initiate the process of formal consideration by the Keeper of the National Register, and

c. tracks and facilitates the review of both nominations to acceptance or rejection.

9. Outreach Initiatives If PQAD is not Eligible

a. Professional Outreach. The project owner shall ensure that the CRS and/or PPA prepare a research paper and present it at a professional conference, to inform the professional archaeological community about the PQAD and to interpret its implications for our understanding of the prehistory and early history of Native American life in the region.

b. Public Outreach. The project owner shall prepare and present materials that Interpret the PQAD for the public. Project owner shall propose at least one outreach project, examples may include one-time preparation of an instructional module or one-time preparation of a public interpretation brochure.

Verification: At least 15 days prior to the start of BSPP construction-related ground disturbance in the linear facilities corridor impacting site CA-RIV-3419, the project owner shall notify the CPM that the field recordation of the impacted southwestern portion of the site has ensued.

At least 90 days prior to the onset of BSPP construction-related ground disturbance in Unit 1 east of Historic Road SMB-H-601, the project owner shall ensure that the PPA completes the geophysical test and that the CRS and PPA consult with the CPM, via telephone, to arrive at an agreement on the reliability of the use of magnetometry to locate buried PQAD thermal cobble features and how to proceed with the subsurface survey. The approved survey shall be conducted. The project owner shall also submit, for the review and approval of the CPM, the precise geographic coordinates of the provisional boundary of the PQAD and a stratified random sample for a broader magnetometry survey of 10 percent of the PQAD within the project boundaries (maximum two acres) or a stratified random sample for a mechanical subsurface survey of 2.5 percent of the PQAD located inside the project's boundaries.

1. At least 60 days prior to the onset of BSPP construction-related ground disturbance in Unit 3 east of Historic Road SMB-H-601, the project owner shall ensure that the PPA completes the preliminary report on the formal inventory of the PQAD prepared by or under the direction of the CRS. The project owner shall ensure that the preliminary report is a concise document that provides descriptions of the schedule and methods of the inventory field effort, a preliminary tally of the numbers and, where feasible, the types of archaeological deposits that were found, a discussion of the potential range of error in that tally, and a map of the locations of the found archaeological deposits that has topographic contours and the project site landform designations as overlays. The results of the formal inventory, as set out in the preliminary report, shall be the basis for the refinement of the provisional district boundary.

2. At least 30 days prior to the start of BSPP construction-related ground disturbance in Unit 3 east of Historic Road SMB-H-601, the project owner shall notify the CPM that the CRS has initiated the data recovery phases of the data recovery program.
3. At least 30 days prior to the start of ground disturbance within 30 meters of the site boundaries of the three isolated thermal cobble features, the project owner shall notify the CPM that the CRS has initiated data recovery on the three isolated thermal cobble features.
4. No longer than 90 days after the end of all construction-related ground disturbance, the project owner shall ensure that the CRS completes the preparation of the National Register of Historic Places and the California Register of Historical Resources nominations for the PQAD and submits the nominations to the State Historic Resources Commission for formal consideration.
5. No longer than 90 days after the end of all construction-related ground disturbance, the project owner shall ensure that the CRS completes the professional paper and provides the CPM with three copies of the final product of that effort, and prepares, and submits for the approval of the CPM, a public outreach product. Upon the CPM's approval of the latter product, the project owner shall ensure, as appropriate, the product's installation, implementation, or display.
6. No longer than 90 days after the end of all construction-related ground disturbance, the project owner shall ensure that the CRS completes the requisite material analyses and prepares and submits, for the approval of the CPM, the final cultural resources report for the Blythe cultural resources data recovery and monitoring activities. The final report shall provide descriptions of the schedule and methods of the data recovery effort, technical descriptions of excavated archaeological features and buried land surfaces that present the highest resolution of technical data that can be derived from the data recovery field notes, plan and, as appropriate, profile drawings and photographs of excavated
7. archaeological features and buried land surfaces, and technical descriptions and appropriate graphics of the stratigraphic contexts of excavated archaeological features and buried land surfaces.

CUL-7 DATA RECOVERY FOR SMALL PREHISTORIC SITES (LITHIC SCATTERS, CAIRNS, AND POT DROPS)

The project owner shall ensure the CRMMP includes a data recovery plan for the resource type "small prehistoric sites," consisting of sites SMB-M-214, SMB-H-234, SMB-H-CT-001and SMB-H-WG-102. This site list may be revised only with the agreement of the CRS and the CPM. The data recovery plan shall include use of the CARIDAP protocol on qualifying sites, how to proceed if features or other buried deposits are encountered, and the materials analyses and laboratory

artifact analyses that will be used. The plan shall also specify in detail the location, recordation equipment and methods used and describe any post-processing of the data. Prior to the start of ground disturbance within 30 meters of the sites boundaries of each of these sites, the project owner shall then ensure that the CRS, the PPA, and/or archaeological team members implement the plan, if allowed by the BLM, which, for sites where CARIDAP does not apply, shall include, but is not limited to the following tasks:

1. Use location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers) to add to the original site maps the following features: seasonal drainages, site boundaries, location of each individual artifact, and the boundaries around individual artifact concentrations;
2. Request the PTNCL geoarchaeologist, or equivalent qualified person approved by the CPM and hired by the project owner should the PTNCL geoarchaeologist not be available, to identify the specific landform for each site;
3. Map and field-record all lithic artifacts (numbers of flakes, the reduction sequence stage each represents, cores, tool blanks, finished tools, hammerstones, and concentrations, and the material types of each) and the other types of prehistoric artifacts present
4. Map any differential distribution of artifacts and suggest explanations for the distribution
5. Assess the integrity of the site and provide the evidence substantiating that assessment;
6. Collect for dating and source analyses any obsidian artifacts;
7. Field record the surface location of all other artifacts and collect all ceramic artifacts and botanical and faunal remains for laboratory analysis and curation;
8. Surface scrape to a depth of 5 centimeters a 5-meter-by-5-meter area centered on the artifact concentration, field-record the lithic artifacts as to location, material type, and the reduction sequence stage each represents, record the location of all other artifacts, and retain the obsidian and ceramic artifacts and botanical and faunal remains for laboratory analysis and curation;
9. Excavate one 1-meter-by-1-meter unit in 10-centimeter levels until the unit reaches a depth of 20 centimeters below any anthropogenic materials, placing the unit in the part of the site with the highest artifact density and recording its locations on the site map;

10. Place one 1-meter-by-1-meter excavation unit, as described above, in the center of each concentration if multiple artifact concentrations have been identified;

11. Notify the CPM by telephone or e-mail that subsurface deposits were or were not encountered and make a recommendation on the site's CRHR eligibility;

12. If no subsurface deposits were encountered, and the CPM agrees the site is not eligible for the CRHR, data recovery is complete;

13. If subsurface deposits are encountered, test the horizontal limits of the site by excavating additional 1-meter-by-1-meter excavation units in 10-centimeter levels until the unit reaches a depth of 20 centimeters below any anthropogenic materials, using a shovel or hand auger, or other similar technique, at four spots equally spread around the exterior edge of each site, recording the locations of these units on the site map;

14. Sample the encountered features or deposits, using the methods described in the CRMMP, record their locations on the site map, retain samples, such as flotation, pollen, and charcoal, for analysis, and retain all artifacts for professionally appropriate laboratory analyses and curation, until data recovery is complete;

15. Present the results of the **CUL-7** data recovery in a letter report by the PPA or CRS, which shall serve as a preliminary report. Letter reports may address one site, or multiple sites depending on the needs of the CRS. The letter report shall be a concise document the provides 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, a map showing the location of excavation units including topographic contours and the site landforms, and a discussion of the CRHR eligibility of each site and the justification for that determination;

16. Update the existing Department of Parks and Recreation (DPR) 523 site form for these sites, including new data on seasonal drainages, site boundaries, location of each individual artifact, the boundaries around individual artifact concentrations, the landform, and the eligibility determination; and

17. Present the final results of data recovery at these prehistoric sites in the CRR, as described in **CUL-18**.

Verification: At least 15 days prior to ground disturbance, the project owner shall notify the CPM that data recovery for small sites has ensued.

After the completion of the excavation of the first 1-meter-by-1-meter excavation unit at each of the subject sites, the CRS shall notify the CPM regarding the

presence or absence of subsurface deposits and shall make a recommendation on the site's CRHR eligibility.

Within one week of the completion of data recovery at a site, the project owner shall submit a letter report written by the PPA or CRS for review and approval of the CPM. When the CPM approves the letter report, ground disturbance may begin at this site location.

CUL-8 DATA RECOVERY ON HISTORIC-PERIOD SITES WITH FEATURES

The project owner shall ensure the CRMMP includes a data recovery plan for the resource type "historic-period archaeological sites with features," consisting of sites SMB-H-143, SMB-H-411, SMB-H-416, and SMB-H-419. This site list may be revised only with the agreement of the CRS and the CPM. The data recovery plan shall include how to proceed if features or other buried deposits are encountered and the materials analyses and laboratory artifact analyses that will be used. The plan shall also specify in detail the location, recordation equipment and methods to be used and describe any anticipated post processing of the data. Prior to the start of ground disturbance within 30 meters of the sites boundaries of each of these sites, the project owner shall then ensure that the CRS, the PPA, and/or archaeological team members implement the plan, if allowed by the BLM, which shall include, but is not limited to the following tasks:

1. The project owner shall hire a PHA with the qualifications described in **CUL-3** to supervise the field work.
2. The project owner shall, ensure that, prior to beginning the field work, the PHA and crew chief are 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.
3. The project owner shall ensure that, prior to beginning the field work, the field crew members are trained in the consistent and accurate identification of the full range of late nineteenth and early-to-mid-twentieth century can, bottle, and ceramic diagnostic traits.
4. The project owner shall ensure that the original site map shall be updated to include at 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 metal detector survey), using location recordation equipment

that has the latest technology with submeter accuracy (such as UTM 11 North or California Teale Albers).

5. The project owner shall ensure that a detailed in-field analysis of all artifacts shall be completed, if not done previously. Types of seams and closures for each bottle and all cans shall be documented. Photographs shall be taken of any text or designs. Unusual or unidentifiable artifacts may be collected for further analysis, but otherwise artifacts shall not be collected.

