Rio Mesa Solar Electric Generating Facility

Draft Ethnographic Report Informing the Preliminary Staff Assessment

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Section 304 of the National Historic Preservation Act [16 U.S.C. 470w-3(a-c),

Section 6254.10 of the California Public Records Act,

46 CFR 101 Use of Human Subjects, and

Section 1798.24 of California Civil Code.

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EXECUTIVE SUMMARY

This report provides documentation concerning Native American ethnographic resources that could be impacted by the Rio Mesa Solar Electric Generating Facility (Rio Mesa SEGF) energy generation project, proposed to be developed on 3,960 acres of land in the southeastern corner of Riverside County, California. This report provides: 1) a brief description of the project; 2) an explanation of ethnography and the types of resources that ethnographic methods can explain; 3) a review of the ethnographic methods employed for this study; 4) background information on the tribal governments and other Native Americans that participated in the study; and 5) the ethnographic resources identified as a result of this study.

This report's analysis has highlighted some of the Chemehuevi Tribe, the Colorado River Indian Tribes, the Fort Mojave Indian Tribe, the Agua Caliente Tribe, the Quechan Indian Tribe, and the Cocopah Tribe life-ways, and how those life-ways are intertwined with the surrounding landscape, into eight attributes: water, plants, agriculture, animals, trails, landforms, mortuary treatments and ceremonies and sacred trails. This report remains in draft form, and will not be finalized until after publication of the Preliminary Staff Assessment (PSA), and after staff has conducted all analysis areas, including trails and tribal ethnographic interviews.

This analysis leads the staff to conclude that there are ethnographic resources that, to varying proximity, are in the vicinity of the project:

1. Salt Song Trail Landscape
2. Keruk/Xam Kwatcan Trail/Earth Figures Landscape
3. Palo Verde Ethnographic Landscape

This report documents each of these resources' periods of significance, analysis of integrity, and how the various criteria are met to meet the eligibility requirements to the California Register of Historical Resources.

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1.1 INTRODUCTION

This report provides documentation concerning Native American ethnographic resources that could be impacted by the Rio Mesa Solar Electric Generating Facility energy generation project, proposed to be developed on 3,960 acres of land in the southeastern corner of Riverside County, California. This report provides: 1) a brief description of the project; 2) an explanation of ethnography and the types of resources that ethnographic methods can explain; 3) a review of the ethnographic methods employed for this study; 4) background information on the various tribal governments and Native Americans that participated in the study; and 5) analysis, eligibility evaluations, and recommendation for eight broad resource categories that contribute to one or several ethnographic resources. The preliminary determination suggests that there are three ethnographic resources located in and about the project area.

1. Salt Song Trail Landscape
2. Keruk Trail/Xam Kwatcam/Earth Figures Landscape
3. Palo Verde Ethnographic Landscape

1.2 Description of Project

The following project description is adapted from the Application for Certification docketed on October 14, 2011 (Docket Report 62584).

> The Rio Mesa Solar Electric Generating Facility (Rio Mesa SEGF) is being proposed for development by Rio Mesa Solar I, LLC and Rio Mesa Solar II, LLC, subsidiaries of BrightSource Energy, Inc., a Delaware corporation.
>
> The proposed project site consists of two 250-megawatt (MW) (nominal) solar concentration thermal power plants situated on the Palo Verde Mesa in Riverside County, California, 13 miles southwest of Blythe. Both plants would be situated solely on land leased from the Metropolitan Water District of Southern California. Only the project gen-tie line, emergency and construction electrical power supply line, and access road would be located on public land managed by the Bureau of Land Management. Each plant will utilize a solar power boiler, located on top of a concrete tower (approximately 750-feet tall), surrounded by heliostat (mirror) fields (approximately 85,000 per plant) which focus solar energy on the boiler. Auxiliary boilers will be used to operate in parallel with the solar field during partial load conditions and when additional power is needed.
>
> Each 250 MW plant requires about 1,850 acres (or 2.9 square miles) of land to operate. A common facilities area will include a combined administration,

control, and maintenance facilities, a water treatment facility, as well as a switchyard. The total area required for both plants, including the shared facilities and gen-tie line, is approximately 3,960 acres.

Project maps that portray the project vicinity, site plan, and a diagram of a solar power tower are provided in the back of this report as Figure 1, Figure 2 and Figure 3.

The Applicant has secured 600 acre-feet per year (afy) of water from the Metropolitan Water District (MWD) for use during construction and operation of the Rio Mesa SEGF. The Applicant estimates that during peak construction of the facility, approximately 400 afy of water would be needed (however, this estimate is based on construction of 3 power towers, and therefore should be somewhat lower based on the applicant's current proposal to build 2 power towers). For annual operational usage, the Applicant estimates that 84.5 afy of water would be necessary for each power tower facility (169 afy) and 4.3 afy of water would be used in the common area, suggesting that annual water usage during operation of the Rio Mesa SEGF would total approximately 173.3 afy (AFC 5.15-27).

1.3 What is Ethnography?

Ethnography is a discipline, a method, and a type of document. As a discipline, ethnography is the prime focus of cultural anthropology. As a method, ethnography is an endeavor to understand other cultural groups from their point of view. In order to understand other cultural groups, ethnographers must first understand their own cultural assumptions, biases, and ways of understanding the world. Cultural self-awareness allows an ethnographer to understand other cultures from the other's point of view. Ethnocentrism is the practice of assessing others only in terms of what we know from our own culture. While most human beings are hardwired to think about the world and others in terms of their own cultural experiences, as one conducts ethnographic investigations, ethnocentrism is to be avoided. As a type of document, ethnography provides readers with a written account that presents an understanding of another culture as the ethnographer came to understand that other culture from its people's perspectives or world view. Ethnology is the comparison of multiple ethnographies either of disparate cultures located throughout the world or located in geographic proximity to one another.

Ethnographers employ some of the following methods to understand other cultures:

- **Ethnographic research**: review of previous ethnographies concerning the culture to be understood
- **Historic research**: a review of historic literature about the people, events, and places of cultural importance

- **Kinship charts**: a method for charting human relations among a culture, clan, community, or family
- **Extended interviews**: representative individual and group interviews that seek responses to a number of research questions concerning the culture as a whole or sub areas of the culture
- **Life history interviews**: documentation of the events that chronicle a person's life story as that person presents their personal history within a broader cultural context.
- **Participant observation**: participating in and observing cultural events as if one were from the culture that one is studying.
- **Journalistic witnessing**: witnessing and documenting a cultural event at face value in descriptive terms without interpretation.

Ethnography fulfills a supporting role for other anthropological disciplines as well as contributions on its own merits. Ethnography provides a supporting role to the discipline of archaeology by providing a cultural and historic context for understanding the people that are associated with the material remains of the past. By understanding the cultural milieu in which archaeological sites and artifacts were manufactured, utilized, or cherished, this additional information can provide greater understanding for identification efforts, making significance determinations per the National Historic Preservation Act (NHPA) or the California Environmental Quality Act (CEQA); eligibility determinations for the National Register of Historic Places (NRHR) or California Register of Historical Resources (CRHR); and for assessing if and how artifacts are subject to other cultural resources laws, such as the Native American Graves Protection and Repatriation Act.

In addition, ethnography has merits of its own by providing information concerning ethnographic resources that tend to encompass physical places, areas, or elements or attributes of a place or area. Ethnographic resources have overlap and affinity to historic property types referred to as cultural landscapes, traditional cultural properties, sacred sites, and heritage resources, or historical resources that are areas or places. There is notable overlap in terminology when referring to ethnographic resources. Studies that focus on specific ethnographic resource types may also take on names such as ethno-geography, ethno-botany, ethno-zoology, ethno-semantics, ethno-musicology, etc. In general, the ethnographic endeavor attempts to minimize human conflict by facilitating iterative cross cultural understandings and, by extension, self-awareness.

Ethnography draws upon a variety of sources; published literature, archaeology, and living people. Each of these sources presents the information in different tenses because sometimes cultural practices and ideas are expressed as things that *have* happened, and sometimes as things which *are* happening. In addition ethnographies, including this report, become fixed to

the time of completion, publication or adoption. Consequently, the ethnographer is presented with an "ethnographic present" problem wherein cultural practices are current, yet they are referenced in the text as happening in the past; or conversely, the ethnographic report represents that the world is as it was at the time of research yet years after publication the cultural world described has changed. Therefore, in order to provide a clear understanding of the ethnography staff has used the tense as it is presented in the available sources.

1.3.1 Ethnographic Resources

While several definitions of ethnographic resources can be found in historic preservation literature, the National Park Service provides the most succinct and commonly used definition NPS 2007: Chapter 10):

> Ethnographic resources are variations of natural resources and standard cultural resource types. They are subsistence and ceremonial locales and sites, structures, objects, and rural and urban landscapes assigned cultural significance by traditional users. The decision to call resources "ethnographic" depends on whether associated peoples perceive them as traditionally meaningful to their identity as a group and the survival of their life-ways.

The term ethnographic resources can include resources that are also referred to as traditional cultural properties, sacred sites, cultural landscapes, heritage resources, historic properties, or historical resources that are areas or places.

1.3.2 What are Traditional Cultural Properties?

Traditional Cultural Properties, often referred to as "TCPs", were defined in order to provide a layer of meaning, relevancy, or significance from a communal or localized perspective to the cultural resources profession that is otherwise dominated by archaeology and the knowledge and perspectives that archaeologists promote (King 2003:21-33). Thomas King and Patricia Parker authored an innovative and influential National Park Service Bulletin (NPS Bulletin 38) that defined what TCPs are; how to understand, locate and document TCPs; and how to ethnographically interact with communities that wish to see their special places protected. An explanation of "traditional cultural significance" is provided in the following quote from NPS Bulletin 38:

> One kind of cultural significance a property may possess, and that may make it eligible for inclusion in the Register, is traditional cultural significance. "Traditional" in this context refers to those beliefs, customs, and practices of a living community of people that have been passed down through the generations, usually orally or through practice. The traditional cultural significance of a historic property, then, is

> significance derived from the role the property plays in a community's historically rooted beliefs, customs, and practices.
>
> Examples of properties possessing such significance include:
> - a location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world;
> - a rural community whose organization, buildings and structures, or patterns of land use, reflect the cultural traditions valued by its long-term residents;
> - an urban neighborhood that is the traditional home of a particular cultural group, and that reflects its beliefs and practices;
> - a location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice; and
> - a location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity.

NPS Bulletin 38 provides the following definition of a TCP:

> A traditional cultural property, then, can be defined generally as one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community. (King 1998: 1)
> http://www.nps.gov/nr/publications/bulletins/nrb38/nrb38%20introduction.htm#tcp

While the TCP definition provided in NPS Bulletin 38 addresses many types of special places, some confusion exists with language added during the 1992 amendments to the National Historic Preservation Act at Section 101(d)6. This section particularly calls out "properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization may be determined eligible for inclusion on the National Register." The section further extols agencies to consult with Indian tribes and Native Hawaiians concerning the importance and values that their communities may attach to special places. This has led some to erroneously interpret the Act's Section 101 language to limit TCPs to only Native Americans and Native Hawaiians. However the specific language of the act does not prohibit diversity beyond the two specific ethnicities called out; but merely affirms that Native Americans asserting TCPs during the Section 106 process must be considered.

Recently, the Advisory Council on Historic Preservation in part as a response to a Native American Renewable Energy Summit held in 2011, has attempted to reconcile the similarities

and differences of ethnographic landscapes and traditional cultural properties with the term Native American Traditional Cultural Landscapes (http://www.achp.gov/pdfs/traditional-cultural-landscapes-in-section106.pdf).

1.3.3 What are Sacred Sites?

The term "Sacred Site" is often used interchangeably and sometimes erroneously with the term Traditional Cultural Property. Sacred Site language stems from the American Indian Religious Freedom Act, the Religious Freedom Restoration Act, and Executive Order 13007. Without providing further information concerning the history and resulting inter-relation of the acts and the order, suffice to say that Executive Order 13007 provides the best guidance and definition of the term "sacred site". The definition is as follows:

> "…any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site."

Therefore, despite the common practice of failing to differentiate between the two terms, and while there is some overlap between what are called TCPs and what are called sacred sites, the two terms actually have less in common, because sacred sites can only be located on federal lands and the definition calls out the limited geographic extent of sacred sites as "specific, discrete [and] narrowly delineated". However, TCPs are identified as a result of federal undertakings and tend to be geographically more expansive than "specific, discrete and narrowly delineated sacred sites."

Executive Order 13007 calls for the federal government to accommodate access to, and ceremonial use of, sacred sites by Indian religious practitioners and to avoid adversely affecting the integrity of sacred sites through federal land manager actions. (http://www.achp.gov/eo13007-106.html)

1.3.4 Cultural Landscapes and Ethnographic Landscapes

TCPs and sacred sites language is often used in overlapping ways that lead to confusion during regulatory processes. Cultural landscapes are another constellation of concepts and historic property types defined prior to the coinage of the term TCP. (See King 2003:39 and Stoffle et al. 2005:165-167, for a dialogue on the merits of TCPs versus cultural landscapes as it relates particularly to area size and methods of bounding an area.) The National Park Service Brief 36 provides the following definition of a cultural landscape and its four types. A Cultural Landscape is

> "…a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person exhibiting other cultural or aesthetic values. There are four general types of cultural landscapes, not mutually exclusive: historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes." (NPS Brief 36 1996: 1)

The four types of cultural landscapes are further defined as follows:

Historic Site: a landscape significant for its association with a historic event, activity, or person. Examples include battlefields and president's house properties.

Historic Designed Landscape: a landscape that was consciously designed or laid out by a landscape architect, master gardener, architect, or horticulturist according to design principles, or an amateur gardener working in a recognized style or tradition. The landscape may be associated with a significant person(s), trend, or event in landscape architecture; or illustrate an important development in the theory and practice of landscape architecture. Aesthetic values play a significant role in designed landscapes. Examples include parks, campuses, and estates.

Historic vernacular landscape: a landscape that evolved through use by the people whose activities or occupancy shaped it. Through social or cultural attitudes of an individual, a family, or a community, the landscape reflects the physical, biological, and cultural character of everyday lives. Function plays a significant role in vernacular landscapes. Examples include mining or ranching complexes.

Ethnographic landscape: a landscape containing a variety of natural and cultural resources that associated people define as heritage resources. Examples are contemporary settlements, religious sacred sites and massive geological structures. Small plant communities, animals, subsistence and ceremonial grounds are often components. Examples include a section of a river where a Native American culture lives, travels, and fishes; or an upland mountain area where tribal people hunt, gather, camp and travel extensively during part of the year.

Landscapes are understood and documented by conducting ethnographic research that identifies the contributing elements or attributes of the landscape. Contributing elements can include both cultural and biological resources, climate and landforms, subsistence, religion, economy and the built environment.

For the purposes of this study, the resource focus is with Native American places and areas otherwise referred to as ethnographic resources and how those resources may stand alone or contribute to ethnographic landscapes located in and around the proposed project area. Having said this, and based upon the discussion provided above, the reader should be aware that there are multiple overlaps of terminology: Traditional Cultural Properties, Sacred sites, Cultural or

Ethnographic Landscapes, and specific historic property or historical resources types of sites, objects, buildings, structures, districts, areas or places.

2.1 HISTORY OF TRIBES FROM THE PATAYAN (ca. A.D. 1000) TO THE PRESENT

2.2 Patayan

The Pai groups that inhabit the Lower Colorado River Valley, and the surrounding region, maintain a collective cultural understanding. These groups, the Mohave, the Walapai, the Havasupai, the Yavapai, the Maricopa, the Quechan, the Cocopah, the Paipai, the Kiliwa and the Kumiai understand that they were created at the sacred mountain *Avikwame* (See section 4.7), and migrated from the mountain south to their respective ancestral homelands (except the Mohave who stayed near *Avikwame*) (Johnson 2003: 161). *Avikwame* is also referred to as Spirit Mountain. Additionally, these groups share the Yuman language, although they speak different dialects. The terms 'Pai' and 'Yuman' are used interchangeably in the literature and in this report. The term Patayan has been used to denote these Pai groups as the prehistoric peoples who occupied the Lower Colorado River Valley and nearby areas (Johnson 2003: 160, Colton 1945: 119). The term Patayan is defined by the material archaeological record, specifically the pottery style, but also other similar material culture attributes which are indicative of this region (Jones and Klar 2007: 252-253, Colton 1945: 114). Figure 4 displays the general area in which the Patayan cultural tradition is located.