6. The project owner shall ensure a systematic metal detector survey is completed at each site, and that each hit is investigated. All artifacts and features thus found must be mapped, measured, photographed, and fully described in writing.

7. The project owner shall ensure that all features are recorded, and that any features having subsurface elements are excavated by a qualified historical archaeologist. All features and contents must be mapped, measured, photographed, and fully described in writing.

8. The project owner shall ensure that the details of what is found at each site shall be presented in a letter report from the CRS or PHA ,which shall serve as a preliminary report, that details what was found at each site, as follows:

    a. Letter reports may address one site, or multiple sites depending on the needs of the CRS; and

    b. The letter report shall 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 site landforms.

9. The project owner shall ensure that the data collected from the field work shall be provided to the DTCCL Historical Archaeologist to assist in the determination of which, if any, of the 12 historic-period sites are contributing elements to the DTCCL.

10. The project owner shall ensure that the PHA analyzes all recovered data and writes or supervises the writing of a comprehensive final report. This report shall be included in the CRR (**CUL-18**). Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**).

Verification: At least 15 days prior to ground disturbance, the project owner shall notify the CPM that mapping and in-field artifact analysis has ensued on historic-period sites with features.

Within one week of completing data recovery at a site, the project owner shall submit to the CPM for review and approval a letter report written by the CRS, evidencing that the field portion of data recovery at each site has been completed. When the CPM approves the letter report, ground disturbance may begin at the site location(s) that are the subject of the letter report.

CUL-9 DATA RECOVERY ON HISTORIC-PERIOD SITES WITH STRUCTURES

The project owner shall ensure the CRMMP includes a data recovery plan for the resource type "historic-period archaeological sites with structures," consisting of site SMB-H-404. This site list may be revised only with the agreement of the CRS and the CPM. The data recovery plan shall include how to proceed if features or other buried deposits are encountered and the materials analyses and laboratory artifact analyses that will be used. The plan shall also specify in detail the location, recordation equipment and methods to be used and describe any anticipated post-processing of the data. Prior to the start of ground disturbance within 30 meters of the sites boundaries of each of these sites, the project owner shall then ensure that the CRS, the PPA, and/or archaeological team members implement the plan, if allowed by the BLM, which shall include, but is not limited to the following tasks:

1. The project owner shall hire a qualified historian to research the locations of these sites and attempt to determine their origins and functions from the historical record.
2. The project owner shall hire a PHA with the qualifications described in **CUL-3** to supervise the field work.
3. The project owner shall, ensure that, prior to beginning the field work, the PHA and crew chief are 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.
4. The project owner shall ensure that, prior to beginning the field work, the field crew members are trained in the consistent and accurate identification of the full range of late nineteenth and early-to-mid-twentieth-century can, bottle, and ceramic diagnostic traits.
5. The project owner shall ensure that the original site map shall be updated to include at minimum: landform features such as small drainages, any manmade features, the limits of any artifact

concentrations and features (previously known and newly found in the metal detector survey), using location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers).

6. The project owner shall ensure that a detailed in-field analysis of all artifacts shall be completed, if not done previously. Types of seams and closures for each bottle and all cans shall be documented. Photographs shall be taken of any text or designs. Unusual or unidentifiable artifacts may be collected for further analysis, but otherwise artifacts shall not be collected.

7. The project owner shall ensure a systematic metal detector survey is completed at each site, and that each "hit" is investigated. All artifacts and features thus found must be mapped, measured, photographed, and fully described in writing.

8. The project owner shall ensure that all structures are mapped, measured, photographed, and fully described in writing, and that all associated features having subsurface elements are excavated by a qualified historical archaeologist. All features and contents must be mapped, measured, photographed, and fully described in writing.

9. The project owner shall ensure that the details of what is found at each site shall be presented in a letter report from the CRS or PHA ,which shall serve as a preliminary report, that details what was found at each site, as follows:

    a. Letter reports may address one site, or multiple sites depending on the needs of the CRS; and

    b. The letter report shall be a concise document the 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 site landforms.

10. The project owner shall ensure that the data collected from the field work shall be provided to the DTCCL Historical Archaeologist to assist in the determination of which, if any, of the three historic-period sites are contributing elements to the DTCCL.

11. The project owner shall ensure that the PHA analyzes all recovered data and writes or supervises the writing of a comprehensive final report. This report shall be included in the CRR (**CUL-18**). Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**).

Verification: At least 15 days prior to ground disturbance, the project owner shall notify the CPM that mapping and in-field artifact analysis has ensued on historic-period sites with structures.

Within one week of completing data recovery at a site, the project owner shall submit to the CPM for review and approval a letter report written by the CRS, evidencing that the field portion of data recovery at each site has been completed. When the CPM approves the letter report, ground disturbance may begin at the site location(s) that are the subject of the letter report.

CUL-10 DATA RECOVERY ON HISTORIC-PERIOD DUMP SITES

The project owner shall ensure the CRMMP includes a data recovery plan for the resource type "historic-period dump sites," consisting of sites SMB-H-171, SMB-H-178, SMB-H- 403, and SMB-H-427 on the proposed plant site and SMB-H-522/525 along the linear facilities corridor if impacts to the latter cannot be avoided by spanning. This site list may be revised only with the agreement of the CRS and the CPM. The data recovery plan shall include how to proceed if features or other buried deposits are encountered, and the materials analyses and laboratory artifact analyses that will be used. The plan shall also specify in detail the location recordation equipment and methods to be used and describe any anticipated post-processing of the data. Prior to the start of ground disturbance within 30 meters of the sites boundaries of each of these sites, the project owner shall then ensure that the CRS, the PPA, and/or archaeological team members implement the plan, if allowed by the BLM, which shall include, but is not limited to the following tasks:

1. The project owner shall hire a PHA with the qualifications described in **CUL-3** to supervise the field work.
2. The project owner shall, ensure that, prior to beginning the field work, the PHA and crew chief are 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.
3. The project owner shall ensure that, prior to beginning the field work, the field crew members are trained in the consistent and accurate identification of the full range of late nineteenth and early-to-mid-twentieth-century can, bottle, and ceramic diagnostic traits.
4. The project owner shall ensure that the original site map shall be updated to include at minimum: landform features such as small drainages, any manmade features, the limits of any artifact

concentrations and features, using location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers).

5. The project owner shall ensure that each dump is entirely mapped, measured, photographed, and fully described in writing.
6. The project owner shall ensure that 10 percent of the surface contents of each dump is recorded as follows:
    a. Apply a 1-meter x 1-meter grid to the entire dump and randomly select 10 percent of the units.
    b. Do a detailed in-field analysis of all artifacts in each unit, 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 shall 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. Unusual or unidentifiable artifacts may be collected for further analysis, but otherwise artifacts shall not be collected.
    c. If any subsurface elements are found in the units, a qualified historical archaeologist shall excavate the part in the unit. All features and contents must be mapped, measured, photographed, and fully described in writing.
7. The project owner shall ensure that the details of what is found at each site shall be presented in a letter report from the CRS or PHA ,which shall serve as a preliminary report, that details what was found at each site, as follows:
    a. Letter reports may address one site, or multiple sites depending on the needs of the CRS; and
    b. The letter report shall be a concise document the 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, and a map showing the location of collection and/or excavation units, including topographic contours and the site landforms.
    c. The letter report for each site shall present preliminary conclusions regarding the period(s) of use of the dump and suggest who the possible users were in each represented period.
8. The project owner shall ensure that the data collected from the field work shall be provided to the DTCCL Historical Archaeologist to assist in the determination of which, if any, of the five historic-period dump sites are contributing elements to the DTCCL.

9. The project owner shall ensure that the PHA analyzes all recovered data and writes or supervises the writing of a comprehensive final report. This report shall be included in the CRR (**CUL-18**). Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**).

Verification: At least 15 days prior to ground disturbance, the project owner shall notify the CPM that mapping and in-field artifact analysis has ensued on historic-period dump sites.

Within one week of completing data recovery at a site, the project owner shall submit to the CPM for review and approval a letter report written by the CRS, evidencing that the field portion of data recovery at each site has been completed. When the CPM approves the letter report, ground disturbance may begin at the site location(s) that are the subject of the letter report.

CUL-11 DATA RECOVERY ON HISTORIC-PERIOD REFUSE SITES

The project owner shall ensure the CRMMP includes a data recovery plan for the resource type "historic-period refuse sites," consisting of sites SMB-H-164, SMB-H-166, SMB-H¬287, SMB-H-288, and SMB-H-423. The focus of the recordation upgrade is to determine if these sites can be attributed to the DTC/C-AMA use of the region and are therefore contributors to the DTCCL. This site list may be revised only with the agreement of the CRS and the CPM. The data recovery plan shall include how to proceed if features or other buried deposits are encountered and the materials analyses and laboratory artifact analyses that will be used. The plan shall also specify in detail the location recordation equipment and methods to be used and describe any anticipated post-processing of the data. Prior to the start of ground disturbance within 30 meters of the sites boundaries of each of these sites, the project owner shall then ensure that the CRS, the PPA, and/or archaeological team members implement the plan, if allowed by the BLM, which shall include, but is not limited to the following tasks:

1. The project owner shall hire a PHA with the qualifications described in **CUL-3** to supervise the fieldwork.
2. The project owner shall, ensure that, prior to beginning the field work, the PHA and crew chief are 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.
3. The project owner shall ensure that, prior to beginning the field work, the field crew members are trained in the consistent and

accurate identification of the full range of late nineteenth and early-to-mid-twentieth century can, bottle, and ceramic diagnostic traits.

4. The project owner shall ensure that the original site map shall be updated to include at 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 metal detector survey), using location recordation equipment that has the latest technology with submeter accuracy (such as UTM 11 North or California Teale Albers).
5. The project owner shall ensure that a detailed in-field analysis of all artifacts types shall 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 shall 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 shall not be collected.
6. The project owner shall ensure that the details of what is found at each site shall be presented in a letter report from the CRS or PHA, which shall serve as a preliminary report, that details what was found at each site, as follows:
    a. Letter reports may address one site, or multiple sites depending on the needs of the CRS; and
    b. The letter report shall be a concise document the 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 site landforms.
    c. The letter report shall make a recommendation on whether each site is a contributor to the DTTCL.
7. The project owner shall ensure that the data collected from the fieldwork shall be provided to the DTCCL Historical Archaeologist to assist in the determination of which, if any, of the six historic-period sites are contributing elements to the DTCCL.
8. The project owner shall ensure that the PHA analyzes all recovered data and writes or supervises the writing of a comprehensive final report. This report shall be included in the CRR (**CUL-18**). Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCL (funded by **CUL-2**).

Verification: At least 15 days prior to ground disturbance, the project owner shall notify the CPM that mapping and upgraded in-field artifact analysis has ensued on six historic-period refuse scatter sites.

Within one week of completing data recovery at a site, the project owner shall submit to the CPM for review and approval a letter report written by the CRS, evidencing that the field portion of data recovery at each site has been completed. When the CPM approves the letter report, ground disturbance may begin at the site location(s) that are the subject of the letter report.

CUL-12 DATA RECOVERY ON HISTORIC-PERIOD ROADS

The project owner shall ensure that a qualified architectural historian (must meet the U.S. Secretary of the Interior's Professional Qualifications Standards for historian, as published in Title 36, Code of Federal Regulations, part 61) conducts research and writes a report on the age and use of two historic period, unimproved roads (SMB-H-600, SMB-H-601), with particular attention paid to their role during the use of the area by the U. S. Army in World War II training maneuvers (DTC/C-AMA). The project owner shall provide the historian's report to the DTCCL PI Historian for use in the possible DTCCL NRHP nomination. The project owner may undertake this task prior to Energy Commission certification of the project.

Verification: At least 15 days prior to ground disturbance, the project owner shall submit to the PM the historian's report documenting the age and historical use of the two roads.

Within 15 days after the CPM approves the report, the project owner shall forward it to the DTCCL PI-Historian.

CUL-13 ARCHIVAL RESEARCH ON BLYTHE ARMY AIR BASE RESERVOIR PIPELINES

The project owner shall ensure that a qualified architectural historian (must meet the U.S. Secretary of the Interior's Professional Qualifications Standards for historian, as published in Title 36, Code of Federal Regulations, part 61) conducts research to establish the current existence and locations of the water supply pipelines that connect the Blythe Army Air Base Reservoir pipelines to the former Blythe Army Air Base. The project owner shall ensure that the construction of the project's underground facilities that cross these old pipelines avoids impacting them. The project owner shall provide the historian's report to the DTCCL PI Historian for use in the possible DTCCL NRHP nomination. The project owner may undertake this task prior to Energy Commission certification of the project.

Verification: At least 15 days prior to excavating any trenches crossing the old Blythe Army Air Base Reservoir water pipelines, the project owner shall submit to the CPM the historian's report verifying the current presence or absence of the pipelines and, if they are present, a plan indicating how they will be avoided.

Within 15 days after the CPM approves the report, the project owner shall forward it to the DTCCL PI-Historian.

CUL-14 ARCHIVAL RESEARCH ON RADIO COMMUNICATIONS FACILITY

The project owner shall ensure that a qualified architectural historian (must meet the U.S. Secretary of the Interior's Professional Qualifications Standards for historian, as published in Title 36, Code of Federal Regulations, part 61) conducts research to evaluate the CRHR eligibility of the radio communications facility, considering all pertinent register criteria, as well as integrity. If the facility is recommended as CRHR-eligible, the project owner shall propose ways to avoid or mitigate, to a less than significant level, the project's impacts to the facility's integrity of setting and integrity of feeling.

The project owner may undertake this task prior to Energy Commission certification of the project.

Verification: At least 45 days prior to construction, the project owner shall submit to the CPM the historian's recommendation, with supporting evidence, on the eligibility of the radio communications facility and, if it is eligible, a plan indicating how the project's impacts to the facility's integrity of setting and integrity of feeling will be avoided or mitigated to a less than significant level.

Rationale: Proposed schedule change is in accordance with the project time-line.

At least 30 days prior to construction, the project owner shall implement those elements of the submitted avoidance/mitigation plan approved by the CRS.

CUL-15 WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

Prior to and for the duration of ground disturbance, the project owner shall provide Worker Environmental Awareness Program (WEAP) training to all new workers within their first week of employment at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas. The training shall be prepared by the CRS, may be conducted by any member of the archaeological team, and may be presented in the form of a video. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes.

The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. Samples or visuals of artifacts that might be found in the project vicinity;
3. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;
4. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during

construction, and the range of variation in the appearance of such deposits;

5. Instruction that the CRS, alternate CRS, and CRMs have the authority to halt ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;
6. Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;
7. An informational brochure that identifies reporting procedures in the event of a discovery;
8. An acknowledgement form signed by each worker indicating that they have received the training; and
9. A sticker that shall be placed on hard hats indicating that environmental training has been completed.
10. No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the CPM.

Verification: At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the training program draft text and graphics and the informational brochure to the CPM for review and approval.

At least 15 days prior to the beginning of ground disturbance, the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP trained worker to sign.

Monthly, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report (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 training to date.

CUL-16 CONSTRUCTION MONITORING PROGRAM

The project owner shall ensure that the CRS, alternate CRS, or CRMs, prevent construction impacts to undiscovered resources and shall further ensure that known resources are not impacted in an unanticipated manner, monitor full time all ground disturbances:

1. associated with construction-related grading and other earthwork;
2. for the trenches for underground communication lines and the natural gas pipeline;

3. for the holes for the transmission line support structures;
4. And for the jack-and-bore tunneling for underground conductor or cable lines or pipelines, that they monitor the excavation of the jack-and-bore entry and exit pits and examine, log, and screen auger backdirt samples, as detailed in the CRMMP.

Full-time archaeological monitoring for this project shall be the archaeological monitoring of the earth-removing activities in the areas specified in the previous paragraph, for as long as the activities are ongoing. Where excavation equipment is actively removing dirt and hauling the excavated material farther than fifty feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation and a second monitor shall inspect the dumped material. For excavation areas where the excavated material is dumped no farther than fifty feet from the location of active excavation, one monitor shall both observe the location of active excavation and inspect the dumped material.

A Native American monitor shall be obtained to monitor all of the ground disturbance described above. Contact lists of interested Native Americans and guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that shall be monitored. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

The research design in the CRMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of noncompliance with the Conditions and/or applicable LORS. Copies of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM, and to any affiliated Native American tribal entities that request such logs. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended.

The CRS or alternate CRS shall report daily to the CPM on the status of the project's cultural resources-related activities, unless reducing or

ending daily reporting is requested by the CRS and approved by the CPM.

In the event that the CRS believes 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 shall be provided to the CPM for review and approval prior to any change in the level of monitoring and concurrently notify affiliated Native American tribal entities.

The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resources monitoring and mitigation activities with Energy Commission technical staff.

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 shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

Verification: At least 30 days prior to the start of ground disturbance, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log.

Monthly, while monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS and shall attach any new DPR 523A forms completed for finds treated prescriptively, as specified in the CRMMP.

At least 48 hours prior to implementing a proposed change in monitoring level, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for changing the monitoring level and concurrently notify affiliated Native American tribal entities.

Daily, as long as no cultural resources are found, the CRS shall provide a statement that "no cultural resources over 50 years of age were discovered" to

the CPM as an e-mail or in some other form of communication acceptable to the CPM and to any affiliated Native American tribal entities that request such statements.

Weekly, during jack-and-bore tunneling for the underground transmission line, the project owner shall provide the CPM with copies of the soil and sediment descriptions and auger-backdirt screening logs kept by the CRS, alternate CRS, or CRMs, as detailed in the CRMMP.

At least 24 hours prior to reducing or ending daily reporting, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for reducing or ending daily reporting.

No later than 30 days following the discovery of any Native American cultural materials, the project owner shall submit to the CPM copies of the information transmittal letters sent to the Chairpersons of the affiliated Native American tribal entities who requested the information. Additionally, the project owner shall submit to the CPM copies of letters of transmittal for all subsequent responses to Native American requests for notification, consultation, and reports and records.

Within 15 days of receiving them, the project owner shall submit to the CPM copies of any comments or information provided by Native Americans in response to the project owner's transmittals of information. The project owner shall provide written responses to any such comments or information within five business days of their receipt and copy the CPM with such correspondence.

CUL-17 AUTHORITY TO HALT CONSTRUCTION; TREATMENT OF DISCOVERIES

The project owner shall grant authority to halt ground disturbance to the CRS, alternate CRS, PPA, PHA, and the CRMs in the event of a discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS. In the event that a cultural resource over 50 years of age is found (or if younger, determined exceptionally significant by the CPM), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and daily reporting, as provided in other Conditions, shall continue during the project's ground-disturbing activities elsewhere. The halting or redirection of ground disturbance shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner, and the CPM has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of CRHR eligibility, and recommendations for data recovery from any cultural resources discoveries, whether or not a determination of CRHR eligibility has been made.
2. If the discovery would be of interest to affiliated Native American tribal entities, the CPM shall ensure the CRS has notified, within 48 hours, all affiliated Native American tribal entities that expressed a desire to be notified in the event of such a discovery. The CRS shall inform the CPM if there are any barriers to performing the notification.
3. The CRS has completed field notes, measurements, and photography for a DPR 523 Primary form. Unless the find can be treated prescriptively, as specified in the CRMMP, the Description entry of the DPR 523 Primary form shall include a recommendation on the CRHR eligibility of the discovery. The project owner shall submit completed forms to the CPM.
4. The CRS, the project owner, and the CPM have conferred, and the CPM has concurred with the recommended eligibility of the discovery and approved the CRS's proposed data recovery, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, PPA, PHA, and CRMs have the authority to halt ground disturbance in the vicinity of a cultural resources discovery, and that the project owner shall ensure that the CRS notifies 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 morning.

Within 48 hours of the discovery of a resource of interest to Native Americans, the CPM shall ensure that the CRS notifies all affiliated Native American tribal entities that expressed a desire to be notified in the event of such a discovery.
Unless the discovery can be treated prescriptively, as specified in the CRMMP, completed DPR 523 forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.