The area around the Rio Mesa SEGF is an area that several different tribes have called home. During the proto-historic period, accounts from European explorers indicate that at different times the Halchidhoma, Quechan, and Chemehuevi tribes each settled in the Palo Verde Valley near the Rio Mesa SEGF project area. Most of the tribes of the Lower Colorado River were involved in amity-enmity relationships with one another; the Mohave, Quechan, Chemehuevi, Yavapai and Kamia were allied against the Halchidhoma, Maricopa, Pima, Papago, and Cocopah in the east, and the Cahuilla, Diegueño, and Serrano in the west (Dobyns et al. 1963: 109-111; Bean and Tojenes 2012: 8). These inter-tribal relationships were sustained by the east – west and north-south running trails that connected the tribes along and slightly away from the Lower Colorado River. These trails were used for resource acquisition, trade, ceremony and warfare (See section 4.6). Frequent warfare was documented in the 19th century, and was a major reason for the transitive nature of occupation in the Palo Verde Valley. It has been suggested that frequent warfare may not have been typical throughout the prehistoric past, but was exacerbated by the desiccation of Lake Cahuilla in the late 18th century (Stone 1981: 37), and the presence of the Euro-Americans (i.e., a demand for slaves by the Spanish and Americans

and increased competition for resources between tribal groups as newcomers settled on vital tribal subsistence and agricultural lands).

The maps (Figures 5, 6, 7 and 8) presented in the back of this report show generally where tribes are thought to have resided over the last several hundred years. The Halchidoma originally moved from the Gila River Colorado east-bank confluence up to the Palo Verde Valley in the 17th century to avoid the enmity relation with the cross river Quechan. Some ethnographic literature suggests that the Halchidoma extricated themselves from the Palo Verde area or were forcibly removed by the Quechan and Mohave between the spring of 1827 and 1829 (Dobyns et al. 1963: 125). Historic records suggest that the Mohave and Quechan feared that a Halcidoma/Pima Maricopa alliance with the Mexican government, who were intent on establishing a direct and standard transportation route from New Mexico to the California Missions, would lead to a geographic separation of the Quechan and Mohave. With the exodus of the Halchidoma, Chemehuevi groups settled into the northern portion of the area (with or without the permission of the Mohave) (Roth 1977). Roth, (citing Carobeth Laird) suggest that there is some evidence that Chemehuevi, being allies of the Halchidoma were settled in the northern Palo Verde Valley prior to Halchidoma egress from the Palo Verde Valley. The Halchidoma, sufficiently bruised by the Mohave and Quechan, first moved to Mexico and then eventually to the Gila River Bend area where they assimilated into the culture of their long term allies, the Maricopa. After the Halchidoma left the Palo Verde area, some Mohave migrated down the Colorado and established themselves in Parker Valley. By 1850, some Quechan, attempting to avoid increasing American militarism in the Yuma area, migrated north and settled into the southern portion of the Palo Verde Valley. Some information suggests that circa 1890, the Quechan who had migrated north and more specifically the village of *Avi'kwotapai*, returned to the Yuma area and settled in the western end of the Fort Yuma Reservation (Bee 1963: 208).

Between the years 1864 and 1890, The American government initiated a campaign, partially successful, that resulted in Yuman people being placed on several reservations established along the Lower Colorado River.

2.3 Present Tribal Governments

Tribes were invited to participate in the ethnographic study, based upon a list of nine affiliated tribes provided by the Native American Heritage Commission. The nine invited tribal governments represent six different cultural affiliations. From north to south, these affiliations are: Chemehuevi (Southern Paiute); Mohave; Serrano; Desert Cahuilla; Quechan; and Cocopah (Bean 1978: 575, Figure 1; Bean and Smith 1978: 570, Figure 1; Bee 1983: 86, Figure 1; Heizer

and Whipple 1971: Map 1; Kelly and Fowler 1986: 368, Figure 1; Stewart 1983a: 55, Figure 1; Williams 1983: 99, Figure 1).

Of the nine tribal governments, five are participating in this study (Table 1).

Table 1 Summary of Tribal Participation for this Study

Tribe	Cultural Affiliation	Study Participation
Chemehuevi Reservation	Chemehuevi (Southern Paiute)	Yes
Colorado River Indian Tribes	Mohave, Chemehuevi (Southern Paiute)	Yes
Fort Mojave Indian Tribe	Mojave	Yes
Fort Yuma Quechan Indian Nation	Quechan	Yes
Cocopah Indian Tribe	Cocopah	Yes
Morongo Band of Mission Indians	Cahuilla, Serrano	No
San Manuel Band of Mission Indians	Serrano	No
Twenty-nine Palms Band of Mission Indians	Chemehuevi (Southern Paiute)	No
Agua Caliente Band of Cahuilla Indians	Cahuilla	Yes

2.4 Southern Paiute

The Southern Paiute are an Indian population that resided within an expansive portion of the Great Basin. Their territory can be described as a crescent extending northwest from the vicinity of present-day Blythe, California along the Colorado River to the Amargosa Range. From the Amargosa Range, Southern Paiute territory extended northeast into southern Nevada, generally between the White River and Virgin River watersheds. The northern boundary of Southern Paiute territory encompasses the southern third of present-day Utah. This group also held land in northern Arizona, north of and including the northern bank of the Colorado River. The eastern boundary of Southern Paiute territory was marked by the southeastern flank of the Rocky Mountains, just east of the Colorado–San Juan River confluence. The Chemehuevi are the only subgroup of Southern Paiute that resided in the project vicinity, along the lower Colorado River between Needles and Blythe (Kelly and Fowler 1986: Figure 1).

2.4.1 Chemehuevi Indian Tribe

Chemehuevi Indians today are affiliated with the Fort Mojave Indian Tribe, Chemehuevi Indian Tribe, Colorado River Indian Tribes, Twenty-nine Palms Band of Mission Indians, and the Cabazon Band of Mission Indians (Kroeber 1976:594–595). The Fort Mojave Indian Tribe is discussed in more detail under the heading *Mohave—Colorado River Indian Tribes*. The Twenty-Nine Palms and Cabazon bands are not discussed in this report since these tribes currently are not participating in this ethnographic study. This section, therefore, addresses the Chemehuevi Indian Tribe.

The Chemehuevi Tribe is a federally recognized tribe and is officially named the Chemehuevi Indian Tribe of the Chemehuevi Reservation (BIA 2010:60810). Rather than remain on the Fort Mojave Indian Reservation, the Chemehuevi requested that the federal government establish their home in their traditional area, the Chemehuevi Valley. In 1885, the Chemehuevi requested to leave the Colorado River Reservation and go back to Chemehuevi Valley. They remained there and at Beaver Lake and Cottonwood Island until dam construction forced them out in 1929. The Chemehuevi Reservation was founded on the Colorado River in Chemehuevi Valley north of Parker, Arizona (Kelly and Fowler 1986:388–389).

Clemmer and Stewart (1986: Table 3) report that the Chemehuevi Reservation was “alienated” in 1912 and inundated by Lake Havasu. In 1935, Congress authorized MWD to obtain as much reservation land as needed to create Parker Dam, which ultimately caused the inundation of 8,000 acres of tribal lands in 1940. In the 1960s, some Chemehuevi members from the Colorado River Indian Reservation joined with off-reservation tribal members in reorganizing the Chemehuevi Tribe and reactivating the Chemehuevi Reservation. The date of election of the Chemehuevi Indian Tribe’s constitution was February 14, 1970. Approval was obtained on June 5, 1970 (Rusco and Rusco 1978: 565, Table 1).

The current reservation contains 32,000 acres of trust land with 30 miles of Colorado River frontage (Chemehuevi Indian Tribe 2012a). The Tribe is based in Havasu Lake, California (Bureau of Indian Affairs 2011: 116). An Executive Committee comprising a chairperson, vice-chairpersons, and secretary treasurer oversees daily tribal operations and enterprises. The tribe also has a nine-person tribal council and a tribal court (active since 1996). The tribe’s Cultural Center seeks to educate its younger generations about contemporary and traditional Chemehuevi life. The Tribe operates the Havasu Landing Resort & Casino (Chemehuevi Indian Tribe 2012b, 2012c, 2012d, 2012e).

2.5 Mohave

Currently, the Mohave Indians are members of one of two tribes: 1) former residents of the Fort Mojave Reservation in Arizona, now residing in Needles, California since the 1930s; and 2)

Mohaves of the Colorado River Reservation, part of the Colorado River Indian Tribes (Stewart 1983a: 55).

2.5.1 Colorado River Indian Tribes

The Colorado River Indian Tribes constitute a federally recognized tribe, headquartered in Parker, Arizona and consists of Mohave, Chemehuevi, Hopi, and Navajo Indians (Bureau of Indian Affairs 2011: 116; Colorado River Indian Reservation 2009a). The Colorado River Reservation was originally established in 1865 for the Mohave; land was added in 1874 to settle Chemehuevi Indians on the reservation (Kelly and Fowler 1986: 388–389; Stewart 1983a: 55). Hopi and Navajo were later settled on the reservation as well (Colorado River Indian Reservation 2009a).

The Colorado River Reservation encompasses 300,000 acres on the Colorado River. The mainstay of the Colorado River Indian Tribes' economy has historically been agriculture and the tribe presently grows cotton, sorghum, and alfalfa. The Colorado River Indian Tribes also run businesses in sand and gravel quarrying, real estate development, retail, and operate the Blue Water Resort and Casino in Parker (Colorado River Indian Reservation 2009a). The tribal government is administered by a nine-person tribal council, which consists of a chairman, vice-chairman, treasurer, secretary, and five council members. All tribal council members are elected to office by tribal members (Colorado River Indian Reservation 2009b).

2.5.2 Fort Mojave Indian Tribe

The Fort Mojave Indian Tribe is a federally recognized tribe with its governmental seat in Needles, California (Bureau of Indian Affairs 2011: 117). The Fort Mojave Reservation covers almost 42,000 acres in Arizona, California, and Nevada. The land is divided into three major segments: 23,669 acres in Mojave County, Arizona; 12,633 acres next to Needles; and 5,582 acres in Clark County, Nevada. The tribe operates the Avi Resort and Casino, containing a casino, hotel, restaurants, movie theater, and other recreation and entertainment. The tribe also hosts an annual Pow Wow every February to celebrate native culture, hold dances, and have musical competitions (Fort Mohave Indian Tribe n.d.).

2.6 Cahuilla

2.6.1 Agua Caliente Band of Cahuilla Indians

Reservations were established for the Cahuilla beginning in 1875, and totaling 10 by 1891(Bean 1978: Table 3). The Agua Caliente Band of Cahuilla Indians was granted land at Tahquitz Canyon, Riverside County, on May 15, 1876 (Agua Caliente Band of Cahuilla Indians 2012a; Bean et al. 1978:5-14, 5-16.) From 1891 until the 1930s, Indian Service (Bureau of Indian Affairs)

personnel lived on-reservation and closely controlled tribal politics. The Indian Reorganization Act of 1934 gave more political autonomy to the Cahuilla, permitting, among other rights, the authority to reestablish tribal governments (Bean 1978:584; Castillo 1978:121).

Today, the tribe and its members constitute the largest single landowner in Palm Springs. The Agua Caliente Band is governed by a tribal council consisting of a chairman, vice chairman, secretary/treasurer, and two council members. The council members are elected by the tribe, and the elected members appoint four proxy members (Agua Caliente Band of Cahuilla Indians 2012b).

2.7 Quechan

2.7.1 Fort Yuma Quechan Indian Nation (Quechan Tribe)

The Quechan Tribe is a federally recognized tribe with its governmental office in Yuma, Arizona (Bureau of Indian Affairs 2011: 119). The U.S. government established the Fort Yuma-Quechan Reservation on the California side of the Colorado River in 1884, although much of the land was shortly afterward appropriated by Euro-Americans. Reservation lands were further broken up by allotment to individual Quechan's in 1912. The tribe ratified a constitution and elected a seven-person tribal council in 1936. In 1978, the tribe had 25,000 acres of land restored to them (Bee 1983: 94–96).

Today, the Quechan Tribe's reservation spans the Arizona–California border at the Colorado River near the confluence with the Gila River and contains 45,000 acres of land. The tribal government is headed by a president and vice president, as well as five council members. Business enterprises include a 700-acre agricultural lease to a non-tribal farmer and a sand-and-gravel lease that employs tribal members. The tribe also manages trailer and recreational vehicle parks, a museum, bingo hall, casino, utility company, and fish and game department (Inter-Tribal Council of Arizona 2011).

2.8 Cocopah

2.8.1 Cocopah Indian Tribe

The Cocopah Indian Tribe is a federally recognized tribe with its seat in Somerton, Arizona (Bureau of Indian Affairs 2011: 116; *Federal Register* 75(190): 60810). The Cocopah originally resided north of their historically documented territory and are believed to have been displaced by the Mohave and Quechan ca. A.D. 1400–1500 (Williams 1983: 99–100).

Today there are two branches of Cocopah, one in the United States ("American Cocopah") and one in Mexico ("Mexican Cocopah"). This division resulted from the actions of the United States

and Mexican governments concerning Indians residing within the boundaries of these two dominant nations. For instance, in 1917, the United States gave the "American Cocopah" title to three small land areas under the jurisdiction of the Yuma agency (Williams 1983: 102). Increased border enforcement in 1930 exacerbated the separation of the two groups (Kelly 1977: 13).

The Arizona Cocopah began to organize in 1961, beginning with a revision of the tribal constitution and bringing electricity to tribal lands. The Cocopah have three reservations: Cocopah West Reservation, Cocopah East Reservation, and Cocopah Lots 5 and 6. These lands total 1,800 acres (Williams 1983: 102). In 1964, the Cocopah Indian Tribe formed its first constitution and a five-person tribal council. In 1985, the Cocopah obtained an additional 4,200 acres of reservation land, including the North Reservation, via the Cocopah Land Acquisition Bill. The tribe is currently led by a chairperson, vice-chairperson, and three council members (Cocopah Indian Tribe n.d.).

3.1 METHODS

3.2 General Description of Ethnographic Methods and "REAP"

Ethnography at its best takes years to complete. Ethnographers can spend a lifetime studying another culture and still find that their cross-cultural knowledge of their "second" culture is incomplete. Minimally, it is advised to spend at least one year in studying another culture so that one can learn about the various seasonal variations and adaptations. Academic and self-funded anthropologists may have such luxury. However, the merits of ethnography, when employed to understand project impacts to ethnographic resources, often require less than optimal study durations. One method, called "Rapid Cultural Assessment" was developed in the 1930s to assists sociologists' understanding of American rural agricultural community responses to socioeconomic impacts ensuing from evolving environmental conditions. (NPS 2007, Chapter 10:8, http://www.iisd.org/casl/caslguide/rapidruralappraisal.htm) The National Park Service (NPS) has developed similar methods for understanding ethnographic resources within the shortened time frames related to project review. The NPS method, called Rapid Ethnographic Assessment Procedures (REAP), was generally followed for this project-related ethnographic study.

REAP consists of a selection of ethnographic methods that relies on interview, observation, and research techniques to describe a way of life common to a group of people, that can include their knowledge, customs, beliefs, social habits, technology, arts, values, and institutions. REAP involves active participation of people in a cultural group to render representations of a way of life from a community's point of view. Unlike traditional ethnography, REAP focuses investigations and resultant descriptions on solving specific problems or issues that may arise as a result of proceeding with a development project.

REAP's truncated methods are:

1. Group meetings/interviews where the ethnographer explains the project to the group, answers general questions and solicits immediate responses, fears, apprehensions, benefits, or other general perceptions from the participants concerning the project, the area where the project is being proposed, and the general connections of traditional people to the project area. Often issues of confidentiality are discussed. Surmounting the issues of confidentiality, the ethnographer may be successful in scheduling follow-up activities with specific individuals to increase ethnographic understanding.

2. Areas worth further ethnographic inquiry are identified; a research design, including research/interview questions, is developed; and specific people are scheduled by the ethnographer and the group for follow-up interviews. Follow-up interviews should be

conducted according to the protocols of documentation and confidentiality identified during the group meeting/interview. Interview notes, however recorded, should be vetted with the source individuals to verify accuracy and to gather additional nuanced information.

3. Follow-up interviews with the same or additional people often occur while both the ethnographer and the community begin to further think about the project, the project effects, and additional information that is necessary for fully identifying, evaluating, assessing effects, or otherwise considering impacts to ethnographic resources.