CUL-18 CULTURAL RESOURCES REPORT (CRR)

The project owner shall submit the final Cultural Resources Report (CRR) to the CPM for review and comment and to the BLM Palm Springs archaeologist for review and approval. The final CRR shall be written by or under the direction of the CRS. The final CRR shall report on all field activities including dates, times and locations, results, samplings, and analyses. All survey reports, revised and final Department of Parks and Recreation (DPR) 523 forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as appendices to the final CRR. If the project owner requests a suspension of ground disturbance and/or construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM and to the BLM Palm Springs archaeologist for review and approval on the same day as the suspension/extension request. The draft CRR shall be retained at the project site in a secure facility until ground disturbance and/or construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification: Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the CPM for review and approval.

Within 180 days after completion of ground disturbance (including landscaping), the project owner shall submit the final CRR to the CPM for review and approval and to the BLM Palm Springs Field Office archaeologist for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification~~:~~ of receipt shall be included in an appendix.

Within 10 days after the CPM and the BLM Palm Springs Field Office archaeologist approve the CRR, the project owner shall provide documentation to the CPM confirming that copies of the final CRR have been provided to the SHPO, the CHRIS, the curating institution, if archaeological materials were

collected, and to the Tribal Chairpersons of any Native American groups requesting copies of project-related reports.

COMPLIANCE WITH BLM PROGRAMMATIC AGREEMENT

CUL-19 If provisions in the BLM Blythe Solar Power Plant Programmatic Agreement and associated implementation and monitoring programs conflict with or duplicate these Conditions of Certification, the BLM provisions shall take precedence. Provisions in these Conditions that are additional to or exceed BLM provisions and represent requirements under the Energy Commission's CEQA responsibilities shall continue to apply to the project's activities, contingent on BLM's approval.

APPENDIX B
Figures

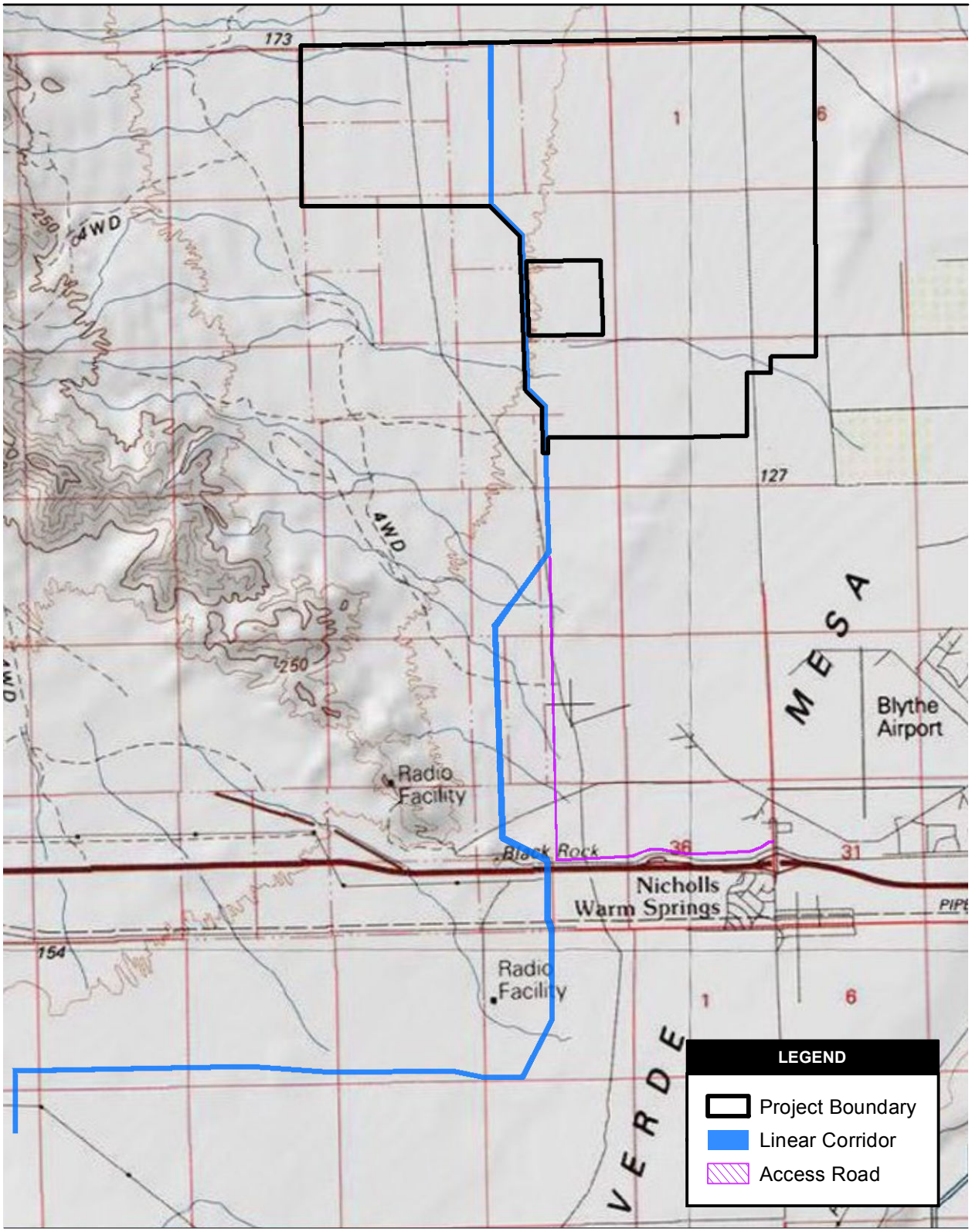
Source: AECOM, ESRI 2013

40 20 0 40 Miles

Scale: 1:2,550,000; 1 inch = 40 mile(s)

Figure 1
Project Vicinity

Path: P:\2012\60273106_NxtEra_Blythe\06GIS\6.3_Layout\Cultural\CRMMP_Figures\Fig01_BSPP_CRMMP_Project_Vicinity.mxd, 2/5/2015, speltsb



Source: USGS 7.5' Topographic Quadrangle McCoy Peak, CA (1983), McCoy Wash, CA (1975), Roosevelt Mine, CA (1983), Ripley, CA (1975); AECOM; NextEra Energy Resources

1 0.5 0 1 Miles

Scale: 1:63,600; 1 inch = 1 mile

Figure 2
Blythe Solar Power Project
Project Location

Path: P:\2012\60273106_NxtEra_Blythe\06GIS\6.3_Layout\Cultural\CRMMP_Figures\Figure02_BSPP_CRMMP_ProjectLocation.mxd, 2/5/2015, speltsb

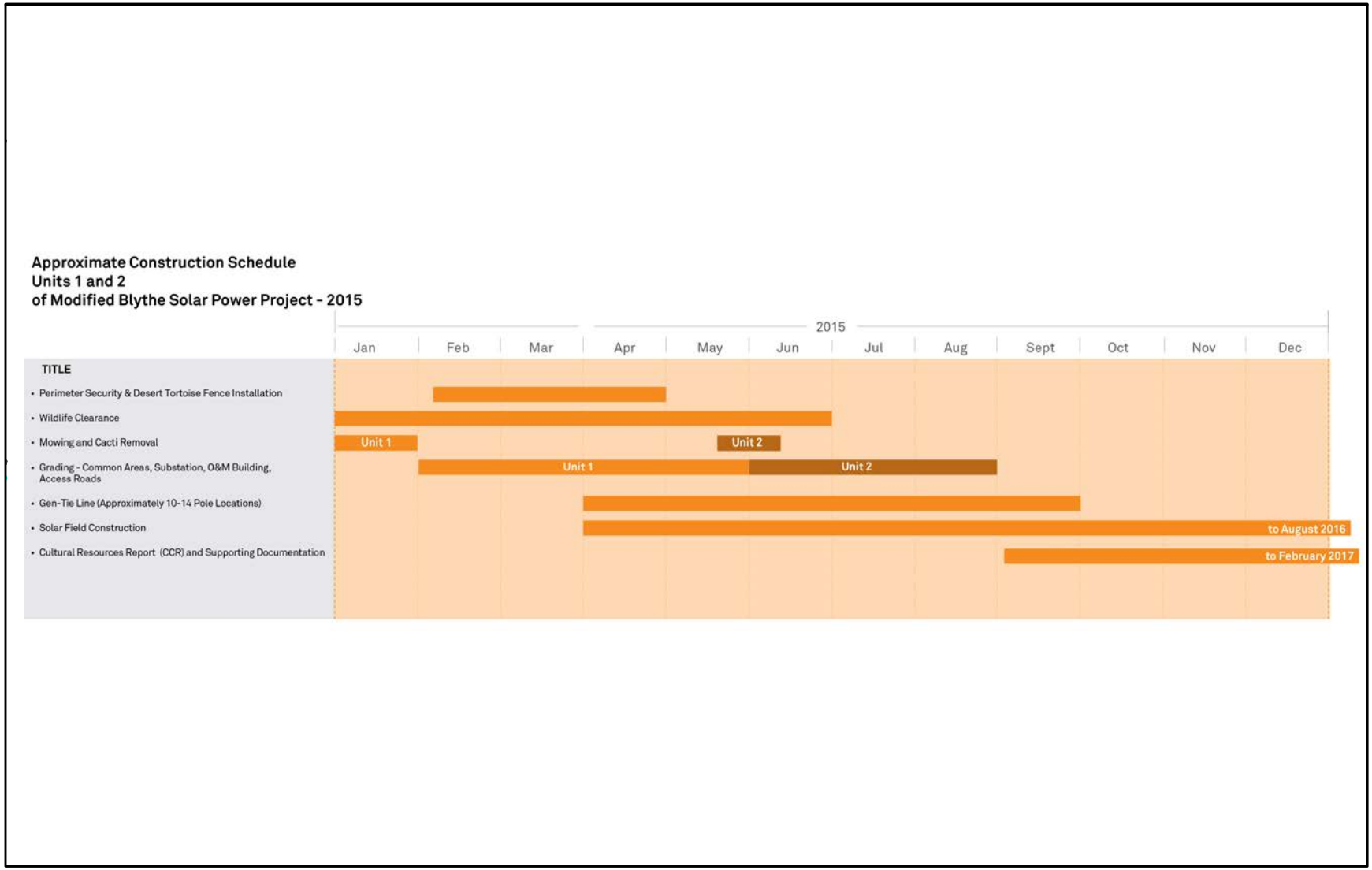
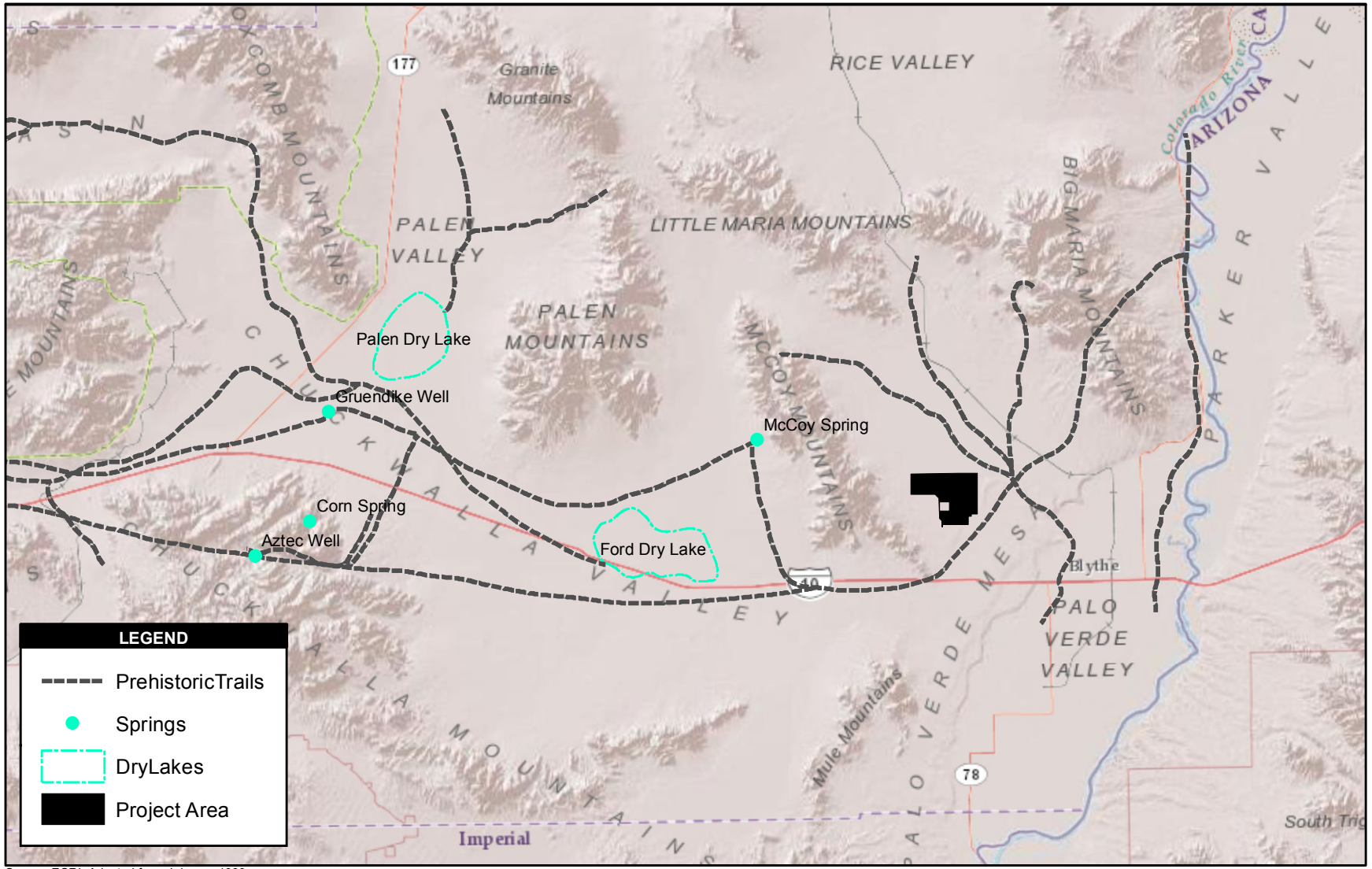


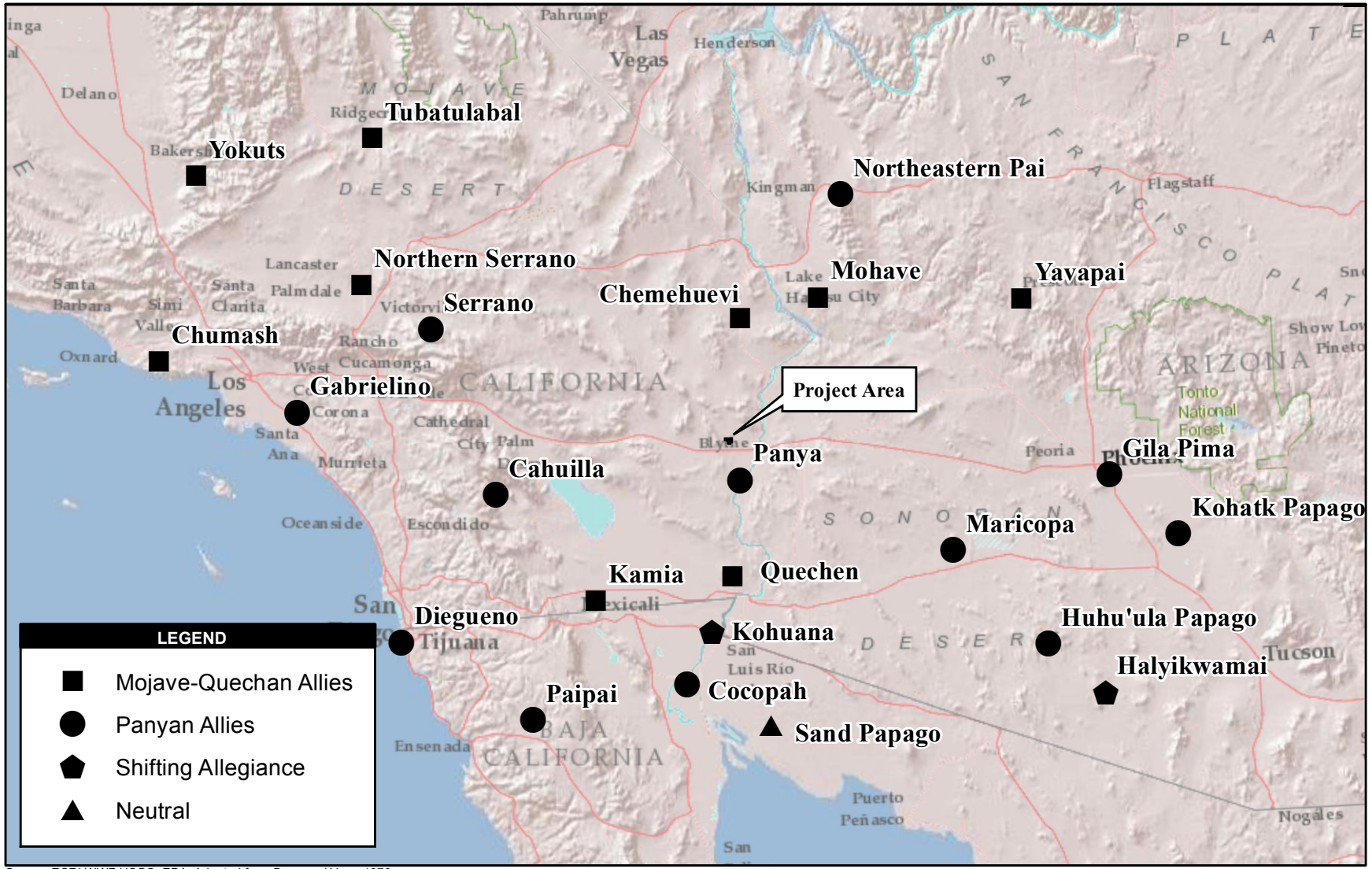
Figure 3
Blythe Solar Power Project
Approximate Construction Schedule



Source: ESRI, Adapted from Johnson 1980

Figure 4
Blythe Solar Power Project
Regional Trails

Path: P:\2012\60273106_NxtEra_Blythe\06GIS\6.3_Layout\Cultural\CRMMP_Figures\Fig4_Regional Trails.mxd, 2/5/2015, speltsb



Source: ESRI,WWF,USGS, EPA, Adapted from Bean and Vane 1978

0 12.5 25 50 75 100 Miles

Scale: 1:4,000,000; 1 inch = 63 Miles

Figure 5
Northern Sonoran Desert
Amity-Enmity System

Path: P:\2012\60273106_NxtEra_Blythe\06GIS\6.3_Layout\Cultural\CRMMP_Figures\Fig5_Anmity-Enmity.mxd, 2/5/2015, speltsb

CONFIDENTIAL

Source: ESRI; AECOM; NextEra Energy Resources

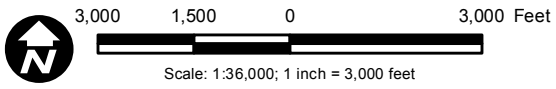


Figure 6-1
Cultural Resources within the Project Area

Path: P:\2012\60273106_NxtEra_Blythe\06GIS\6.3_Layout\Cultural\CRMMP_Figures\Figure06-1_BSPP_CRMMP_CulturalResources.mxd, 2/5/2015, speltsb

CONFIDENTIAL

Source: ESRI; AECOM; NextEra Energy Resources

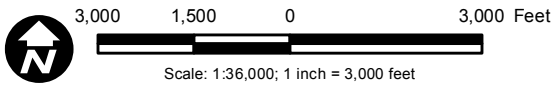


Figure 6-2
Cultural Resources within the Project Area

Path: P:\2012\60273106_NxtEra_Blythe\06GIS\6.3_Layout\Cultural\CRMMP_Figures\Figure06-2_BSPP_CRMMP_CulturalResources.mxd, 2/5/2015, speltsb