4. As Steps 1 through 3 are being conducted, a parallel archival "search, retrieve, and assess" process should be undertaken to provide supporting or conflicting information to what is being discovered through the interview process. In addition to archive, book store, and other informational repositories (e.g., the internet), the people themselves or other ethnographers with previous experiences with the same people, may provide source materials.

5. Field visits will help the ethnographer triangulate between what people currently say, what people have written in the past, and what is actually or perceived to be in the project area as a potential ethnographic resource.

http://www.nps.gov/ethnography/training/elcamino/phase1.htm#reap

3.3 RMSEGS Ethnographic Study - General Meetings

Several meetings were held to exchange general information with affiliated tribes and to gauge tribal interest in participating in further project-related ethnographic studies. Specific Tribal government representatives and individual traditional Native American practitioners were contacted for initial invitation, based upon a January 25, 2012 listing provided by the Native American Heritage Commission (NAHC) to Energy Commission staff.

A March 9, 2012 meeting was held at the Quechan tribal offices in Yuma California, and attended by the Energy Commission staff ethnographer and the Quechan Tribal Historic Preservation Officer and the Quechan Preservation Culture Committee. The Energy Commission power plant licensing process was generally discussed and the Rio Mesa project description was also reviewed in general. The potential role of ethnographic methods for determining ethnographic resources including landscapes was discussed. The Quechan Tribe expressed interest in participating in project-related ethnographic studies and stated that dream trails are in the project vicinity and would likely be impacted by the project.

A May 10, 2012 meeting was held near the Rio Mesa project site, and attended by the ethnographer and cultural resources staff from the Quechan Tribe, Mojave Indian Tribe and the Colorado River Indian Tribe. The Energy Commission power plant application review process was generally discussed and the Rio Mesa project description was also reviewed in general. The potential role of ethnographic methods for determining ethnographic resources including landscapes was discussed. The Tribes present expressed interest in participating in project-related ethnographic studies. However all three tribes also suggested that a draft report be prepared without tribal involvement. The draft report could be provided for tribal review and comment.

The Cocopah Tribe's Cultural Resources Department staff has expressed interest in the project during several email and phone conversations.

One letter, dated May 7, 2012 was received by staff from the Agua Caliente Tribe that requested:

1. that the project area receive 100% survey and that any reports and related site records be sent to the Agua Caliente THPO for review and comment,
2. that any ground disturbing activities be monitored by an approved Native American Cultural Resource Monitor, and
3. if Native American human remains are discovered, that State Health and Safety Code 7050.5 applies.

An August 23, 2012 meeting was held at the Aha Macav Cultural Resources office on the Fort Mojave Reservation in Needles, California, and attended by the staff ethnographer and ethnographic assistant, cultural resources staff from the Fort Mojave Tribe, the Colorado River Indian Tribes, and the Quechan Tribe, and the Tribal Chairman and counsel from the Chemehuevi Tribe. The application review process was generally discussed and the Rio Mesa project schedule in relation to the ethnographic study and the Preliminary Staff Assessment was reviewed. The draft ethnographic study was reviewed, and tribes provided limited comments; however, tribes noted that they intend to provide additional comments prior to the publication of the PSA. Additional discussions centered on the potential for tribal oral history interviews to be conducted between publication of the PSA and FSA, potential landscape boundaries were clarified with tribal input, and the archaeological testing plan for the Rio Mesa SEGF was generally discussed. The tribes present were adamantly opposed to subsurface testing, collection, and laboratory testing, but acknowledged that mapping and photography documentation was acceptable. The participating tribes have broad concerns for other testing plan elements, and requested face-to-face consultations with Energy Commission management

concerning the testing plan. Additional areas of concern are related to impacts to the Colorado River and water usage by the project. During this meeting, tribes expressed concerns about the ability of new forms of language (i.e., English and science) to express the tribes' deep understanding of their place in a riverine environment.

3.4 Research Design

Based upon these general meetings, an abbreviated research design was developed that generated various research questions or directives. The research design was then pursued within an ethnographic project area of analysis (EPAA). Originally staff was guided by a somewhat hypothetical circular EPAA defined by a radius of 35 miles from the center of the project area. After conducting preliminary research that suggested specific ethnographic landscapes, the EPAA was elongated to include two linear trail corridors that, in combination, follow and cover both sides of the river from generally Yuma to Laughlin, and one circle of about 15 miles in radius that generally encircles a length of the Colorado River, the Palo Verde Mountains, the Mule Mountains and the southern portions of the Palo Verde Valley and Mesa.

Due to extensive research conducted by staff on the Hidden Hills Solar Energy Generating System (HHSEGS) project, located approximately 225 miles to the north of the Rio Mesa SEGF project, staff was aware that the Salt Song Trail corridor, running through the HHSEGS project vicinity, also runs along the Colorado River and adjacent to the Rio Mesa SEGF project vicinity.

Prior to Rio Mesa SEGF project review, staff was aware that the Quechan dream trail also passes through the project vicinity. This trail was the center of a controversy (*circa* 2000) that pitted the Quechan Tribe against the BLM when that agency was considering a mining permit, that, had it been issued, would have removed large portions of Glamis Mountain, known to contain gold. The proposed Glamis Mine project location is approximately 25 miles south of the proposed Rio Mesa SEGF project.

Prior to conducting original research for Rio Mesa SEGF project review, staff was also aware that the Lower Colorado River corridor, and specifically the Blythe area, contained world-renowned earth figures. The Blythe Intaglios (earth figures) are well known and are listed on the State Historical Landmarks.

The following research design provided general guidance for preliminary archival research and allowed the ethnographer to prepare for interviews.

- Research specific Lower Colorado River/Palo Verde Native American history and culture beyond what is generally provided in the URS Cultural Resources report prepared for the Rio Mesa SEGF AFC.

- Determine what plants and animals have cultural significance for the Cocopah, Quechan, Mojave or Chemehuevi tribes or ones which may be located in the project area. Plants and animals determined to have attached Native American cultural values should be further studied to understand ethno-botanical and ethno-zoological details.
- Research the general Cocopah, Quechan, Mojave or Chemehuevi cultural relevance and history of water knowledge and use in the Lower Colorado River Valley and surrounding mountains.
- Research and understand the importance of spring environs in the project area for the continuance of Cocopah, Quechan, Mojave or Chemehuevi life-ways.
- Research and understand tribal ceremonies performed in the Project vicinity. Determine to what extent these ceremonies are still practiced today and to what extent the proposed project would impact such ceremonies.
- Research and further understand the history, practices, and meaning of the Salt Song trail for Chemehuevi, with emphasis on ethno-geography and specific attention paid to the nature of the trail aspects of physical travel, song scapes and related practices, beliefs and related ceremonies
- Research and further understand the history, practices, and meaning of the Xam Kwatcan or "Dream" trail, with emphasis on ethno-geography and specific attention paid to the nature of the trail aspects of physical travel, dream travel and related practices, beliefs and related ceremonies.
- Research the history of Cocopah, Quechan, Mojave or Chemehuevi agriculture in the project area from pre-contact to current times.
- Research and map, to the extent feasible, Native American Trails located in and near the project area that are not necessarily "Dream Trails" or the Salt Song Trail.
- Understand to what extent the Bradshaw Trail is also a Native American trail.
- Inquire about and document the importance of the Mule Mountains, McCoy Mountains, Big and Little Maria Mountains, Trigo Mountains, the Palo Verde Mountains and other surrounding landforms in general as view/auditory sheds in relation to the project area, other landforms, and other ethnographic resources.
- Research traditional and current Cocopah, Quechan, Mojave or Chemehuevi burial practices, including cremation.
- Inquire as to the interrelation of Cocopah, Quechan, Mojave, Chemhuevi and Cahuilla cultures in general and specifically in project area.
- Research the history of tribal governments: Chemehuevi Tribe, Fort Mojave Indian Tribe, Colorado River Indian Tribe, Agua Caliente Band of Cahuilla Indians, Fort Yuma Quechan Indian Nation and Cocopah Tribe.

3.5 Interviews

Based upon ENERGY COMMISSION STAFF/Tribal staff meeting discussions, it was agreed that Tribal interviews would happen after archival research had been completed and a draft ethnographic study was written to reflect results of the archival research. Therefore tribal interviews were not conducted at the time of publication of the PSA. This section will be

completed prior to publication of the FSA. It is likely that interviews will provide information that may add to or change ethnographic resources characterizations for this document and the PSA.

3.6 Archival Research

Staff made efforts to seek, obtain, and assess culturally relevant information from various archival and other sources.

- Documents were obtained via various internet searches and subsequent downloads.
- Books were obtained from used book stores in the project area and from on-line book purchasing venues.
- Books and manuscripts from the California State Archives were obtained and reviewed.
- Books and manuscripts from the California State Library were obtained and reviewed.
- Books and manuscripts from the Sacramento State University Library were obtained and reviewed.
- Books and manuscripts from the University of California at Davis Library were obtained and reviewed.
- Books and manuscripts from the University of California at Berkeley Anthropology Library were obtained and reviewed.
- Books and manuscripts from the University of California at Berkeley Bancroft Library were obtained and reviewed.
- Historic Photographs from the California State Archives and University of California at Berkeley Bancroft Library were obtained and reviewed.
- Documents from the tribal representative of the Quechan Tribe were obtained concerning reports that had been used in preparing cultural resources information for the California Desert Conservation Area (CDCA).

3.7 Ethnographic Method Constraints

Constraints to the ethnographic methods described above were identified:

1. Confidentiality of specific traditional cultural knowledge
2. Not enough time to conduct thorough ethnography
3. Language barriers in expressing and understanding information
4. A trail study was not completed in time to include relevant trail information to bear on the ethnographic resources identified.

Due to the sensitive nature of some of the potential answers to research questions and the confidentiality that participating tribes attach to such information, tribes requested that thorough archival research and a draft report be conducted and then provided for tribal review. Based upon that review, tribes would then, perhaps, convey some confidential information. While this process is a rational approach to protecting sensitive information by only providing

the bare minimum required, the approach also requires more coordination and therefore a lengthier schedule for completing the ethnographic study and subsequent report.

The Cocopah, Quechan, Mojave or Chemehuevi cultures, and particularly traditional cultural practices related to epistemology (belief systems), world view, and religion, are too complex to understand within the limits of a three to six month study.

Some cultural practices and understandings are foreign to the English language and scientific way of knowing and can only be articulated in Chemehuevi, Mojave, Quechan and Cocopah languages.

Constraints were *surmountable*, *partially surmountable,* or *not surmountable* as described below.

- This draft report only provides what can be learned from the written ethnographic record. Staff anticipates some oral history interview information to be obtained and incorporated into the report after PSA publication. *Constraint Partially Surmounted.*

- The Rapid Ethnographic Assessment Procedures were adapted to this ethnographic study. While REAP cannot replace the quality of long-term ethnography, it does provide some ability to include ethnographic resources in the Energy Commission siting process; a process that only affords Energy Commission staff with a few months, at most, to conduct independent research. *Constraint Partially Surmounted*.

- Staff does not speak or understand any of the languages traditionally spoken by Native Americans of the Lower Colorado River. Additionally, tribes expressed concerns about the ability of new forms of language (i.e., English and science) to express the tribes' deep seeded understanding of their place in a riverine environment. However, information conveyed in this report is provided in the English written language only. *Constraint Not Surmountable*.

- Due to budget and time constraints, the trail study was reduced to a minimal effort to obtain information and plot trail locations in and around the proposed project area. Consequently a trail study was delayed and will not be initiated until about the time of PSA publication. Trail study results will be included in a final ethnographic report that will inform the FSA. However enough trail information is available to inform the definition of two sacred trail landscapes. *Constraint Partially Surmounted.*

4.0 ETHNOGRAPHIC ATTRIBUTE ANALYSIS

Based upon what can be found through archival research[1], the various themes of the research questions are condensed and reduced to eight broad attribute categories as follows:

- Water
- Plants
- Agriculture
- Animals
- Trails
- Landforms
- Mortuary Treatment
- Ceremonies and Sacred Trails

4.1 Totemic Clan Names

Totemic clan names are an important identifying characteristic among Yuman speakers. These totems can take the forms of, or have over-arching bearing on several of the attribute categories, i.e., water, plants, animals, or other natural phenomena.

It is understood that these totems are assigned by the Creator, and that these totems belong to specific clan groups (Kelly 1942: 677). There is some information that the god *Mastamho*, residing in his northern "house" and immediately after the creation of humans, sent forth varying Yuman people that migrated and inhabited various portions of the lower Colorado River from Spirit Mountain (the "Big House") south to the Gulf of Mexico. Other literature suggests that it was Mastamho's father, Mutavilya, who provided the original clan designations (Sherer 1965: 127). While the first migratory wave (some literature suggests that the last wave was the Mohave who stayed close to the place of origins) stayed nearer to Spirit Mountain, successive waves migrated further south (Johnson 2003: 161). Each wave was also provided with totemic clan names. This totemic clan system "comprises patrilinear, exogamous, nameless groups of totemic reference", and except for the Cocopah, totem taboos are either slight, or lacking (Kroeber 1976: 741). Regardless of origins, the clan names can be grouped into three categories that reflect an indigenous division of the universe into three zones: above the earth, the earth, and below the earth (Sherer 1965: 128). Each clan is a specific aspect of one of these three zones. The following table is adapted from Sherer (Ibid. 136, 138 – Table 1), and reflects only Mohave Clan names. Quechan maintain a similar clan system but with different name variations. Chemehuevi do not exhibit a clan structure in their kinship system.

[1] The following analysis provides what was discovered through archival research. Document or personal communications citations will cue the reader as to the source that substantiates a statement or assertion.

CLAN NAMES – ABOVE GROUND	TOTEMS	NOTES
Neolge	sun, fire, eagle, deer, beetle	
Oach	Cloud, rain, white cloud, rain cloud	
Mat-hachva	wind	Extinct
Whalia	moon	
Maha	Small bird	
Motheha	Night bird, screech bird	
Kutkilya	Owl	Extinct
CLAN NAMES - GROUND	**TOTEM**	**NOTES**
Hipa	Coyote	
Moha	Mountain Sheep, Deer	
Masipa	Quail, Coyote	
Nyikha	Caterpillar	Extinct
Vemacka	Bean, Honey Mesquite	
Mus	Bean, Screw bean Mesquite	
Chaca	Corn	
Vahadha	tobacco	Extinct (merged with *Gottah*)
Gottah	Mescal, Agave, Tobacco	
Kumathee	Ocotillo, Cactus	
Quinetha	Prickly-pear cactus	
Teelya	mescal	
CLAN NAMES – BELOW GROUND	**TOTEM**	**NOTES**
Shulia	Beaver	
Boudha	Frog	
Malika	Ground squirrel, Wood Rat, desert rodent	

There is some disagreement in the literature as to whether clans are local or non-local named or nameless (Spier 1953). It appears as though the discrepancies between named or nameless is a matter of gender relations in evolving patrilinear societies with various and differing rules concerning speaking other certain persons' names or affiliations. Due to, 1) the various creation migrations that ensued from north to south, 2) the agricultural migrations that ensued from river flood plain to nearby mesas and mountains, 3) amity/enmity migrations that ensued from various alliances and warfare events, and 4) the rule of exogamy or marrying outside of one's own clan, it is difficult to assert that particular clans have rights to particular locales because of clan designations. Conversely it is plausible that clans tended to settle in certain areas as units simply due to circumstances of particular times and upon settling asserted rights because they were there, and not because their respective clan totem provided a right to be at the specific locale (Spier 1953). There is some evidence that clan names were associated with specific months when the totem plant or animal made a seasonal appearance requiring an important

tribal interaction. For example the month of "Mesquite Beans Ripen," late June to early July, was also a time that the Mesquite Clan was at its zenith of importance. There is discrepancy as to whether the linking of clan names, totems, related plants, subsistence activities and specific locales were that important or even existent among the Lower Colorado Tribes (Castetter and Bell 1951: 147). There is sufficient evidence that indicates that the Department of the Interior and with assistance from the Boarding schools attempted a systematic removal of the Clan system in order to disrupt the communal understanding of the environment and specific lineages' relations to the land. The communal system of relating humans to the world was not conducive to the western introduced way of allotting land (160 acres) to specific individuals that were then responsible for subsistence on only that land (Sherer 1965: 135-141).

However, today, those members of a specific clan are understood to be well informed of the nature and characteristics of the totem, and should be considered to be experts of the aspects of the totem. For example Mesquite Bean Clan members are thought to have specific knowledge concerning the mesquite tree, and the species' treatment as a source of food and other cultural materials. (Tribal Communication – Tribal Meeting August 23, 2012).