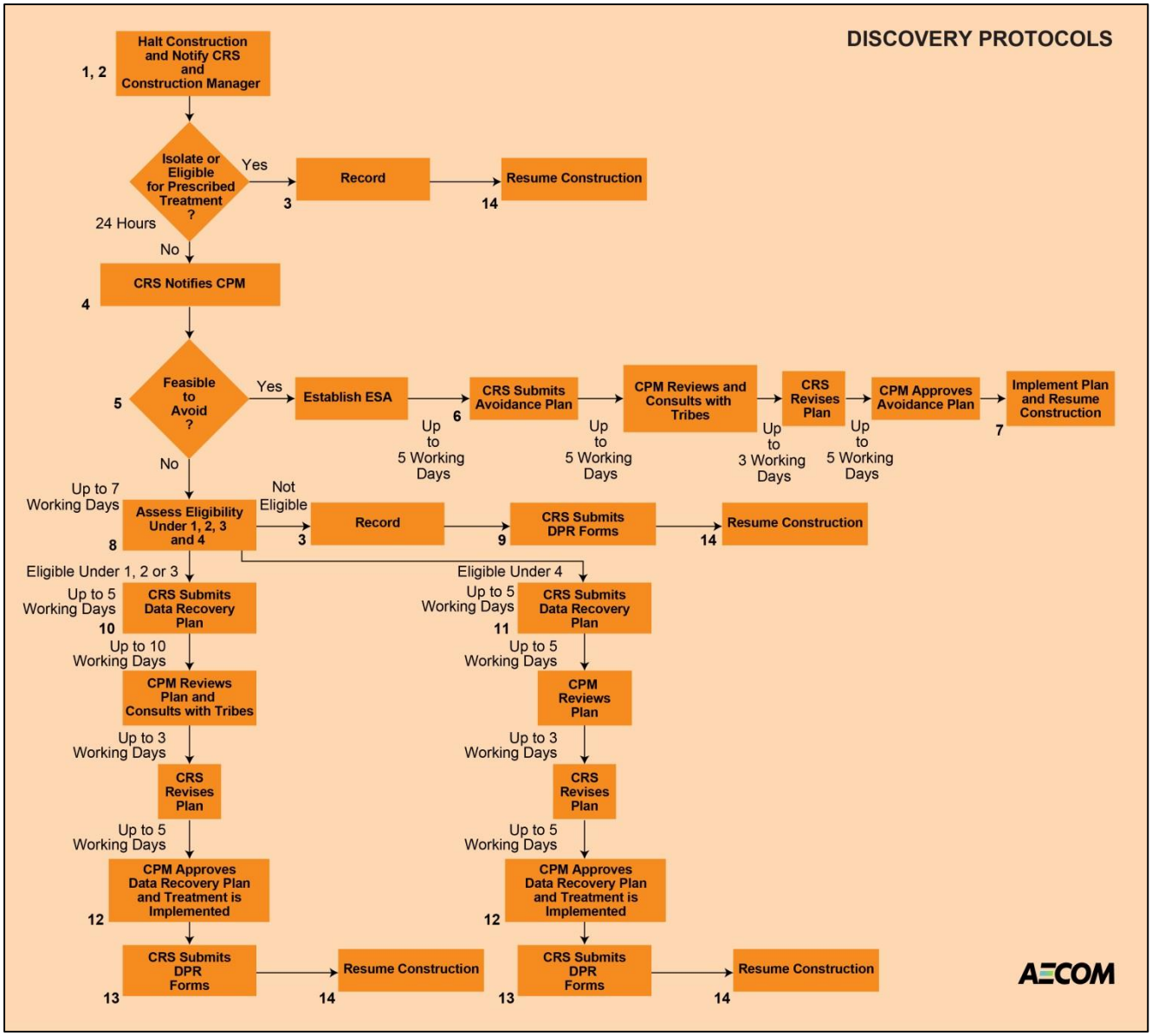


Figure 7
Blythe Solar Power Project
Discovery Protocols

APPENDIX C
Cultural Resources Laws, Ordinances, Regulations, & Standards

APPLICABLE LAW	DESCRIPTION
FEDERAL	
Antiquities Act of 1906 16 United States Code (USC) 431–433	Establishes criminal penalties for unauthorized destruction or appropriation of "any historic or prehistoric ruin or monument, or any object of antiquity" on federal land; empowers the President to establish historical monuments and landmarks.
Archaeological Resources Protection Act of 1979 (ARPA) 16 USC 470aa et seq.	Protects archaeological resources from vandalism and unauthorized collecting on public and Indian lands.
STATE	
Public Resources Code (PRC), Section 5097.98(b) and (e)	Requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the Native American Heritage Commission-identified Most Likely Descendants (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to re-inter the remains elsewhere on the property in a location not subject to further disturbance.
PRC, Sections 5097.99 and 5097.991	5097.99 establishes as a felony the acquisition, possession, sale, or dissection with malice or wantonness Native American remains or funerary artifacts. 5097.991 establishes as state policy the repatriation of Native American remains and funerary artifacts.
Health and Safety Code (HSC), Section 7050.5	Makes it a misdemeanor to mutilate, disinter, wantonly disturb, or willfully remove human remains found outside a cemetery; Requires a project owner to halt construction if human remains are discovered and to contact the county coroner.
LOCAL	
Riverside County General Plan Multipurpose Open Space Element (Chapter 5), Open Space Policies OS 19.2–19.4	OS 19.2 requires the review of all proposed development for archaeological sensitivity; OS 19.3 Employs procedures to protect the confidentiality and prevent inappropriate public exposure of sensitive archaeological resources when soliciting the assistance of public and volunteer organizations. OS 19.4 Require a Native American Statement as part of the environmental review process on development projects with identified cultural resources.

APPLICABLE LAW	DESCRIPTION
Riverside County General Plan, Exhibit A, CEQA Findings of Fact and Statement of Overriding Considerations, Mitigation Monitoring Program, Measures 4.7.1A, 4.7.1B, and 4.7.1C	OS 19.5 allows the History Division of the Riverside County Regional Park and Open-Space District to evaluate large project proposals for their potential preservation or destruction of historic sites; requires projects to provide feasible mitigation for impacts to historic sites prior to county approval. OS 19.6 enforces the California State Historic Building Code so that historic buildings can be preserved and used without posing a hazard to public safety. OS 19.7 endorses the allocation of resources and/or tax credits to prioritize retrofit of historic structures.
	Outlines mitigation measures for cultural resources monitoring programs.

APPENDIX D
Treatment Status of Archaeological Resources within the Approved and Amended BSPP by Trinomial and Temporary Number

Trinomial	Primary Number	Temporary Site Number	In Amended Project Footprint	Required Treatment under Approved Project COCs	Removed from Approved Project COCs with CPM Concurrence	Treatment under Approved Project COCs Completed	Remaining Treatment Required
CA-RIV-9511	33-018677	SMB-H-109	X				
CA-RIV-9512	33-018678	SMB-H-110	X				
CA-RIV-9515	33-018681	SMB-H-114	X				
CA-RIV-9516	33-018682	SMB-H-115	X				
CA-RIV-9517	33-018683	SMB-H-116	X				
CA-RIV-9518	33-018684	SMB-H-118	X				
CA-RIV-9520	33-018686	SMB-H-120	X				
CA-RIV-9521	33-018687	SMB-H-121	X				
CA-RIV-9522	33-018688	SMB-H-122	X				
CA-RIV-9523	33-018689	SMB-H-123	X				
CA-RIV-9524	33-018690	SMB-H-124	X				
CA-RIV-9525	33-018691	SMB-H-125	X				
CA-RIV-9526	33-018692	SMB-H-126	X				
CA-RIV-9527	33-018693	SMB-H-127	X				
CA-RIV-9528	33-018694	SMB-H-129	X				
CA-RIV-9529	33-018695	SMB-H-130	X				
CA-RIV-9530	33-018696	SMB-H-131	X				
CA-RIV-9531	33-018697	SMB-H-132	X				
CA-RIV-9532	33-018698	SMB-H-133	X				
CA-RIV-9533	33-018699	SMB-H-134	X				
CA-RIV-9534	33-018700	SMB-H-135	X				
CA-RIV-9535	33-018701	SMB-H-136	X				
CA-RIV-9536	33-018702	SMB-H-137	X				
CA-RIV-9537	33-018703	SMB-H-138	X				
CA-RIV-9538	33-018704	SMB-H-139	X				
CA-RIV-9539	33-018705	SMB-H-140	X				
CA-RIV-9540	33-018706	SMB-H-143	X	CUL-8			Enhanced recordation and metal detector
CA-RIV-9541	33-018707	SMB-H-144	X				
CA-RIV-9542	33-018708	SMB-H-145	X				
CA-RIV-9543	33-018709	SMB-H-147	X				
CA-RIV-9544	33-018710	SMB-H-148	X				
CA-RIV-9548	33-018714	SMB-H-154	X				
CA-RIV-9549	33-018715	SMB-H-155	X				
CA-RIV-9550	33-018716	SMB-H-156	X				
CA-RIV-9553	33-018719	SMB-H-159	X				
CA-RIV-9559	33-018725	SMB-H-165	X				
CA-RIV-9560	33-018726	SMB-H-166	X	CUL-11		Treatment completed 9/15/2010;CPM letter report approval 6/13/2011	

Trinomial	Primary Number	Temporary Site Number	In Amended Project Footprint	Required Treatment under Approved Project COCs	Removed from Approved Project COCs with CPM Concurrence	Treatment under Approved Project COCs Completed	Remaining Treatment Required
CA-RIV-9561	33-018727	SMB-H-167	X				
CA-RIV-9565	33-018731	SMB-H-171	X	CUL-10		Treatment conducted under BLM evaluation program 4/2014; letter report in progress	
CA-RIV-9569	33-018735	SMB-H-177	X				
CA-RIV-9570	33-018736	SMB-H-178	X	CUL-10		Treatment conducted under BLM evaluation program 4/2014; letter report in progress	
CA-RIV-9571	33-018737	SMB-H-179	X				
CA-RIV-9572	33-018738	SMB-H-180	X				
CA-RIV-9578	33-018744	SMB-H-186	X				
CA-RIV-9579	33-018745	SMB-H-189	X				
CA-RIV-9580	33-018746	SMB-H-190	X				
CA-RIV-9581	33-018747	SMB-H-191	X				
CA-RIV-9582	33-018748	SMB-H-192	X				
CA-RIV-9583	33-018749	SMB-H-193	X				
CA-RIV-9584	33-018750	SMB-H-194	X				
CA-RIV-9618	33-018786	SMB-H-229	X				
CA-RIV-9619	33-018822	SMB-H-230	X				
CA-RIV-9620	33-018823	SMB-H-231	X				
CA-RIV-9621	33-018824	SMB-H-232	X				
CA-RIV-9622	33-018825	SMB-H-233	X				
CA-RIV-9623	33-018826	SMB-H-234	X	CUL-7		Treatment completed 7/22/2011; CPM letter report approval pending	
CA-RIV-9624	33-018827	SMB-H-235	X				
CA-RIV-9625	33-018828	SMB-H-236	X				
CA-RIV-9652	33-018856	SMB-H-283	X				
CA-RIV-9656	33-018860	SMB-H-287	X	CUL-11			Enhanced recordation
CA-RIV-9657	33-018861	SMB-H-288	X	CUL-11			Enhanced recordation
CA-RIV-9658	33-018862	SMB-H-290	X				
CA-RIV-9660	33-018864	SMB-H-401	X				
CA-RIV-9661	33-018865	SMB-H-402	X				