4.2 Water

Water is critical to all life forms, particularly in the desert. Without water, life would not be possible. The most prevalent water source for tribes in the vicinity of the Rio Mesa SEGF is the Colorado River. This body of water was the essential element in facilitating habitation in this area (Forbes 1965: 7). Tribes have expressed concern regarding impacts to water. Specifically, they have stated that impacts to the Colorado River corridor would have serious consequences for their ability to maintain their life-ways. It was stated by a tribal representative that the Colorado River is "who we are, it's what we do" (Tribal Communication - Tribal Meeting of August 23, 2012). Adverse impacts to the Colorado River and the associated corridor is considered desecration of a sacred area because groups are no longer able to fulfill their duty to commune with the Creator, or conduct ceremonies and rituals which adds to the sacredness of the river (e.g., bathing in the river for purification, bathing in the river by runners, and after cremation ceremonies) (Tribal Communication – Tribal Meeting of August 23, 2012).

In addition to providing water to quench the thirst of humans and animals, the annual flooding of the river and the subsequent silts that were deposited on the floodplain as a result, allowed groups to cultivate and domesticate a variety of crops in an environment with minimal rainfall and no irrigation (See section 4.4). The Lower Colorado River also acts as a travel corridor in which tribes established long-running trails, both secular and sacred, on the east and west banks of the river whereby groups interacted physically via trade and warfare, as well as ceremonially and in dream states (See section 4.6) (Bean et al. 1978: 5-4).

The importance of the Colorado River to Pai Indians is reinforced in their mythology and creation story. Johnson (2003) writes,

> The Colorado River itself, in Native American mythology, is an earthly manifestation or mirroring of the great river of the night sky, the Milky Way. Both the Colorado River and the Milky Way are representations of the north-south orientation of the first migrations of the people, first from the world beyond, and second, into the physical world as the Creator led the people to the various new homelands of each group in Pai country (Johnson 2003: 161).

In the creation story of the Mohave and Quechan, the Creator made the Colorado River after creating the sacred mountain Avikwame (Spirit Mountain), near Laughlin, Nevada (Kroeber 1925: 788-791, Stewart 1983a: 65). It is recounted that the creator then took a raft down the river from Spirit Mountain and steered it this way and that, creating where the bends, beaches and silt deposits would be. After creating the river, the tribes were formed and instructed to follow the river south to their respective homelands; the Quechan following the *Xam Kwatcán* trail from which they derive their name, a form of the word *kwatcán* (Forbes 1965: 4).

Among the Chemehuevi, the creation story of Ocean Woman stresses the importance of water. In this story, the world is primarily made up of water, but also earth and sky. When Ocean Woman scraped off some of her dead skin and sprinkled it on the water it created the earth, which floats on the water (Laird 1976: 148-152). In the Chemehuevi story of Southern Fox, *tantivaiyipatsi*, on Southern Fox's journey north to Death Valley from the Whipple Mountains (north of the project area), he shot his arrows, and when he removed the arrows from the ground he created four springs, *Hawayawi* (West Wells), *Hahaiv?a* (Klienfelter), *Paasa* (Paute Springs), and *Parimpa* (Pahrump Springs)(Laird 1975: 18). Laird (1976: 152-154) also presents the tale of Cottontail Rabbit and the sun. In this story, Cottontail Rabbit throws a rock at Immortal Water and breaks him, which causes water to enter into the environment and creates all of the streams, springs, seeps, and tanks in the world.

The river continues to be an important aspect to the Native peoples of the Lower Colorado River. For example, inter-tribal gatherings are still periodically held between the Lower Colorado River tribes in the river corridor (Tribal Communication – Tribal Meeting August 23, 2012). These gatherings provide an opportunity for the tribes to reinforce the importance of the river in their own cultures and solidify the inter-tribal relationships.

In a 1909 United States Geological Services (USGS) sponsored survey, 320 desert watering locations were described and mapped throughout southwestern Nevada and southeastern California (Medenhall 1909). Numerous springs and wells were located in the vicinity of the Rio

Mesa SEGF in this study, and are presented in Table 2. Prior to mechanically dug wells and pipelines for transporting water, springs, seeps, and "tanks" guided how people traveled and, therefore, how trails traversed the desert and provided connectivity among these vital water locales. Even after Euro-Americans had established themselves in the desert region, water locales, and eventually wells, continued to be wayward markers of trails and places to pass through on a journey.

Table 2 (from Medenhall 1909)

Name of Well/Spring	Location	Description
Mule Springs	West side of Mule Mountains	Water is good, supply abundant
Spring (no name) (perhaps Arrow weed Spring)	South base of Palo Verde Mountains	
Springs (no name) (perhaps Clapp Spring)	East edge near north of Palo Verde Mountains	
McCoy Spring	West edge of McCoy Mountains	Excellent water
Chuckwalla Spring	Southwest edge of Chuckwalla Mountains	
Corn Spring	East side of Chuckwalla Mountains	
Granite Tanks	Northeast edge of Chuckwalla Mountains	Water of fine quality

Native Americans in the Lower Colorado River region did not only travel north-south, but frequently traveled east-west as well. Consequently, the Indians had to cross the Colorado River. Historic documentation notes that the Quechan were a very aquatic people (Trippel 1984: 156-157), and were excellent swimmers. Both men and women swam across the river with baskets or ceramic vessels filled with goods or small children (Forbes 1965:57-61, Stewart 1983a: 60). When traveling down the river, the Mohave used floating logs as rafts (Stewart 1983a: 60), and both the Cocopah and the Mohave constructed rafts out of tule for riverine transportation (Kelly 1977: 53, Kroeber 1925: 739). The Mohave creation story tells of *Mastamho*, the god of water, ordering every man and animal to swim (Bourke 1889: 80), further evidence of the long-term importance of water and water travel.

One way in which to understand the cultural importance of water for a group of people is to examine the linguistics of the same people. The following table is not exhaustive;

however, it provides some of the words used by tribes in the Lower Colorado River Valley about water and water sources.

Table 3 Water Vocabulary

English Name	Indian Name	Tribe
Colorado River	Pagah	Chemehuevi (Laird 1976)
Lake	Pagar?r?	Chemehuevi (Laird 1976)
Stream/wash/arroyo	Huwp?	Chemehuevi (Laird 1976)
Natural tank	Pilkyav?o	Chemehuevi (Laird 1976)
Water	Ahá	Mohave (Kroeber 1948)
Water	Av?'	Quechan (Kroeber 1948)
Water	Xa'	Cocopah (Kroeber 1948)

As mentioned, the annual flooding of the Colorado allowed groups along the river to maintain an agricultural based method of subsistence. Prior to the extensive water controls that presently prevent the river from reaching the floodplain, groups along the Lower Colorado River used the river's floods as an important time marker for the seasons. Among the Quechan, the floods denoted the end of spring, a*pén* and the beginning of the summer flood season, *nikapēt* (Forde 1931: 120). The flooding time was euphemistically considered an event when and where the creator seasonally broke open a gourd that had held back the waters (Castetter and Bell 1951: 145).

Indians implemented some water controls of their own when they were still able to conduct floodplain agriculture. Cocopah are known to have created levees and ditches, some as high as 5 feet, in order to control how much water went into their fields, a practice likely developed independently of Anglo influence (Stone 1986: 35). Mohave and Quechan attempted to divert rising flood water onto favorable garden plants by building wing dams that channeled water into successive plots (Castetter and Bell 1951: 133-134). Despite the current water controls on the Colorado, Indians continue to be concerned about water in the Colorado River (see section 4.1). Bean et al. (1978: 6-93) spoke with members of the Colorado River Indian Tribes who expressed concern about water diversion and water withdrawal from the river. In addition, the work by Bean et al. (1978: 7-7) identified the Palen and Ford dry lakes in the Chuckwalla Valley, northwest of the project area, as areas of concern for tribal groups, as well as significant mineral hot springs and areas of mineral water in the Chuckwalla valley. Underground

water sources also have significant cultural relevance, in that sources of underground water are believed to be interconnected in a sacred manner (Bean et al. 1978: 7-7).

Once Euro-American influence became so pervasive that tribes along the Lower Colorado River were no longer able to maintain their traditional patterns, they resorted to working wage jobs. One of the positions for which tribal members were well qualified was work on the steamboats that travelled the Colorado River corridor. Often Cocopah were hired as guides and wood cutters on the boats because of their residence at the mouth of the river, travelling as far north as Hardyville in the Mohave Valley (Bean et al. 1978: 5-54 - 5-55). However, once the railroads were firmly established, the need for the steamboats declined, and with it the opportunities for Indians to get work on the boats. Indians were also hired as guides for those not familiar with the river.

An historic account from 1889 details the trip of an early anthropologist who hired a Mohave man named Merryman to take him down the river (Bourke 1889: 77). On their journey down the river, Merryman told Bourke about various Mohave cultural traditions, including Mastam-ho the god of water, and the influence of flooding on the Mohave people's life-ways (Bourke 1889: 80-97). Later in the early 1900s, Tribal people were employed to build the irrigation ditches and the levees along the river and sloughs and in the flood plains of the river valleys (citation).

4.3 Plants

The project area for the Rio Mesa Solar Electric Generating Facility is composed primarily of creosote desert scrub, with portions of desert wash scrub in the on-site washes. Desert scrub habitat can be found along portions of the gen-tie line north of the project area. Numerous special status plant species have either been documented on site, or it has been determined that the habitat in which the project area lies is suitable for certain special status species (AFC 5.2-16 – 22); however, this report focuses on all plants known to have been, or currently are, of importance to Native Americans with ties to the project area.

The Colorado Desert can seem like a foreboding environment to those inexperienced with the territory. But for those who know how to take advantage of the available resources, this region can provide a host of edible foods and utilitarian items from plant resources. In areas close to the bottomlands of the Colorado River, seasonal wild plant foods were often in abundance at certain times of the year; however, late spring and early summer were regularly times of strained food supply for groups living along the river (Castetter and Bell 1951: 66). A comparison of the plants documented in the project AFC ("Table 5.2-3 California Desert Native Plants List" and "Table 5.2-2 Special Status Plant Species with Potential to Occur Within the Project Site"), as well as plants listed in the Jepson Online Interchange California Floristics

(http://ucjeps.berkeley.edu/interchange/) and Calflora database (http://www.calflora.org/) that occur in creosote desert scrub, desert wash scrub, and desert scrub habitats, and a list of culturally important plant species derived from several various sources, has resulted in a list of plants located at Appendix 3. Of the myriad plants that can occur in these biomes, 64 plants are known to have cultural significance. Of these 64 culturally significant plants, 3 of them are special status species (Crucifixion thorn, Devil's Claw, and Saguaro cactus), about twelve percent of the total special status species plants. It is likely that additional tribal consultation will modify Table 4 (Appendix 3).

The plants in Table 4 should not be considered exhaustive, but a sample of potential culturally significant plants that could be impacted with construction of the Rio Mesa SEGF. Some of the traditional knowledge base has been lost because elders have passed away without passing on the information and some plants are now extinct; consequently that knowledge has also been forgotten. While some of the plants in the project area may not have a known use, the plants may still have a specific name and some indigenous knowledge may be known about the plant because it is to be avoided, or because a plant may function in some other ecological way, or because there is a free association between the plant and some otherwise unrelated ecological function.

Native Americans view their environment in a holistic manner, i.e., there is an interconnected nature to all aspects of the environment, plants, animals, landforms, water (e.g., Stoffle et al. 1997: 229). Therefore, an effect to one element of the environment is an effect to the whole. For example, Native Americans in the Lower Colorado River Valley do not make a distinction between special status species (i.e., threatened or endangered species) and species that are prevalent in the environment. Once a species is put on the special status list, it is believed to be too late to do anything substantial for that species (Bean et al. 1978: 7-10). Moreover, the preservation of one aspect of the environment is directly intertwined with all other aspects. Bean et al. (1978: 6-56) give the example of mistletoe; mistletoe grows on mesquite trees, and birds eat the mistletoe, therefore the preservation of mesquite is critical to the preservation of the mistletoe-eating birds.

The following three sections showcase three plant species of importance to Lower Colorado River Tribes.

Mesquite

Various species of the mesquite plant were observed in the project area, and therefore have a high potential to be impacted by construction of the Rio Mesa SEGF. The plant provides many

uses, for example the pods and beans can be used for food or made into a mildly alcoholic drink. Mesquite pods were gathered in June, July and August and were a critical source of food prior to the agricultural harvest that took place in September and October. The wood has been used for traditional house construction, bows, firewood, mortars and pestles, weapons, as a planting/weeding stick, for games such as a ball and shinny stick, pottery paddles, basketry coiling awls, weaving swords, cremation torches, and cradle frames and hoods. Various parts of the plant have been used medicinally, notably the sap, but the beans were also used for treating gonorrhea. The sap or gum of the plant has been used to fashion gourd rattles, attach feathers to arrows, mixed with pigments for paint, and mixed with mud for girls' hair during their puberty rites. The bark of the tree has been mixed with clay and used as a hair dye and hair cleaner, and used for constructing fishing nets. Mesquite charcoal has been used for tattooing by some tribal groups. Mesquite groves were owned among some groups, and arrow weed hanging from the branches of mesquite trees denoted ownership.

Arrow weed

Arrow weed was not observed onsite during the biological surveys conducted for the AFC; however, one of the habitats in which arrow weed grows is the creosote desert scrub community, the primary vegetation community in which the project area lies. Consequently, there is a moderate probability that arrow weed could be present in the project area and impacted by construction of the Rio Mesa SEGF. Like mesquite, arrow weed had many different uses and was used by almost all Native Americans in the Lower Colorado River Valley for multiple purposes. The plant was used for traditional house construction and in constructing shelters for mourning ceremonies, arrows (from which the plant derives its common name), fish nets and traps, granaries, lining earth ovens and mortars, as a covering for drying seeds, torches during mourning ceremonies, stakes for goals during games, as archery targets, for funeral pyres, as a couch in girls' puberty rites, as drumsticks of a basket drum, cradleboards, and basketry. The sap or gum of arrow weed is known to have been used to fasten handles to gourds, or mixed with mud and plastered on girls' heads during puberty rites or as glue for various purposes.

Cactus

Multiple species of cactus were observed in the project area during the biological surveys for the AFC, and many different species of these succulents were used by Native Americans in the Lower Colorado River Valley. One of the most common uses of cactus was for the fruit which is produced on some species of the plant (cactus apples). In addition to the fruit, the tops of some species of cactus were cut off and provided liquid. The cactus spines are known to have been used for fishing hooks as well.

Table 5 Potential Culturally Significant Cactus Species

Common Name	Scientific Name	Indian Name	Use

Barrel Cactus	*Ferocactus cylindraceus*	?	?
Wiggin's Cholla	*Cylindropuntia echinocarpa*	?	?
Branched Pencil Cholla	*Cylindropuntia ramosissima*	?	?
Fishhook Cactus	*Mammillaria tetrancistra*	?	?
Graham's Nipple Cactus	*Mammillaria grahamii*	?	?
Beavertail Prickly Pear	*Opunita basilaris*	?	?
Cottontop Cactus	*Echinocactus polycephalus*	?	?

Some plants may not have been used for specific purposes, but may still have inherent cultural significance because of its relevance to a creation story, song or myth.

During the survey conducted by the Applicant for the AFC, a total 14 Cacti species were noted in the project area. Of these 14 species, 7, or 50% of the known species, have been documented as species of cultural significance for groups in the area. These seven species are, Barrel Cactus *Ferocactus cylindraceus*, various other cactus species, Wiggin's Cholla *Cylindropuntia echinocarpa,* Branched Pencil Cholla *Cylindropuntia ramosissima,* Fishhook Cactus *Mammillaria tetrancistra,* Graham's Nipple Cactus *Mammillaria grahamii,* Beavertail Prickly Pear *Opunita basilaris,* and Cottontop Cactus *Echinocactus polycephalu.*

4.4 Agriculture

Archaeological evidence indicates that Yuman speakers began to practice agriculture around A.D. 800-1000 in the Lower Colorado River Valley, with the Palo Verde Valley being the earliest western extent of the agricultural florescence as a result of Yuman migration (Moratto 1984: 358). Maize is known to have been cultivated approximately 1,000 years earlier in the San Juan Basin, about 600 miles upriver (Castetter and Bell 1951: 101).

However, tribal knowledge suggests alternative origins. The Lower Colorado River Tribes consider that the Creator gave the people the knowledge and plants with which to conduct agriculture. For the Mohave, the god Mastamho told the people that food was incomplete until the vessels (i.e., pottery) in which to cook the food were provided. Therefore, in the Mohave mind, pottery and agriculture are associated, and both are thought of as something that was given to them (Kroeber 1976: 736). A Mohave story, similar to the biblical story of Cain and Abel, describes how corn and wheat are understood to have become part of the diet. In this

story, Hatapa-aqwaoOtse was with the brothers Pukehane and Tsitsuvare, but they had nothing to eat and so Hatapa-aqwaoOtse reached his arm to the southeast and obtained corn for them to eat, and reached his hand to the northeast and obtained wheat (Kroeber 1963b: 5). The Mohave understand that Mastam-ho instructed the Mohave to plant the crops which he created in the ground after the floods had subsided (Bourke 1889: 88).

The tribes along the Lower Colorado River (and Paiutes to the northwest as far as the Owens Valley) were some of the few Indians in California who practiced agriculture; most other tribes in the state were hunter/gatherers with perhaps some limited practices related to cultivating specific plants such as mesquite, clover or tobacco. The development of agriculture in the Lower Colorado River Valley significantly improved groups' ability to obtain reliable subsistence, and led to population aggregation into groups larger than what was typical of California tribes (Kroeber 1963a: 104). The annual flooding of the Colorado River provided a rich, silty floodplain on which Native Americans were able to plant and harvest a variety of crops. However, the floods varied yearly, and when the floods were slight, groups had to intensify their wild food collecting efforts to make up the difference in the smaller crop yield. At other times the floods were heavier than normal, or a second round of flooding would occur. In these cases, crops would sometimes be severely damaged, or the second flooding could provide an opportunity to plant another crop (Castetter and Bell 1951: 67-69).

Before flood controls on the Colorado River, the waterway was frequently changing course (Heintzelman 2008: 92) and forced groups to move to higher ground when the spring floods would start, and then move back to the floodplain after the floods subsided (Bee 1963: 209, Castetter and Bell 1951: 70). Here is a general description of planting techniques by a mid-nineteenth-century observer:

> The river bottom is wide and fertile… and is intersected by a great number of sloughs and lagoons, former bends of the river. On these the Indians plant in the month of July, or soon as the waters of the annual rise commence or subside. No vegetables will grow beyond the influence of the overflow (Heintzelman: 1857 34-35).

And further:

> Their agriculture is simple. With an old axe… knives and fire, a spot likely to overflow is cleared. After the waters subside, small holes are dug at proper intervals, a few inches deep, with a sharpened stick, having first removed the surface for an inch or two, as it is apt to cake. The ground is tasted, and if salt the place rejected; if not, the seeds are then planted. No further care is required but to remove the weeds (Ibid.).

In the vicinity of the Rio Mesa SEGF, it was known that a group of Quechan resided south of Blythe in the Palo Verde Valley from after 1829 to around 1890, likely in a village called Avikwotapai (Bean and Toenjes 2012: 29, Bee 1963: 208), and were likely able to maintain their traditional pattern at this time (Bean et al. 1978: 5-47). It is suggested that at least one Quechan party, escaping the California Militia at the Yuma Crossing in 1850 moved north to perhaps the Palo Verde Valley (Forbes 1965:321-322). Bean et al. report that Chemehuevi people farmed the Palo Verde Valley in historic times (Bean et al. 7-30). During times of flooding groups moved to mesas or other nearby high ground (Bee 1963: 208, Forbes 1963:57-61), and it is probable that this village, and any other floodplain villages in the vicinity, would have moved west to the Palo Verde Mesa, close to or within the Rio Mesa SEGF project area, during annual flooding periods. It is reported that people moving away from the floodplain in anticipation of the seasonal floods moved to higher ground; some moving to the nearest high ground, others to the river bank escarpment that aligned the Colorado River and others moved further inland and nearer to reliable spring areas. The distance that a group would move from the floodplain was dependent on how much of a flood was anticipated and how little or great were the food stocks that had to be transported and the distance to be covered for procuring wild foods. In addition, food crops were stored on the mesa and the first set of foothills to facilitate the annual migration and to prevent the loss of all food stock should a village or family unit be subject to raiding or warfare and subsequent loss of food (Castetter and Bell 1951: 164-165). A likely caching area for the Palo Verde area would have been the lower and eastern portions of the Mule and the Palo Verde Mountains.

Kroeber (1951: Map 2,) indicates at least three places, possibly villages, on the western side of the Colorado River in the Palo Verde Valley. Place I, located just east of present day town of Palo Verde, *Ahpe-hwelyeve*, appears to be a place where a Mohave culture hero makes peace by sharing tobacco with the men assembled in the main house. It is assumed that the people who dwelled in this village were Quechan. The village leader and people of *Ahpe-hwelyeve* reciprocate by providing a wife and a meal of beans and corn mush. This place is located on a rise in the flood plain of the Palo Verde Valley. The Palo Verde Mesa escarpment is approximately three miles to the east and a good quality spring (Clapp Spring) is located another five miles east across the Palo Verde Mesa and just underneath “The Thumb,” a monumental outcrop of rock.

In fact, the Clapp Spring area exhibits a wide variety of sites that suggest long term off-river habitation. Midden is reported to be several feet thick and exhibits a wide array of remains suggesting a diet that included plants and faunal remains from flood plain, mesa and mountain subsistence (BLM Site record citation). The site consists of the spring, several fire blackened caves, lithic scatter and pottery shreds. It is suggested that the numerous sites in the project

area, most exhibiting various ephemeral activities related to resource procurement, lithic reduction and local and long distance travel, can best be interpreted within the context of the flood plain habitation site I and the Clapp Spring Site. The Clapp Springs site has been subjected to Vandalism. Further research will need to be conducted to substantiate this hypothesis.

While cultivated crops provided up to 40 percent of the diet for those dwelling in the Palo Verde Mesa, and while fish provided another 10 percent of the diet, the remaining 50 percent of the diet came from wild and semi wild plant gathering and animal hunting. The plant and animal subsistence activities occurred in the flood plain, mesas, immediate mountains such as the Mule and Palo Verde Mountains, and in the washes that incise the alluvial fans that surround the mountains. Despite the abundance of soil fertility of the lower Colorado River valleys and the ease of cultivation there, leading to abundant food supplies, there were times when the river did not flood, or repeatedly flooded and seasonal crops were not secured. In these times, upland Mesa's, alluvial fans and nearby mountains became essential sources for food procurement. Warfare and alliances and related plunder and trade may have been another method for food procurement (Kroeber 1980).

Knowing when to plant crops was gauged astronomically, i.e., when the Big Star, *xamacevetai*, rose at dawn it was time to plant, and this star was watched continuously to suggest the time to harvest - when it set in the west just after sunset (Forde 1931: 109). Another Quechan informant suggested that when Pleiades first appeared in the east in the morning the land would be in a condition ready for planting, and by the time Orion appeared at dawn, all plants should be in the ground (Forde 1931: 109). Another agricultural specialist suggested that the periodicity of river flow, flooding and subsidence were more keenly considered in determining seasonal agricultural activities and that the astronomical calculations only informed the Indian farmer of when it might be too late to plant (Castetter and Bell 1951: 146). Nonetheless, a general monthly and seasonal subsistence schedule is provided in the following table.

Table 6 Seasonal Subsistence Activities and Migrations

MONTH	INDICATOR	ACTIVITIES	LOCATIONS
Late February – Early March	Cottonwood Trees Bud	Hunting and Gathering, Travel and Trade	Mesa and Mountain
March	Willow and Mesquite bud – Windy	Early garden plot clearing and hunting	Un-flooded parts of Flood plain, Mesas, and Mountains
April	Early Floods Subside	Garden plot clearing, early planting, fishing	Flood plain, River Sloughs and Lagoons,

		and hunting	mesas, mountains
Late April – Early May	Berries Ripen	Gathering of berries on the mesas, Time to harvest Winter Wheat if planted, Fishing and hunting	Flood Plain, Mesas, Mountains
May – Early June	Highest most extensive Flooding	Hunt for stranded fish, harvest any early crops if flood waters permit, a time of food scarcity and uncertainty. Begin Planting main crops	Flood Plain, Mesas
Late June - July	Mesquite Beans ripen	Men complete planting, Women gather mesquite pods, Mesquite harvest festival held, many wild plants with green shoots gathered in the flood plains. Summer homes in flood plain erected	Flood Plain and Mesa
July - August	Weeds grow	Gardens are hoed by men, Women gather Screw bean mesquite pods, Summer homes are erected in floodplain. River fishing at its best	Flood Plain and River
September - October	Green Corn Ripens	Early corn is picked and consumed, Fishing, Mesquite pod processing and storage basket nests constructed	Flood Plain and River
Late October – early	Garden Harvest	Gardens are harvested,	Flood Plain

November		Rabbits and birds hunted, harvest festivals held, lots of procurement activities to store food for winter months	
November	Frost	Move harvest to mesas and build/restore winter homes	Flood Plain and Mesas
December	Cold	Live off of stored food, rabbit and bird hunting, travel and trade	Mesas and Flood Plain
January – Early February	Dried Canes	Inactivity, Live off of stored food, rabbit and bird hunting, travel and trade	Mesas and Flood Plain

The Lower Colorado River Valley was so fertile that the carrying capacity of the cultivatable land was "greatly in excess of the needs of the aboriginal population" (Castetter and Bell 1951: 66). Despite the fertile ground, groups in the Lower Colorado River Valley did not place much emphasis on maintaining large caches of crops to last them until the next harvest, or conduct rituals or prayers to improve their agricultural yield (Castetter and Bell 1951: 87-88, Kelly 1977: 23). The Cocopah, and other groups, were very generous with their food, but food was not seen as a symbol of wealth or social prestige (Castetter and Bell 1951: 71). Sometimes groups would grow extra food when they knew there was going to be a ceremony in which large amounts of food were needed, but in general, they were somewhat limited by the short window of opportunity in which to plant their crops after the floods, and limited available labor. It is estimated that the maximum amount of land that a single family unit would have grown was about 2 acres, with the average family's plot consisting of about 1 acre in the Lower Colorado River Valley (Castetter and Bell 1951: 75).

Several different crops were planted and harvested by tribes within the lower Colorado River valleys. Table 7 displays the crops that are known to have been cultivated in the area.

Table 7 Cultivated Crops in the Lower Colorado River Valley

Legend:
A- Mohave; B-Chemehuevi; C-Quechan;
D-Cocopah; E-Cahuilla; F-No specified tribe

Common Name	Scientific Name	Indian Name	Use	Reference
Wheat		?Atsit*a*(B)	Food (B, A)	Laird 1976; Kroeber 1925
Maize/Corn		Hawiv? (B), ta?'?tsake's – yellow (C), ta?'?tshama'l, - white (C), ta?'?tsaxwa't, - red (C), ta?'?tshavaló – blue (C), ta?'?tsiruwá – speckled (C); Hača·sδhan - flour, Hača·swur – flint (D)	Food (B, C, A, D)	Laird 1976; Forde 1931; Kroeber 1925; Kelly 1977
Beans	*Vigna sinensis*	Axma – large (C), vata'x – small, noku – cowpea (C), ama?otar – blind bean (C); Hemapatai, hemaramas (D)Murih (B); Merik (D)	Food (C, A, B, D); stalk fiber used for coradage (A, D)	Forde 1931; Kroeber 1925; Kelly 1977; Laird 1976
White tepary bean	*Phaseolusa cutifolius*	Mare'kxama'l (C)	Food (C)	Forde 1931
Yellow tepary bean		Mare'kakwe's (C)	Food (C)	Forde 1931
Yellow muskmelon		Akwe's (C)	Food (C, A)	Forde 1931; Kroeber 1925
Dark green watermelon		Nya (C)	Food (C, A)	Forde 1931; Kroeber 1925
Yellow pumpkin	*Curcubita pepo*	Axmatahan (C); Ichiluk (A)	Food (C, A); rinds used for ring-and-pin game (A); juice used to protect face against wind and wrinkles (A)	Forde 1931; Taylor and Wallace 1947; Kroeber 1925
Gourds	*Cucumis sp.*	Halma (D)	Rattles (C, A, D); Food (D)	Forde 1931; Langdon 1976; Kelly 1977
Various wild grasses		Akata'I, aksam, akyirc (C); Akatai, aksamta, ankithi (A)	Food (C)	Forde 1931; Kroeber 1925

Pumpkin	*Cucurbita moshata*	Kwura' - common cheese, hamča' - cushaw (D)	Food (D)	Kelly 1977
Watermelon	*Citrullus vulgaris*	Kwi-yup	Food (D)	Kelly 1977
Muskmelons			Food (D)	Kelly 1977
Cotton			Textile (F)	Castetter and Bell 1951
Alfalfa			Food (C)	Castetter and Bell 1951
Sorghum			Food (C)	Castetter and Bell
Barley			Food (F)	Castetter and Bell 1951

Warfare played an important cultural and social role for most groups along the Lower Colorado River, but groups tried to avoid going to war during the planting and harvesting times if possible (Castetter and Bell 1951: 72). The planting began as soon as the floods subsided, with watermelon planted first among the Yuma, followed by maize, cow-peas, tepary beans, cantaloupes, and large calabashes, and often the beans and melons were planted between rows of corn (Forde 1931: 109). Wheat, introduced by the Spanish, was usually planted in the winter, and was harvested in late spring. In less fertile areas, various wild grasses were planted. Typically, half of the corn was eaten as green corn, a favorite delicacy (Castetter and Bell 1951: 75).

Both cultivated and wild foods were stored, and the hot and dry climate made this a relatively easy task. Among the Cocopah, both pottery ollas and woven baskets were used as storage containers, and sometimes these would have been placed on the roof of a house, but a specially built platform at the entrance of the house was the primary storage location (Kelly 1977: 42-43). Constructed of willow and tule, this platform kept their important foods off the ground and away from the flood waters. Pumpkins and melons were dried in strips and stored, but pumpkins and watermelons were also sometimes buried in arrow weed lined pits (Forde 1931: 111, Kelly 1977: 43).

The Yuman speakers all practiced agriculture along the river to some degree, with the Mohave obtaining about 50 percent of their subsistence from agriculture, the Cocopah about 30 percent, and the Quechan somewhere in between the two (Castetter and Bell 1951: 74). The Chemehuevi also practiced agriculture and grew the same crops as the Yuman speakers, but did

not tend to the fields after planting and before harvesting (e.g., weeding, scaring away birds) (Bean and Toenjes 2012: 50). Most Yuman speakers are known to have done at least two weedings of their crop, and children would try to scare away birds and other animals with bows and arrows (Bee 1986: 87, Forde 1931: 113).

There was an informal division of labor among Lower Colorado River tribes regarding agriculture; among the Cocopah men did most of the farm work, but women were not opposed to participation. Men would clear the fields, usually by burning trees to kill them and clearing other brush, and plant the seeds, but both sexes helped with farm tasks (Kelly 1977: 30). The division of agricultural labor seems to have been informal at best among the Mohave and Quechan tribes as well (Kroeber 1976: 736).

Among the Mohave, farm land was owned, and the land could be sold for other property or beads. Generally, lineage group area outer boundaries for agricultural use were determined by establishing lines of sight from a place on or near the river and up to a distant peak. Within the broad area demarcated, separate families were free to establish garden patches, often done by predicting where flood waters would provide the best features for what and how the family headman decided to plant. If there was a dispute over land claims, as often happened after floods destroyed a landmark denoting boundaries, a non-lethal shoving match, *thupirvek*, would take place among the quarrelling parties. The two disputing men would each be surrounded by their supporters and the two ensuing "scrums" would each try to shove/drag their man to the other edge of the disputed boundary and through the other scrum. If this shoving match did not resolve the situation, then a stick fight, *chetmana'ak*, occurred wherein the disputers would beat each other over the heads until one of them became too weary to continue (Kroeber 1976: 744-745). However further south, it appears as though agricultural patches were not owned beyond one season. Yearly flooding would make boundaries difficult to relocate and some amount of labor was expended every late spring to clear a new plot for planting. There was more available land, particularly in the lower Colorado River Valleys then there were families to work the land. As long as a man worked his patch year after year, it was considered his. A son could inherit his patch. However, upon a man's death the patch was avoided by the mourning family for up to a year. During this time, especially if the area was an ideal spot, then other families might encroach.