Trinomial	Primary Number	Temporary Site Number	In Amended Project Footprint	Required Treatment under Approved Project COCs	Removed from Approved Project COCs with CPM Concurrence	Treatment under Approved Project COCs Completed	Remaining Treatment Required
CA-RIV-9662	33-018866	SMB-H-403	X	CUL-10		Treatment completed 9/15/2010; CPM letter report approval pending	
CA-RIV-9663	33-018867	SMB-H-404	X	CUL-9		Treatment completed 7/22/2011; CPM letter report approval pending	
CA-RIV-9664	33-018868	SMB-H-406	X				
CA-RIV-9665	33-018869	SMB-H-407	X				
CA-RIV-9666	33-018870	SMB-H-408	X				
CA-RIV-9667	33-018871	SMB-H-409	X	CUL-8	11/29/2010		
CA-RIV-9668	33-018872	SMB-H-411	X	CUL-8			Enhanced recordation and metal detector
CA-RIV-9669	33-018873	SMB-H-413	X				
CA-RIV-9670	33-018874	SMB-H-414	X				
CA-RIV-9671	33-018875	SMB-H-415	X				
CA-RIV-9672	33-018876	SMB-H-416	X	CUL-8			Enhanced recordation and metal detector
CA-RIV-9673	33-018877	SMB-H-417	X				
CA-RIV-9674	33-018878	SMB-H-419	X	CUL-8			Enhanced recordation and metal detector
CA-RIV-9675	33-018879	SMB-H-420	X				
CA-RIV-9676	33-018880	SMB-H-423	X	CUL-11		Treatment completed 7/22/2011; CPM letter report approval pending	
CA-RIV-9677	33-018881	SMB-H-424	X				
CA-RIV-9678	33-018882	SMB-H-426	X				
CA-RIV-9679	33-018883	SMB-H-427	X	CUL-10		Treatment completed 7/22/2011; CPM letter report approval pending	
CA-RIV-9682	33-018886	SMB-H-439	X				
CA-RIV-9683	33-018887	SMB-H-442	X				
CA-RIV-9686	33-018890	SMB-H-447	X				

Trinomial	Primary Number	Temporary Site Number	In Amended Project Footprint	Required Treatment under Approved Project COCs	Removed from Approved Project COCs with CPM Concurrence	Treatment under Approved Project COCs Completed	Remaining Treatment Required
CA-RIV-9687	33-018891	SMB-H-450	X				
CA-RIV-9690	33-018894	SMB-H-460	X				
CA-RIV-9692	33-018896	SMB-H-507	X				
CA-RIV-9693	33-018897	SMB-H-508	X				
CA-RIV-9694	33-018898	SMB-H-509	X				
CA-RIV-9695	33-018899	SMB-H-513	X				
CA-RIV-9703	33-018907	SMB-H-527	X				
CA-RIV-9705	33-018909	SMB-H-529	X				
CA-RIV-9812	33-019023	SMB-P-434	X	CUL-6			Excavation
CA-RIV-9979	33-019663	SMB-M-418	X	CUL-6			Will be requesting removal; not a prehistoric cobble feature
n/a	n/a	SMB-P-410	X	CUL-7	Not in amended COCs		Modern parcel boundary; not a prehistoric resource
CA-RIV-9981	33-018915	SMB-H-601	X	CUL-12		11/2/2010	
CA-RIV-9983	33-018914	SMB-H-600	X	CUL-12		11/2/2010	
CA-RIV-1464	n/a	n/a	X				
CA-RIV-5674H	33-006008	CA-RIV-5674H					
CA-RIV-10077	33-018675	SMB-H-002					
CA-RIV-9633	33-018836	SMB-H-253					
CA-RIV-9635	33-018839	SMB-H-255					
CA-RIV-9636	33-018840	SMB-H-256					
CA-RIV-9637	33-018841	SMB-H-257					
CA-RIV-9638	33-018842	SMB-H-258					
CA-RIV-9639	33-018843	SMB-H-259					
CA-RIV-9642	33-018846	SMB-H-265					
CA-RIV-9643	33-018847	SMB-H-266					
CA-RIV-9713	33-018923	SMB-H-821					
CA-RIV-9714	33-018924	SMB-H-824					
CA-RIV-9729	33-018940	SMB-H-860					
CA-RIV-9730	33-018941	SMB-H-861					
CA-RIV-9754	33-018965	SMB-M-LK-102					
CA-RIV-9755	33-018966	SMB-H-LK-105					
CA-RIV-9756	33-018967	SMB-H-LK-106					
CA-RIV-9759	33-018970	SMB-H-MT-002					
CA-RIV-9763	33-018974	SMB-H-WG-101					
CA-RIV-9765	33-018976	SMB-M-261(262)		CUL-10	11/20/2010		
CA-RIV-9768	33-018979	SMB-M-522(525)		CUL-10		6/27/2011	
CA-RIV-9770	33-018981	SMB-M-806					
CA-RIV-9795	33-019006	SMB-M-CT-001		CUL-7		6/27/2011	
CA-RIV-9797	33-019008	SMB-M-LK-103					
CA-RIV-9798	33-019009	SMB-M-LK-104					

Trinomial	Primary Number	Temporary Site Number	In Amended Project Footprint	Required Treatment under Approved Project COCs	Removed from Approved Project COCs with CPM Concurrence	Treatment under Approved Project COCs Completed	Remaining Treatment Required
CA-RIV-9760	33-018971	SMB-H-MT-104					
	33-018935	SMB-H-846					
CA-RIV-1136	33-001136	CA-RIV-1136		CUL-7			
CA-RIV-2846	33-002846	CA-RIV-2846		CUL-6			
CA-RIV-3419	33-003419	CA-RIV-3419		CUL-6			
------	33-009670	P-33-9670					
CA-RIV-7175	33-009671	CA-RIV-7175					
CA-RIV-9011	33-017323	CA-RIV-9011					
CA-RIV-9510	33-018676	SMB-H-107					
CA-RIV-9513	33-018679	SMB-H-111					
CA-RIV-9514	33-018680	SMB-H-113					
CA-RIV-9519	33-018685	SMB-H-119					
CA-RIV-9545	33-018711	SMB-H-151					
CA-RIV-9546	33-018712	SMB-H-152					
CA-RIV-9547	33-018713	SMB-H-153					
CA-RIV-9551	33-018717	SMB-H-157					
CA-RIV-9552	33-018718	SMB-H-158					
CA-RIV-9554	33-018720	SMB-P-160		CUL-7			
CA-RIV-9555	33-018721	SMB-H-161					
CA-RIV-9556	33-018722	SMB-H-162					
CA-RIV-9557	33-018723	SMB-H-163		CUL-8			
CA-RIV-9558	33-018724	SMB-H-164		CUL-6/11			Still in amended COCs; need to request removal
CA-RIV-9562	33-018728	SMB-H-168					
CA-RIV-9563	33-018729	SMB-H-169					
CA-RIV-9564	33-018730	SMB-H-170					
CA-RIV-9566	33-018732	SMB-H-173					
CA-RIV-9567	33-018733	SMB-H-175					
CA-RIV-9568	33-018734	SMB-H-176					
CA-RIV-9573	33-018739	SMB-H-181		CUL-11			
CA-RIV-9574	33-018740	SMB-H-182					
CA-RIV-9575	33-018741	SMB-H-183					
CA-RIV-9576	33-018742	SMB-H-184					
CA-RIV-9577	33-018743	SMB-H-185					
CA-RIV-9585	33-018751	SMB-H-195					
CA-RIV-9586	33-018752	SMB-H-197					
CA-RIV-9587	33-018753	SMB-H-198					
CA-RIV-9588	33-018754	SMB-H-199					
CA-RIV-9589	33-018755	SMB-H-200					
CA-RIV-9590	33-018756	SMB-H-212					
CA-RIV-9591	33-018757	SMB-H-203		CUL-8			
CA-RIV-9592	33-018758	SMB-H-204					
CA-RIV-9593	33-018759	SMB-H-205		CUL-8			
CA-RIV-9594	33-018760	SMB-H-206					
CA-RIV-9595	33-018761	SMB-H-207		CUL-8			
CA-RIV-9596	33-018762	SMB-H-208					