With increased non-Indian settlement in the river valley in the late nineteenth century, agricultural practices started to go into disuse among most groups (Kroeber 1976: 735). Indian Gardens were increased for a period of the late nineteenth century in order to provide fresh produce to local miners and military outposts in exchange for cash and credit. The Cocopah were able to maintain their traditional agricultural practices the longest because they were the

farthest from American development, but when the Laguna Dam was completed and the Imperial Valley Canal was washed out in 1905, the delta region became barren for the next few years, and the Cocopah were not able to regain their economic life-ways even though some located to the southern Salton Sea area (Castetter and Bell 1951: 73-77). By the time of dam building (1905 for the Laguna Dam, 1935 for the Boulder Dam and 1938 for the Parker Dam), yearly flooding and resultant fertile siltation were controlled by the dams. The Lower Colorado valleys changed in response to the new methods of agriculture that required extensive irrigation canals, chemical fertilization, mechanized farm equipment, new forms of manual labor, and checkerboard and permanent land ownership concepts. Yuman people became cash laborers in the burgeoning mining and agricultural industries and personal gardening only occurred in Indian backyards close to permanent tribal housing. The mesas and mountains remained as places providing indigenous sources of wild food.

Despite the Colorado River water controls instilled by the dams, the river remains a dynamic force in Lower Colorado Indian tribal thought, reverence and related cultural traditions.

Irrigated agriculture is practiced today on the several of the reservations, with cotton being the main crop, but alfalfa, barley, wheat, corn, and sorghum are also grown. However, in most cases the tribes have leased their farmland to white farmers, and prefer to work day labor positions (Castetter and Bell 1951: 83-85).

Table 8 places Lower Colorado River agriculture, and specifically indigenous agriculture in the Palo Verde area, within the context of the rise of agriculture in the New World. The red lines provide the reader with the time frame for the Palo Verde Ethnographic Landscape period of significance.

Table 8 Emergence and History of New World Agriculture Related to the Yuman Cultures of the Lower Colorado River

Tribal Periods	Archaeological Periods	Date	Years B.P.	Broad Patterns of History
Time Immemorial	Prehistoric	8,000 BC	10,000	New World agriculture adopted
		5,000 BC	7,000	Hypsithermal Warm Period
		4,000 to 3,000 BC	6,000 to 5,000	Adoption of maize in Mexico
		2,000	4,000	Maize spreads to North

Mastamho Creator				America
		AD 340 to 1200	1,660 to 800	Patayan Culture in Colorado Desert
Tribes Clans Wars		AD 500 to present	1,500 to present	Floodplain agriculture practiced in the Colorado River Valley
		AD 1450 to 1850	650 to 100	Little Ice Age
Indian/non-Indian interface	Protohistoric	AD 1540	460	Spanish Explorers – Garces, Alarcon, DeAnza
		AD 1826	174	American Explorers – Jedediah Smith
		AD 1867 to 1904	130	Reservation (Grant – Dent Canal) and Blythe Irrigation Project s
Reservation Period	Historic	AD 1890	110	Quechan leave Palo Verde Area for Yuma
		AD 1905	95	Laguna Dam constructed in Yuma
		AD 1920 to 1927	80 to 73	Water districts
		AD 1930s	70	Depression, Indian Labor on Valley Farms
		AD 1950	50	Palo Verde Dam Diversion
		AD 1960	40	Labor Movement
		AD 2012		Large Scale industrial agriculture, tribal leasing and labor, Small scale residential gardening

Sources: Macneish 1992, Harrington 1997, Webster 2011, Kohler et al. 2008, Jones and Klar 2007

4.5 Animals

Numerous species of animals rely upon the habitat in which the Rio Mesa SEGF is proposed to be constructed. In this area, there are 7 special status species (as determined in the AFC Table 5.2-4) that also have cultural resource values. Nineteen percent of the special status species identified in the project area are of cultural importance. These species are the Desert Tortoise, Gila monster, Golden Eagle, Prairie Falcon, Burrowing Owl, American Badger, and Bighorn Sheep. However, like plant species, Native Americans do not make the Western distinction between those species which are threatened or endangered and those which are doing well in their habitat. Therefore, Table 9 (Appendix 4) is a list of all known culturally important animal species and their potential to occur in the project area, regardless of special species status.

Table 9 located in the appendices, demonstrates that animals have many uses other than just for food for groups in the Lower Colorado River. In fact, hunting for most groups was not of great import, and likely only made up about ten percent of Yuman tribes' subsistence (Driver 1957). There are several reasons for this, primarily because large game was not prevalent around the river. In addition, the floodplain provided such a bounty making hunting only necessary for supplementing agricultural crops and collected plant foods (Forde 1931: 118). Because the Cocopah were located in the delta region of the Colorado River, those groups closer to the Gulf of California were able to exploit ocean resources such as marine fish, oysters, clams, and mussels (Driver 1957: 177).

Hunting was done with bows and arrows or traps. Fishing was performed by using seines, or the fish would be driven up shallow sloughs into scoops, or caught on a line with a cactus spine hook (Wallace 1955). Fish were prepared either by broiling or in a stew with corn (Kroeber 1925: 737) Because hunting was not a task frequently undertaken by the tribes along the Lower Colorado River, animal products such as meat, buckskin and rabbit blankets were often traded for with tribes to the east for agricultural products (See section 4.6) (Davis 1963).

Dreaming is a critical aspect to the cultural system of Yuman Indians (See section 4.9), and sometimes while dreaming animals acted as guides, helping to move the dreamer through the landscape. The following such animals were frequently spirits; birds – mockingbirds, orange shouldered blackbirds, buzzards, eagles, horned owls, crows, mountain killdeer, and ducks; insects – flies, gnats, and crickets, but the insects appeared as swarms not individuals; other animal spirits included coyotes, deer, jackrabbits, cottontail rabbits, dogs, frogs, bats and fish (Spier 1953: 250). Animal species were often seen to have sacred values because of the role they play with shamans and priests. For example, almost all predatory animals are seen as sacred because it is believed that shamans used them as mediums and supernatural guardians.

Most amphibians and reptiles are also seen as sacred because they are believed to represent beings of the "underworld", and many lizards are also used by shamans and priests as guardians or spiritual representations (Bean et al. 1978: 7-10). Totems of certain clans of Yuman speakers were often animal species. Among the Mohave, these animals were not necessarily considered sacred just because they were a totem, and there was no taboo against killing and eating them. However, among the Cocopah a taboo regarding killing and eating totem animals was in place (Kroeber 1925: 741).

A variety of different animals were used for different purposes, both secular and profane. The following is a discussion of four of these species and concerns their cultural use and significance.

Desert Tortoise

Currently, the desert tortoise is a special status species, and the desert tortoise has been a resident of the Colorado Desert for a long time, evidenced by the Pleistocene-aged desert tortoise fossil that was found during paleontological surveys for the Rio Mesa SEGF. The desert tortoise has long been of use to Native Americans in the desert (Schneider and Everson 1989: 84-89). Some tribes use it for food, but sacred meanings are also attached to the desert tortoise. For example the Mohave refuse to touch the tortoise, while the Chemehuevi and other tribes do not adhere to such taboos (Kroeber 1925: 737).

Fish

At least four species of fish are known to have been taken from the Colorado River, bony tail, Colorado salmon, mullet and the humpback sucker, and are attributed to the Creator Mastamho who, after creating the river, plunged his stick into the river four times, and after each plunging a new fish emerged in the order provided above (Wallace 1955: 87-88). Fish, per the instructions of the creator to the Mohave, were taken by a number of different methods; netted with seines, driven up shallow sloughs, or with cactus spine hooks. Early Spanish and American explorers noted that the fish was somewhat soft and unpalatable, but a lack of game and other desirable fish likely made this an important source of protein. It is possible that more than just these four fish were eaten by the more southern tribes. Not all tribes ate fish, in fact the Chemehuevi were revolted by the fish the Mohave ate (Laird 1976: 141).

Rabbits

At least three known species of rabbits are known to have been of cultural significance to tribes in the area; the Arizona Cottontail, the Desert Cottontail, and the Jackrabbit. Rabbits are one of only a few game animals that are prevalent in the Lower Colorado River Valley. As such, these

animals were often used for their meat, hunted either by individuals or in groups. Group hunting was conducted by a leader who designated positions for the other participants, and rabbits were then driven into a net made of stout cords and stakes, measuring about a yard square. Rabbits were then shot with bows when trapped in the net. Other methods of catching rabbits were to dig them out of their burrows or to use a twitch-up trap of saplings and cords (which were also used to catch quail and other small game as well) (Spier 1951: 67). Rabbits were also valued for their skins, which were usually made into blankets (also a popular traded item). Rabbits are also significant for their role in tribal myths. For example, the Chemehuevi tell a story about how 'Cottontail Rabbit Conquered the Sun'. At the time this story takes place, the sun was intensely bright and hot, and so Cottontail Rabbit went east to find the place where the sun emerges. On his way he met two orphans who showed Cottontail Rabbit how they had been obtaining water and food. By throwing rocks and breaking the Immortal Water, Immortal Yucca Date, and the crevice where seeds had been stored, Cottontail Rabbit was able to disperse all these different elements throughout the landscape so that they would be easily accessible. Cottontail Rabbit and the orphans looked all over the desert for a plant that would not burn, and then Cottontail Rabbit threw a rock at the sun when it rose causing fire to encompass the desert, but Cottontail Rabbit and the orphans hid under the plant which would not burn. After the fire burned out, the sun was much less hot and bright, and the earth was then capable of sustaining humans (Laird 1976: 152-154).

Lizards

Numerous species of lizards inhabit the Colorado Desert. Specifically, culturally significant species include the Chuckwalla, gecko, Gila monster, and horned toad. These lizards had cultural significance because they were eaten by some tribes (e.g., the Chemehuevi), but also because they play a role in the stories and religious teachings of the tribes of the Lower Colorado River Valley. While the Chemehuevi and other groups relied on lizards as a food source, among the Mohave, the eating of lizards disgusted them. In addition to a food source, lizards were also used for their intestines, which were mixed with red paint and charmstones (Forde 1931: 195). Lizards have a sacred role as well, and some species have a role in stories. Shamans and priests used lizards as spiritual guardians or representations (Bean et al. 1978: 7-10). It is understood by the Quechan that when a moon eclipse occurs, it is the result of a lizard eating the moon (Gifford 1926: 66).

4.6 Trails

Additional research for this report section is on-going, and trail research findings will be included in the FSA.

Aboriginal trails extensively cover the North American continent and specifically California (Davis 1961: 70 Map 1). The Southern California Desert – Central Colorado Desert area features a significant trail network that supported a complex of trade relations (Ibid: 2-3). Specifically, three trails, (trail numbers 87, 88 and 92) located in or near the project site are identified as contributors to the Native American Colorado Desert Trail network (Ibid: 62, Johnston and Johnston 1957). These three trails run west-east, and while of sufficient length and connectivity to support transportation and trading between people of the Pacific Coast and Central Valley with people of the Gila and Middle Colorado River basin, these trails were undoubtedly used for local travel as well.

There is physical and epistemological[2] overlap of trails on and through the landscape regardless of the intent and psychological disposition of the traveler. That is to say, that a trail, a traveler, and the knowledge of the trail (usually encapsulated in a song or dream) are not separate and distinct realities. Or that one method of travel (i.e., walking or running) is more real or supersedes another method of travel (singing or dreaming). This is difficult to articulate in English (See section 3.7).

What is documented as a single linear path, more often in desert environs are several parallel trails (Johnston and Johnston 1957: 23, other citations). Parallel tracks can be explained by attributing each linear trail to a specific ethnic group and also there are thoroughfares for intercultural travel as contrasted with intra-cultural travel; similar to how modern freeways often are paralleled by frontage roads for local traffic. These separate trails allowed antagonistic groups to avoid each other while travelling along the similar trending routes (Citation, Laird 1976:136).

Table 10 Items Traded Between Groups in the Lower Colorado River Valley and Beyond [This table will be populated once trail research is complete]

	Chemehuevi	Mohave	Cahuilla	Quechan	Cocopah	Tribes to the West	Tribes to the East
Chemehuevi	X						
Mohave		X					
Cahuilla			X				
Quechan				X			
Cocopah					X		
Tribes to the West of						X	

[2]Epistemology: the branch of philosophy that studies the origin, nature, methods, validity, and limits of human knowledge.

the Colorado River							
Tribes to the East of the Colorado River							X

4.6.2 Archaeological Trail Features

[This section is incomplete and is pending trail and archaeological testing results. Research results will be included in a final ethnographic report prior to publication of the FSA]

There are several different indicators of prehistoric Native American trails in the Colorado Desert. These indicators are generally features associated with trails; some are sacred, others are secular, and some can be both sacred and secular depending on the resource. Because these archaeological trail indicators denote culturally important trails, it is essential that these features be clearly understood, analyzed, and documented. The following list of archaeological trail features describes the trail indicator and the likely function of the feature as it relates to trails. The table in Appendix 2 denotes those archaeological sites in the Rio Mesa SEGF project area and nearby vicinity which contain one or more of these archaeological trail features.

Trails

Ancient trails in the Colorado Desert can still be seen on the surface today. There are several reasons for this, primarily the presence of desert pavement and desert varnish. Desert pavement is the surface of the desert floor and consists of small, inter-locking pebbles and cobbles which have built up as a crust over time. Desert varnish is the accumulation of a shiny coating (patina) on rocks from the growth of bacteria over thousands of years (http://en.wikipedia.org/wiki/Desert_pavement). When these eons-old desert pavement and desert varnish are tramped on over time and/or moved out of the way with travelling feet, a visible trail appears on the lighter colored subsurface, which due to the dry climate is not washed away, although sometimes aeolian processes do obscure trails.

Prehistoric trails are generally 30-40 centimeters in width, and generally have one of the following associated features (Laylander and Schaefer in draft). Often trails also had a parallel trail along side of it as well (Apple 2005).

Pot Drops/Ceramic Scatters

Pot drops are broken ceramic vessels on the desert surface. These ceramic features have been often noted to be in close proximity to trail features (McCarthy 1993: 14). Ceramics in the Colorado Desert consist of Patayan ceramics; types include Colorado Beige, Colorado Red, Black Mesa Buff, Tumco Buff, Palomas Buff, Parker Buff, and Topoc Buff (Jones and Klar 2007: 252-253). It is surmised that the pot drops that are associated with trails are the result of the transitory activities of those traversing the trails (Bean et al. 1978: 7-13 – 7-14).

Cairns

Cairns or rock piles in the desert often denote that one is in close proximity to a trail. However, it should be noted that historic cairns are also prevalent in the Colorado Desert due to mining, and care should be taken to distinguish between those cairns which are historic and which are prehistoric (Laylander and Schaefer in draft). Sometimes these cairns contained cremations, others were used as shrines, and others were simply trail markers; however, regardless of their purpose, they are "indications of the eco-cultural ethic which led Native Americans to pause for a moment and pay respect before setting foot on the trail" (Bean et al. 1978: 7-14).

Cleared Circles

Cleared circles are areas which have been cleared of desert pavement and are in a circle shape. They can be large or small, clustered together or separate. These features can occur naturally; however, those which are cultural tend to have well-formed berms and associated cultural features (Laylander and Schaefer in draft). The Quechan understand that cleared circles that are in clusters are places where a spiritual leader would take students to teach them about the connection between material and spiritual realms (Cahora 1997, cited in Apple 2005: 108). The Mule Mountains Archaeological Site, located just north of the project area, is an example of such a site. Those cleared circles which are not clustered are understood to represent ceremonial or religious functions (Apple 2005: 108).

Quartz Shatter

Quartz shatter was sometimes placed along trails (Apple 2005: 107) so that those travelling the trails at night would be able to see the trail from the moonlight reflecting off of the quartz. Quartz piles along trails were noted during a site visit to the Mule Mountain Spring and related earth figures site.

Spirit Breaks/Spirit Deflectors

Spirit Break trail features require further research with affiliated tribes.

Petroglyphs

Petroglyphs are designs etched into rock by Native Americans. All rock art is considered to be a symbol of the sacred past, a representation of the sacred being from the time of creation and of the Native Americans themselves. Rock art is understood to be a pictorial representation of the events and activities of the creator during sacred times (Bean et al. 1978:7-14). Petroglyphs are often found near springs, but also frequently are located in areas near trails which pass by suitable locations for petroglyphs.