Trinomial	Primary Number	Temporary Site Number	In Amended Project Footprint	Required Treatment under Approved Project COCs	Removed from Approved Project COCs with CPM Concurrence	Treatment under Approved Project COCs Completed	Remaining Treatment Required
CA-RIV-9597	33-018763	SMB-H-209					
CA-RIV-9598	33-018764	SMB-H-210		CUL-8			
CA-RIV-9605	33-018773	SMB-H-213					
CA-RIV-9606	33-018774	SMB-H-215					
CA-RIV-9607	33-018775	SMB-H-216					
CA-RIV-9608	33-018776	SMB-H-218					
CA-RIV-9609	33-018777	SMB-H-219					
CA-RIV-9610	33-018778	SMB-H-220					
CA-RIV-9611	33-018779	SMB-H-221					
CA-RIV-9612	33-018780	SMB-H-222		CUL-8			
CA-RIV-9613	33-018781	SMB-H-223		CUL-8			
CA-RIV-9614	33-018782	SMB-H-224		CUL-10			
CA-RIV-9615	33-018783	SMB-H-226					
CA-RIV-9616	33-018784	SMB-H-227					
CA-RIV-9617	33-018785	SMB-P-228		CUL-7			
CA-RIV-9626	33-018829	SMB-H-243					
CA-RIV-9628	33-018831	SMB-H-245		CUL-8			
CA-RIV-9629	33-018832	SMB-H-246					
CA-RIV-9630	33-018833	SMB-H-247		CUL-8			
CA-RIV-9631	33-018834	SMB-H-248					
CA-RIV-9632	33-018835	SMB-H-251		CUL-8			
CA-RIV-9634	33-018838	SMB-H-254					
CA-RIV-9640	33-018844	SMB-H-260					
CA-RIV-9641	33-018845	SMB-H-263					
CA-RIV-9644	33-018848	SMB-H-267					
CA-RIV-9645	33-018849	SMB-H-268					
CA-RIV-9646	33-018850	SMB-H-269					
CA-RIV-9647	33-018851	SMB-H-271					
CA-RIV-9648	33-018852	SMB-H-274					
CA-RIV-9649	33-018853	SMB-H-276					
CA-RIV-9650	33-018854	SMB-H-279					
CA-RIV-9651	33-018855	SMB-H-282					
CA-RIV-9653	33-018857	SMB-H-284					
CA-RIV-9654	33-018858	SMB-H-285					
CA-RIV-9655	33-018859	SMB-H-286					
CA-RIV-9659	33-018863	SMB-H-291					
CA-RIV-9680	33-018884	SMB-H-430					
CA-RIV-9681	33-018885	SMB-H-432		CUL-9			
CA-RIV-9684	33-018888	SMB-H-444					
CA-RIV-9688	33-018892	SMB-H-452					
CA-RIV-9689	33-018893	SMB-P-453					
CA-RIV-9691	33-018895	SMB-H-505					
CA-RIV-9696	33-018900	SMB-H-514		CUL-9			
CA-RIV-9697	33-018901	SMB-H-515					
CA-RIV-9698	33-018902	SMB-H-516					
CA-RIV-9699	33-018903	SMB-H-517					
CA-RIV-9700	33-018904	SMB-H-518					
CA-RIV-9701	33-018905	SMB-H-519					
CA-RIV-9702	33-018906	SMB-H-520					

Trinomial	Primary Number	Temporary Site Number	In Amended Project Footprint	Required Treatment under Approved Project COCs	Removed from Approved Project COCs with CPM Concurrence	Treatment under Approved Project COCs Completed	Remaining Treatment Required
CA-RIV-9704	33-018908	SMB-H-528					
------	33-018916	SMB-H-702					
------	33-018917	SMB-H-701					
CA-RIV-9708	33-018918	SMB-H-809					
CA-RIV-9709	33-018919	SMB-H-813					
CA-RIV-9710	33-018920	SMB-H-815					
CA-RIV-9711	33-018921	SMB-H-817					
CA-RIV-9712	33-018922	SMB-H-820					
CA-RIV-9715	33-018925	SMB-H-827					
CA-RIV-9716	33-018926	SMB-H-828					
CA-RIV-9717	33-018927	SMB-H-829					
CA-RIV-9718	33-018928	SMB-H-830					
CA-RIV-9719	33-018929	SMB-H-831					
CA-RIV-9720	33-018930	SMB-H-832					
CA-RIV-9721	33-018931	SMB-H-833					
CA-RIV-9722	33-018932	SMB-H-834					
CA-RIV-9723	33-018933	SMB-H-836					
CA-RIV-9724	33-018934	SMB-H-843					
CA-RIV-9725	33-018936	SMB-H-847					
CA-RIV-9726	33-018937	SMB-H-849					
CA-RIV-9727	33-018938	SMB-H-854					
CA-RIV-9728	33-018939	SMB-H-855					
CA-RIV-9731	33-018942	SMB-H-866					
CA-RIV-9732	33-018943	SMB-H-867					
CA-RIV-9733	33-018944	SMB-H-902					
CA-RIV-9734	33-018945	SMB-H-906					
CA-RIV-9735	33-018946	SMB-H-907					
CA-RIV-9736	33-018947	SMB-H-908					
CA-RIV-9737	33-018948	SMB-H-913					
CA-RIV-9738	33-018949	SMB-H-917					
CA-RIV-9739	33-018950	SMB-H-918					
CA-RIV-9740	33-018951	SMB-H-919					
CA-RIV-9741	33-018952	SMB-H-926					
CA-RIV-9742	33-018953	SMB-H-927					
CA-RIV-9743	33-018954	SMB-H-928					
CA-RIV-9744	33-018955	SMB-H-929					
CA-RIV-9745	33-018956	SMB-H-935					
CA-RIV-9746	33-018957	SMB-H-937					
CA-RIV-9747	33-018958	SMB-H-939					
CA-RIV-9748	33-018959	SMB-H-940					
CA-RIV-9749	33-018960	SMB-H-941					
CA-RIV-9750	33-018961	SMB-H-943					
CA-RIV-9751	33-018962	SMB-H-CT-003					
CA-RIV-9752	33-018963	SMB-H-JR-101					
CA-RIV-9753	33-018964	SMB-H-LK-101					
CA-RIV-9757	33-018968	SMB-H-LK-201					
CA-RIV-9758	33-018969	SMB-H-LK-501					
CA-RIV-9761	33-018972	SMB-H-TC-102					
CA-RIV-9762	33-018973	SMB-H-TC-104					

Trinomial	Primary Number	Temporary Site Number	In Amended Project Footprint	Required Treatment under Approved Project COCs	Removed from Approved Project COCs with CPM Concurrence	Treatment under Approved Project COCs Completed	Remaining Treatment Required
CA-RIV-9764	33-018975	SMB-M-214		CUL-6/7			Still in amended COCs; need to request removal
CA-RIV-9766	33-018977	SMB-M-511					
CA-RIV-9767	33-018978	SMB-M-512					
CA-RIV-9769	33-018980	SMB-M-805					
CA-RIV-9771	33-018982	SMB-M-816					
CA-RIV-9772	33-018983	SMB-M-818					
CA-RIV-9773	33-018984	SMB-M-822					
CA-RIV-9774	33-018985	SMB-M-823					
CA-RIV-9775	33-018986	SMB-M-825					
CA-RIV-9776	33-018987	SMB-M-826					
CA-RIV-9777	33-018988	SMB-H-850					
CA-RIV-9778	33-018989	SMB-M-851					
CA-RIV-9779	33-018990	SMB-M-857					
CA-RIV-9780	33-018991	SMB-M-859					
CA-RIV-9781	33-018992	SMB-M-864					
CA-RIV-9782	33-018993	SMB-M-903					
CA-RIV-9783	33-018994	SMB-M-904					
CA-RIV-9784	33-018995	SMB-M-909					
CA-RIV-9785	33-018996	SMB-M-910					
CA-RIV-9786	33-018997	SMB-M-912					
CA-RIV-9787	33-018998	SMB-M-914					
CA-RIV-9788	33-018999	SMB-M-915					
CA-RIV-9789	33-019000	SMB-M-916					
CA-RIV-9790	33-019001	SMB-M-923					
CA-RIV-9791	33-019002	SMB-M-925					
CA-RIV-9792	33-019003	SMB-M-930					
CA-RIV-9793	33-019004	SMB-M-934					
CA-RIV-9794	33-019005	SMB-M-936					
CA-RIV-9796	33-019007	SMB-M-JR-140					
CA-RIV-9799	33-019010	SMB-M-TC-101		CUL-7	6/13/2011		
CA-RIV-9800	33-019011	SMB-M-TC-103		CUL-7	6/13/2011		
CA-RIV-9801	33-019012	SMB-M-WG-102		CUL-7			Still in amended COCs; need to request removal
CA-RIV-9802	33-019013	SMB-P-237					
CA-RIV-9803	33-019014	SMB-P-238		CUL-7			
CA-RIV-9804	33-019015	SMB-P-241		CUL-7			
CA-RIV-9805	33-019016	SMB-P-242					
CA-RIV-9806	33-019017	SMB-P-244		CUL-7			
CA-RIV-9807	33-019018	SMB-P-249		CUL-7			
CA-RIV-9808	33-019019	SMB-P-252		CUL-7			
CA-RIV-9809	33-019020	SMB-P-270					
CA-RIV-9810	33-019021	SMB-P-275					

Trinomial	Primary Number	Temporary Site Number	In Amended Project Footprint	Required Treatment under Approved Project COCs	Removed from Approved Project COCs with CPM Concurrence	Treatment under Approved Project COCs Completed	Remaining Treatment Required
CA-RIV-9811	33-019022	SMB-P-921					
CA-RIV-9813	33-019024	SMB-P-435					
CA-RIV-9814	33-019025	SMB-P-436		CUL-6		6/13/2011	
CA-RIV-9815	33-019026	SMB-P-437		CUL-6		6/13/2011	
CA-RIV-9816	33-019027	SMB-P-438		CUL-6		6/13/2011	
CA-RIV-9817	33-019028	SMB-P-440		CUL-6			
CA-RIV-9818	33-019029	SMB-P-441		CUL-6			
CA-RIV-9819	33-019030	SMB-P-445					
CA-RIV-9820	33-019031	SMB-P-448					
CA-RIV-9821	33-019032	SMB-P-454					
CA-RIV-9822	33-019033	SMB-P-530		CUL-7			
CA-RIV-9823	33-019034	SMB-P-531		CUL-7			
CA-RIV-9824	33-019035	SMB-P-532		CUL-7			
CA-RIV-9825	33-019036	SMB-P-901					
CA-RIV-9826	33-019037	SMB-P-905					
CA-RIV-9827	33-019038	SMB-P-920					
CA-RIV-9828	33-019039	SMB-P-922					
CA-RIV-9829	33-019040	SMB-P-942					
CA-RIV-9830	33-019041	SMB-P-944					
CA-RIV-9831	33-019042	SMB-P-946					
CA-RIV-9832	33-019043	SMB-P-947					
CA-RIV-9934	33-019617	SMB-H-250		CUL-8			
CA-RIV-9935	33-019618	SMB-P-272					
CA-RIV-10115	33-019870	SMB-H-202					