Earth Figures

Earth figures are "ground scrapings" which are made by clearing away desert pavement, in order to make a depiction of various real or supernatural phenomena (Bean et al. 1978: 7-15). These depictions can be abstract, zoomorphic, geometric or anthropomorphic designs and are located at multiple places along the *Xam Kwatcan* Trail, from Pilot Knob to Spirit Mountain (Altschul and Ezzo 1995: 134). The closest earth figures to the Rio Mesa SEGF project area are:

- Blythe Earth Figures
- Ripley Earth Figures
- Palo Verde Peak Earth Figures
- Mule Spring Earth Figures
- Southern McCoy Earth Figures

There is some literature that suggests that current Native Americans attribute the earth figures (and petroglyphs) to ancient ancestors; and while the meanings are not well understood today, the images are still considered sacred. Another body of literature, generated by and about the La Cuna de Aztlan Sacred Sites Protection Circle, suggests that the earth figures commemorate a time when the Palo Verde was occupied by the ancestors of the Aztecs and is referred to in the Aztec Codices as the mythical land of the Atzlan. Further, la Cuna de Atzlan suggests that the earth figures assist in the sorting of the souls of the deceased based upon a person's life history of good and bad deeds, career choices and manner of death. The group identifies the Palo Verde and Mule Mountains area as one place where the deceased souls dwell (Kelly 2012). There is some Chemehuevi, Mohave and Quechan corroboration with the interpretation that the earth figures guide the souls of the deceased to certain destinations on their journey to the afterlife (Kelly 2012). Johnson (2003: 175-176), after much research suggests the following:

> The primary function of the earth figures of the Lower Colorado and Gila River valleys was to serve as a mode of communication between the Earth People (local tribal people) and the Sky People (deities and ancestral spirits).

Johnson goes on to explain that there are three "Big Houses" related to the Xam Kwatcan Dream Trail, one of the "houses" being Palo Verde Peak. The living, interacting with the deceased along this trail, make petitions to the deceased at such earth figure sites near the Big Houses, to particularly move from this world where they may dwell in a "wandering area" on to the afterlife. Johnson suggests that the Mule Mountains is one "wandering area." Johnson explains the function of one earth figure, trail complex, rock cairns and cleared circle and lithics area called Summit Path (Site CA-IMP-4387):

> The function of the Summit Path… serves as a processional avenue leading to a shrine at the hilltop. Usually these shrines are associated with the journey to the afterworld by local ancestor spirits. Living relatives of a deceased family member, led by a religious practitioner, would ascend the summit path in ceremonial procession to the cairn/shrine where an offering of some type would be made… [T]he cul-de-sac trail west of the cairn/shrine may have been a place where people would visit their deceased relatives to encourage them to continue their journey to beyond the Big House associated with Palo Verde Peak… and eventually beyond the hole-in-the sky.

There is some interpretation that some of the earth figure's characteristic differences result from various warring factions making territorial claims by creating earth figures in areas that are claimed after removing the previous occupants (Altschul and Ezzo 1995: 142). The interpretation that the earth figures balance between unity and schism among warring factions that all participate within a common cultural framework is interesting, but remains unfounded and contrary to how traditional practitioners understand and use earth figures that contribute to the Xam Kwatcan Trail Landscape in current times.

Research on earth-figures is on-going, and results will be incorporated into the FSA.

Rock Rings

Rock rings have been interpreted to be secular features (Apple 2005: 108), but others have also inferred a more significant cultural element to these features (Altschul and Ezzo 1995: 133). When interpreted as a non-secular feature, it is argued that these rock rings or rock alignments are associated with the earth figures associated with trail systems (Altschul and Ezzo 1995: 133). Secular interpretations focus on the rock rings as being utilitarian, i.e., for use in subsistence activities, warfare, or trade (Apple 2005: 108).

TRAIL ANALYSIS

[Results of trail analysis and discussion of any trail related features, better understood through archaeological testing, will be placed here. This section will refer to Figure 10 – an as of yet to be developed map of trails in and around the Palo Verde area. Further tribal research is needed to complete the Trail section.]

4.7 Landforms

Landforms of various types can be included in the cultural system of which a Native American group is a part. For example, mountain peaks, rivers, springs, and seeps are often considered important or sacred landforms. The following lists of landforms are those which are believed to have potential cultural significance for tribes in the vicinity of the Rio Mesa SEGF. These landforms have been derived from topographical maps of the region, as well as from published sources (i.e., Forde 1931, Kroeber 1925, and Laird 1976) and are listed from the north, starting with the Colorado River and Avikwame, and going in a clockwise direction. [Some landforms, included here by name, but without further description, require further research]. Figure 9 provides a map with some of the landforms, important for this study, depicted in a geographic context.

- Colorado River – the Colorado River is a vitally important landform in the vicinity of the Rio Mesa SEGF. It is believed that the Colorado River and the Milky Way are the same north-south representations of the Pai people's journey to and from the sacred mountain Avikwame (Johnson 2003: 161). The Colorado River provides almost all of the necessary water for the people who live in the Lower Colorado River Valley, the animals and plants that also live there, as well as serving as both a secular and ceremonial travel corridor. Moreover, the Colorado River is significant in that it divides and makes new landforms.
- Spirit Mountain (Avikwame - Yuman) – Spirit Mountain (located in the Newberry Mountains) is the mountain on which the Yuman Indians were created. From this place, each of the seven different Pai groups[3] migrated from the mountain to their respective ancestral homelands. This mountain is the destination for those making the pilgrimage on the *Xam Kwatcan* trail. Located at this mountain is the most important "Big House of the spirits" along the trail, locations which served as temporary residences for ancestor spirits during their first year of death. A year after death, the keruk ceremony takes place at the Big House locations (see Section 4.9). The Mohave tribe are considered to

[3]There is some discrepancy about how many different Pai groups there are. See Harrington 1908:324 for a different count

be the primary users and caretakers of the Big House and earth figures located near Spirit Mountain (Johnson 2003: 163).

- Parker Valley - The Chemehuevi word for enemy territory, tuhugwantitivipi, referred specifically to the area between Fort Mojave and the Palo Verde Valley (Laird 1976:134).
- Ehrenberg (Rarantsi – Chemehuevi)- location where Mexicans had a large barge operation
- Mohave Wash
- Mule Wash
- Gould Wash
- Crazy Woman Wash
- Dome Rock Mountains
- Cibola Valley
- Trigo Mountains
- Pilot Knob (Akikwalal) – This mountain peak is the southern end of the *XamKwatcan*Trail that extends from Avikwame south. This peak is where those southern Yuman tribes making the Keruk pilgrimage, either physically or in a dream state begin their journey north. Like Spirit Mountain, Pilot Knob also maintains a Big House in which ancestors spend time before making their final journey. The Cocopah and Quechan are the primary users and caretakers of the Big House and earth figures located at Pilot Knob (Johnson 2003: 163).
- Picacho Peak – significant to the Diegueno tribe.
- Milpitas Wash
- Palo Verde Mountains
- Palo Verde Peak (located in the Palo Verde Mountains) – This is the highest mountain in the project vicinity and is on the western side of the Colorado River, and the third location of a Big House along the *Xam Kwatcan* trail. Numerous trails, and trail features (i.e., cairns, cleared circles, rock rings, lithics and earth figures) connect from the *Xam Kwat can* to Palo Verde Peak, as well as various earth figures and viewpoints of Palo Verde Peak (Johnson 2003). Palo Verde Peak is a place to visit for those involved in the Keruk/Mourning ceremony where mourners petition their deceased loved ones to move on to the next world.
- Flat Tops (located in Palo Verde Mountains)
- Thumb Peak
- Clapp Spring – this is the only known water source on the southern end of the Palo Verde Mesa.

- Palo Verde Mesa – This mesa was a prime gathering and hunting ground for tribal families that practiced traditional agriculture in the Palo Verde Valley particularly during seasonal river flooding.
- Palo Verde Valley – this valley has been documented as being the location to a Quechan village, *Avikwotapai*, on the west side of the Colorado River (Bean and Toenjes 2012). This village may be the same as *Ahpe-hwelyev.*
- Mule Mountains – these mountains, immediately west of the project area, are understood to be a spiritual training area (Tribal Communication Meeting of August 23). The Mule Mountains are considered to be a place of "wandering souls" that abide in these mountains during the one year period between the funeral and mourning ceremonies.
- Mule Spring – located on the northwest side of the Mule Mountains this area shows signs of human habitation, features numerous petroglyphs, trails and is near earth figures. At one time said to be a flowing spring, currently it appears as a tank.
- Black Rock
- McCoy Mountains – there are known culturally significant springs, petroglyphs and earth figures located in and around these mountains - southernmost range claimed by Chemehuevi.
- Little Maria Mountains
- Wii?wirah (Big Maria Mountains) – another southern range claimed by Chemehuevi. The Blythe earth figures are located on its eastern side.
- Pasagovagar? - Green Water – spring or seep in Riverside Mountains
- Hauwawangk?gor? - Bone-gray peaks – Northwest Colorado Desert home to tutuguuvi (Chemehuevi)

4.7.1 Landform Connectivity

As mentioned earlier, Native Americans view their environment in a holistic manner; therefore, these landforms above are not the only important ones, and are a less than comprehensive list. In addition, all land, space, air in between, above and below these landforms are also considered important. Cachora (2000, cited in Bean and Toenjes 2012: 19) noted that there is a web of power which connects the important landscape features such as mountains and springs. Destruction of this web of power affects the "entire cosmos." Peaks are most important, but valleys between peaks and desert pavements are also important in that they are pathways for "the web that must run through from peak to peak" (Cachora 2000 cited in Bean and Toenjes 2012: 19).

Traditional Yuman dreamers make connections between disparate landforms, plants and animals and other cultural, historic and religious events by dreaming. In the practice of dreaming, the dreamer makes a journey through the land and is presented with signs that provide omens of a person's individual and family capacity for good or ill fortune (Devereux 1956: 43).

The current world of the living is sandwiched between an underworld and an above world. The underworld is a place of demons, monster snakes and other forms of malady, poison and disease that shamans either use or combat for personal or communal gains. The above world is a place where the deceased reside should proper ceremony be conducted by the living to usher their loved ones on to the next life. Johnson explains the Yuman worldview by using an analogy of the Tree-of-Life or World Tree, a symbol common in ancient and historic Mesoamerican cultures.

> …the Tree symbol involves three parts; the roots associated with the underground or underworld; the trunk associated with the present world and as a symbol of the axis mundi, or passage way between the underworld and the upper world; and lastly the branches representing the sky, the upper world or the beyond world, all pertaining to the greater journey of life (Johnson 2003: 169).

Johnson further explains that the earth figures of the Lower Colorado River Corridor allow traditional practitioners and those attempting to understand the meaning of life and death, particularly during a time of grieving from the loss of a family member, to come to understand the connectivity of time and space at the place of the earth inscripted figures (Ibid).

4.8 Mortuary Treatment

This section of the report describes the physical mortuary treatments of the Native American cultural groups participating in this study: Chemehuevi (Southern Paiute); Mohave; Cahuilla (Desert Cahuilla); Quechan; and Cocopah. In this section, the reader is informed of these Indian groups' physical treatment of the dead with a focus toward how such treatment would appear on the landscape. Because of this narrow focus, discussion of funeral and related ceremonies is presented in section 4.9. The order of discussion is from north to south, permitting easy identification of any cultural/geographic patterning to mortuary treatments.

4.8.1 Mortuary Practices in the Ethnographic Literature

Southern Paiute

Chemehuevi

The Chemehuevi traditionally buried their dead and destroyed (burned) the property of the deceased. However, if the person died away from home they could be cremated (Bean and Toenjes 2012: 53, Tribal Communication Meeting August 23). The Chemehuevi buried their dead by placing the body in a rock cleft or in a shallow wash (Kelly and Fowler 1986: 380). The property of the deceased was cremated and mourners would add belongings to be destroyed with the deceased's property (Kroeber 1976: 599). Rock cairns or shrines mark trails and sometimes burials (Bean et al. 1978:6-40; Bean and Toenjes 2012:6-40). After a year of mourning a Salt Song ceremony is performed in order to assist the deceased's spirit to the afterlife.

Mohave

Mohave practiced cremation of their dead, and all property of the deceased was destroyed at death and the body was cremated on a funeral pyre. Mourners threw offerings onto the pyre and the deceased's house and granary were burned (Kroeber 1976: Plate 69; Stewart 1983a: 59, 66). Individual Mohave frequently made requests regarding the disposal of their property upon death. Examples include orders for mourners to eat the deceased's prized animal or being cremated with a special belonging (Kroeber 1976: 751).

A detailed description of Mohave funeral pyres and cremation is available from Kroeber (1976: 750). After death, a trench was excavated near the deceased's house, willow (*Salix* sp.) or cottonwood (*Populus* sp.) logs piled above the trench, and the body lain on the pyre with the head facing south. More recently, mesquite (*Prosopis* sp.) branches were used for this purpose instead of willow and cottonwood (Stewart 1983a: Figure 11). Burning arrow weed (*Pluchea sericea*) was inserted into the pyre to set it ablaze. When the fire sunk into the pit, sand was pushed over it. The house and shade were immediately set on fire with all contents therein. Mourners threw offerings onto the pyre (Kroeber 1976: 750).

About 1970, most Mohave still cremated their dead on funeral pyres. Some property was still burned, but not the house (Stewart 1983a: 68). One tribal member remarked that they stopped burning houses when they became too expensive to replace (Tribal Communication Meeting August 24).

Special mourning ceremonies (*keruk*) were held for men with illustrious war records and perhaps for chiefs (See section 4.9). It appears to have been held either immediately after cremation or days or weeks later. In the morning after the ceremony, the dead warrior's house and property, as well as the ceremonial shade and ritual paraphernalia, are burned (Forde 1931: 252–253; Kroeber 1976: 750–751; Stewart 1986a: 67).

The Mohave keruk shelter was built in a manner similar to the Quechan. The Mohave keruk shelter was held in a clearing 50–60 yards long, extending south from the main gathering shelter. The shade was set afire and the ceremonial gear burned. Mourners threw clothing and beads into the fire (Forde 1931: 252–253).

Cahuilla (Desert Cahuilla)

The Desert Cahuilla cremated their dead, held a feast after cremation, but before the image[4] ceremony (Forde 1931:258). Their treatment of the deceased's remains and property is otherwise similar to the other groups described here.

The Pass Cahuilla of the Palm Springs area used a ceremonial dance house for their mourning ceremony. This was a permanent structure and was not burned at the conclusion of the ceremony. The dance house measured about 40 feet (ft.) in diameter. Images were burned on a separate fire (Forde 1931:259, 262.)

Quechan

The Quechan treated the remains and property of their deceased similarly to the modes described for the Mohave. The Quechan cremated their dead after a day of mourning. A shallow pit was dug to underlie the funeral pyre. Ashes and unconsumed bone would fall into the pit and was easily buried (Forde 1931: 207–208). In pre-reservation times, all property of the deceased was destroyed or given away, including the family home. Cremation took place near the house (Bee 1983: 89, 94; Forde 1931: 208). The mourning ceremony, including the construction of a special shade structure, is similar to that of the Mohave (Bee 1983:93–94; Kroeber 1976: 792).

Forde (1931: 208, 210, Figure 9) presents detailed observations on a Quechan funeral that took place in 1928. The body was fully dressed, wrapped in many blankets and was carried to the cremation ground, where it was laid onto a frame of wooden poles. The frame was built over a pit that measured 6 feet long and 2 feet wide. The pit was fashioned with a bed of dried arrow weed and three large logs (7 feet long, 1 feet diameter). Two other logs of the same length

[4] Images are effigies of the deceased that take up to a year to manufacture and require traditional practitioners to travel around ancestral territory collecting specific materials used to construct the image or "doll."

placed along the outer edges of the floor, supported by stakes driven into the ground. Arrow weed and brush were placed in the trough so formed and a wall of twigs was arranged around the outside. Blankets were thrown on top. The body was laid in the trough and covered with brush.

Trippel (1889: 582) described the cremation pit as v-shaped, measuring 7 feet by 3 feet by 3 feet. The body was wrapped in a heavy canvas. Short, thick pieces of wood were placed atop the body till the pyre was 7 feet high. Personal effects of the deceased were arranged on the pyre.

Traditionally, the house and belongings of the deceased were all burned. Favorite horses killed and buried (emphasis added); others were given away (Forde 1931: 211). Bolton (1931:4: 337, cited in Forde 1931:211) also reports that ceramic jugs were broken after death occurred.

The cremation of Pasqual, a principal Quechan leader (*k^{w}axoṭ*) from 1845 to 1887 (Bee 1983: Figure 10), followed a more elaborate pattern:

> Two decorated horses were led to two deep holes dug at either side of Pasqual's body. The horses were killed with axes and thrown into the holes, which the Quechan covered with dirt. Mourners threw offerings onto Pasqual's burning pyre: calico cloth, pottery, weapons, other objects, even their own clothing (Forde 1931:211–212).

The Keruk ceremony was held in a clearing (about a 250 square yard area) among the brush of the Colorado River floodplain. The clearing was ringed by temporary shelters of cottonwood boughs. Booths were located along the north side of the clearing. The pyre was placed centrally in the clearing and was roughly flanked by the Keruk house on the north and a temporary shelter on the southwest. The temporary shelter is a square roofing of arrowweed thatch supported by cottonwood poles. A center post was employed in addition to side posts. The east or front side of the shelter had 6-ft-tall posts, while the back or west side had 3-ft-tall posts, creating a marked slope to the roofline of the structure (Forde 1931:224–225, Figure 10, Plate 56).

To build the Keruk house, post holes were dug, corn placed in the bottom of the holes, and the poles were inserted. Placement of center poles followed the same procedure. Like the temporary shelter, the east side was supported by taller poles than the west side. Dense brushwood was placed on a light pole roof frame. During the Keruk ceremony, a small fire was built and moved between the east and west sides of the Keruk house (Forde 1931: 228, 229, Plate 57a). Images of the dead were burned on a brushwood pyre and the Keruk house was burned. The small temporary shelter was burned as well. Ceremonial paraphernalia was burned

on the pyre while mourners and onlookers threw blankets and clothing on it (Forde 1931: 243–244).

Separate areas were made for storing arrow weed brush and poles. The image makers had a separate work area. The area of the image makers has a shelter (not described) (Forde 1931: 224, 229, Figure 10).

Cocopah

As described for the previous groups, the Cocopah destroyed all possessions and the body of the deceased at funerals (Kelly 1977; Williams 1983: 110–111). As of 1981, this was still the American Cocopah's mortuary practice (Williams 1983: 111).

The deceased was fully dressed before cremation. The house of the dead and all belongings were destroyed; even footprints were removed. Mourners threw offerings onto the funeral pyre. The Cocopah collected the ashes and removed them from the cremation site (Forde 1931: 208).

Currently, the deceased belongings are more often given away or sold. A year or so after a death, the Keruk ceremony is held in memory of one or more persons that died since the last Keruk ceremony. A shelter was erected specifically for the ceremony and it was tradition to burn the structure in addition to the body (Williams 1983: 110–111)

The ceremonial house was a rectangular shade structure supported by 12 poles, four in each of three rows from front to back. The front of the shelter is tall, the rear short. The dimensions of the house were about 27 ft. wide and 13.5 ft. deep. The sides of the structure were walled by brush. An enclosure was formed in front of the house by erecting two fences of poles and arrow weed. A fire was made in the resulting court (Forde 1931: 255).

The Keruk house was burned, but devoid of any contents. A separate pit was dug in which clothes, money, bows, and arrows were burned. The pit is afterwards closed up with earth (Forde 1931: 256).

4.8.2 Implications for the Structure of the Archaeological Record

The mortuary practices reviewed above show considerable parallels in terms of the physical preparation and disposal of the deceased's corporeal remains and property. The pattern of the tribal groups discussed herein can generally be described thus: 1) the body is prepared for cremation or burial; 2) the remains are cremated or buried, with or without the property of the deceased; 3) the deceased's property and home might be burned separately from, but at about the same time as the body; 4) the remains of the body and any burned property is removed or

abandoned; and 5) the preparation and conduct of post-death/"annual" ceremonies. This section of the report explores their potential archaeological consequences in this approximate sequence.

Preparation, Cremation, and Burial

Concerning preparation of the body, the aboriginal practice seems clearly to have been cremation among the Yuman speakers. Prior to cremation, the body was dressed and/or wrapped in blankets (Forde 1931; Williams 1983: 110). Items special to the deceased were sometimes placed on the body prior to burning. In other cases, as with the Quechan, the deceased's belongings were placed on the pyre prior to burning. The funeral pyres of the Cocopah, Mohave, and Quechan overlaid pits of approximately the same dimensions: 6–7 feet by 2–3 feet by 3 feet. Only the Cocopah are reported as removing the cremains from the pit; the other groups simply filled in the hole. Cemeteries are not recorded for the tribal groups concerned here, doubtlessly because cremations were usually conducted near the home of the deceased and left in state. At times, animals might have been buried near the deceased or burned on the funeral pyre. Mourners and onlookers threw offerings onto the funeral pyre as well.

Little is said in the ethnographic record about mode of burial. The Chemehuevi placed the deceased in a rock cleft or shallow wash.

Given the mode of cremation described in the regional ethnographic record, human cremations could be manifested in the project vicinity as pits filled with ash, wood charcoal, bones and teeth (cremains), and various grave goods. Such accoutrements could reasonably include charred clothing, bone, shell beads, faunal remains, and other artifacts. The remnants of cremation pits may or may not be evident on the ground surface. Beyond finding human remains in the burial contexts mentioned above, little can be said about the likely appearance of interments in the archaeological record: bones and perhaps grave goods buried in washes or collapsed in rock crevasses.

The ethnographic context of cremation reported here calls for cautious interpretations of the status and wealth of individual cremations. With entire communities contributing items to funeral pyres, the quantity of goods present with crematory remains in archaeological context should not be construed as a direct indication of individual status or wealth. Comparative data from other cremations would permit reasonable inferences about individual status and wealth, given sufficient sample sizes.

Cremations will likely be in close proximity to structural archaeological features under favorable preservation conditions, since cremations were typically conducted near the deceased's

residence. Dedicated cemeteries are not reported for the Chemehuevi, Cocopah, Quechan, Desert Cahuilla, or Mohave.

> Rock cairns, which variably mark trails, burials, or other phenomena, occur in the project vicinity as piles of rock standing from one to three courses in height. Older cairns are frequently indicated by stronger desert varnish or patina (Nixon et al. 2011).

Destruction of Home and Property

The destruction of the deceased's property by fire was practiced by the Cahuilla, Chemehuevi, Cocopah, Mohave, and Quechan. The ethnographic record indicates that the body (discussed in the previous section), property, residence, and associated structures are destroyed at about the same time. The majority of personal property is burned with the body, although some possessions may have been left in the residence, which was then burned. All five Indian groups described herein burned the deceased's residence and other structures owned by the dead person. To derive potential archaeological consequences of structural burning, it is necessary to consider the construction and materials of native structures. Six types of structures are known to have been built in the project vicinity: winter houses, domed brush houses, granaries, field houses, ramadas, and open-air brush enclosures.

Winter houses and domed brush houses must have been the most frequently burned structures, as they were the primary residences for much of the year. Among the five tribal groups of the project vicinity, the winter house was supported by 2–6 central wood posts. Further roof support and wall structure was provided by up to 20 additional posts at the perimeter of the structure. Other notable features of winter houses were occasional semi-subterranean construction and indoor floor hearths. The winter house followed a rectangular plan 20–50 ft. on a side (Bee 1983: 89, Figure 2; Forde 1931: 120–122, Figure 4; Kelly and Fowler 1986: 375, Figure 3; Kroeber 1976: 731; Stewart 1983a: 57, Figure 5; Williams 1983: 105).

Domed brush houses also were made throughout the project vicinity. These structures were approximately 9–20 ft. in diameter and composed of bent wood poles with arrow weed thatch. Field houses were built in a similar manner, although they presented more ephemeral structures that were open at the front and back (Bean 1978: 577, Figure 2; Forde 1931: 122; Kelly and Fowler 1986: 375, Figure 3; Williams 1983: 105).

Granaries were constructed of arrow weed and/or willow and placed on a four-post wood frame (Bean 1978: 578, Figures 4–5; Kelly and Fowler 1986: 375, Figure 3).

Ramadas were flat-topped shades supported by nine or more perimeter posts and covered with arrow weed or willow thatch. The structure had no walls. Ramadas were sometimes built next to or in front of residences (Bee 1983: 89, Figure 2; Forde 1931: 120–122, Figure 2; Kelly and Fowler 1986: 375, Figure 3; Kroeber 1976: 731; Stewart 1983a: 57).

Open-air brush enclosures are reported among the Cocopah and Quechan. Arrow weed or willow was used to fashion the structure, which sometimes was free-standing, but often erected adjacent to a residence. The literature reviewed for this study contains no reference to deliberately burning enclosures that had belonged to the deceased, but the firing of granaries among the Mohave and their frequent proximity to residences indicate a distinct possibility that the enclosures would at least occasionally be burned (Bee 1983: 89, Figure 2; Forde 1931: 120–121; Williams 1983: 105).

The most enduring aspects of the aboriginal structures reviewed here would be the support structure of winter houses and dome houses. Having been burned, the support poles are likely to leave charcoal-filled postholes. Hearths also may be preserved, evident by fire-discolored soil, charcoal, and perhaps a stone ring. The location of these features can aid in the interpretation of site function. Fragments of roof fall might also be preserved after burning. Various artifacts could be expected in this context, though their preservation will vary with material type and its resistance to fire.

The ramada can be expected to leave post holes after being burned, but generally less structural and artifactual material. The field house, granary, and brush enclosure were far more ephemeral structures and may leave little recognizable trace in the archaeological record.

Preparation and Conduct of Post-death/“Annual” Ceremonies

Although the Desert Cahuilla employed a permanent ceremonial structure for their “annual” ceremony, the Cocopah, Mohave, and Quechan are known to have built ceremonial structures and burn them during the proceedings. Preparation and conduct of the annual ceremony has several implications for the structure of the archaeological record, affecting the representation of structures, other ceremonial features, and distribution of site and landscape elements on the ground.

In its most elaborate form, recorded among the Quechan, the annual ceremony involved the construction of three ceremonial structures, numerous shelters and booths for participants, and shelters for image-makers. The ceremonial structures (temporary shelter and keruk house) resembled the winter houses but were not covered with earth. Keruk houses were generally about the same size as winter houses (25–35-ft. diameter).

After burning, these structures would potentially leave the same traces in the archaeological record as described in the previous section: charcoal-filled post holes, hearths, fire-discolored soil, and perhaps roof fall. In addition, corn may have been placed at the bottom of the post holes before insertion of the poles. Keruk houses, therefore, might be recognizable as such, should charred corn be found in post-hole remains. Under favorable conditions, fragments of clothing and beads—offerings from mourners and onlookers—might be preserved within burnt structural remnants.

Other features associated with annual ceremonies that can leave a discernible archaeological remnant include free-standing hearths and pyres constructed for burning images of the dead and offerings. Images were fashioned from wood or, more rarely, reeds and were wrapped in clothing (Forde 1931: 229).

The conduct of the annual ceremonies might also be expressed on the archaeological landscape in constellations of related features. Although a certain amount of variability characterized the practice of annual ceremonies among historically documented Indian groups (to say nothing of potential variability during approximately 12,000 years of prehistory) the Mohave and Quechan made specific use of space and modified their surroundings during these ceremonies. Earlier, this report discloses that cleared areas among river-floodplain brush were an essential element of Mohave and Quechan annual ceremonies. Within the cleared areas, ceremonial structures and features are patterned in ways that are archaeologically discernible. According to the description of the Quechan annual ceremony, a ceremonial ground might manifest in the archaeological record as follows: a centrally located hearth-like feature representing the image pyre, flanked north and south by burned post-hole remnants and other burnt structural debris. Nearby, the edges of the ceremonial ground might be marked by sparse artifact scatters consistent with short-term occupation by several family groups. Expected artifacts might include pottery fragments, ground-stone tools, and faunal remains. Hearths would be marked by fire-affected soil and perhaps rock rings.

4.9 Ceremonies and Sacred Trails

Dreaming

Dreaming, the knowledge and methods for proper dreaming, and the revelations resulting from dreaming are thought to be the basis of Lower Colorado Native American life-ways (Kroeber 1976: 754-755, 783-784; Forde 1931: 201-204; Gifford 1926: 58-69; Wallace 1947: 252-258). Dreamers are said to place the import of dreams above the reality that sensory perception provides in the awake state of consciousness. That is to say that dreams guide the person more than the immediately perceived world guides the person. Bad dreams mean a person will have

bad luck in the world, good dreams means that the person will have good luck in the world. This cultural phenomenon, specifically honed in the lower Colorado River area, has led anthropologists to herald the people and practice "as one that can grow only out of a remarkable civilization" (Kroeber 1976: 754).

Some may argue that dreaming is a matter for individuals and only individuals. That is to say dreaming has no relevancy for any cultural collectivity beyond the idiosyncratic musings of an individual with him or herself. While that may be true for the role of dreaming in other cultures, including American popular culture, that is not the case with the cultures of the lower Colorado River. Without asserting that all Yuman dreaming is relevant to the larger social whole, methods have been developed for classifying dreams into 1) categories relevant to social groups, and 2) those relevant to individuals (Lincoln 2003: 189-206). Lincoln distinguishes between "cultural pattern dreams" and "individual dreams." Lincoln also suggests that, as cultural traditions change or fragment, so also may the dreaming motifs, qualities and relative importance placed on dreaming switch from culture pattern dreaming to individual dreaming. Lincoln provides an example of how a Yuman dreamer of the last century, undergoing a conversion from traditional Yuma religion to Christianity also underwent a change in the quality and relevance of dreaming (Ibid: 192-193).

An example of Yuman culture pattern dreaming is where various dreamers, independent of one another dream of the same series of events with the same deities engaged in helping the dreamer to gain some aspect of knowledge, insight or foresight, or other power. Characteristically, one of the most prevalent culture patterned dreams involves the Creator Mastamho assisting the dreamer along the Xam Kwatcan/Dream Trail on a journey to Spirit Mountain, the place of Yuman creation. Yuman people wishing to reconnect with the fundamental principles of their culture can physically walk the Xam Kwatcan/Dream trail as a form of reconnection back to the place or origin. Those that wish to make the journey often can dream the pilgrimage. Yuman dreamers currently travel the Xam Kwatcan/Dream trail on a regular basis.

Lincoln (2003: 189-206) further bifurcates the individual dreaming phenomenon into two other categories, 1) those dream events which do not purport to be the same as others' dreams (and are therefore not culture pattern dreams) but remain relevant to cultural phenomena; and 2) those dreams that are individually based and that do not have any basis in the larger culture. Dreamers will often have familiar landscapes that are culturally significant that are travelled within the dream state. Various landscape contributing features such as vegetation, animals and landforms become pivotal markers on the landscape for anchoring the persons dream journey. These contributing features exist both in the physical world that the dreamer visits in

the waking world, as well as in the dream world that the dreamer traverses while dreaming. Therefore, an alteration in the physical landscape has a direct effect in the quality and ability of the dreamer to traverse the landscape while in a dream state.

It is specifically culturally patterned and individual cultural dreams that dreamers discuss with others either in deciphering meaning, predicting events or admonishing or pre-cautioning family and community members about past or future events that may have, or will bode well or ill for those involved. It is in the telling of the dream that the power of dreams guides a people towards a culturally relevant destiny.

4.9.1 Ceremonies

Mesquite and Harvest Festivals

During the month of July and after the mesquite pods have ripened, lineages and extended families mobilized for the gathering of the important food source. Up until July most people subsided on a "catch as catch can" basis. The previous year's agricultural harvest had usually given out sometime during February. Hence the arrival of rip mesquite was enthusiastically welcomed. The following excerpt from Castetter and Bell (1951: 229) will suffice.

> When the mesquite crop was abundant it was made a matter of universal rejoicing and congratulations. As the fruit ripened, the outlying districts were notified of the date of the ceremony by runners, and when a sufficient number of Indians had assembled, a large open bower or shed was built and at sunrise each morning young and old went to the mesquite groves to gather the pods in large baskets. The fruit was then brought to the shed and prepared by first discarding the inferior pods, then saturating the rest with water and burying the sticky masses in the ground. After a day or two they were taken up, much shrunken and almost solidified, and piled in stacks beneath the shed. When enough had been gathered for storage, a light brush fence was constructed around the shed and bundles of pods were placed in different parts of the enclosure, in sets for each district represented. The evenings were spent in singing, dancing, playing games, and love-making. On the last day the participants gathered outside the frail fence and, at a given signal, dashed through the fence toward the piles of beans, each seizing as many bundles as possible, meanwhile in good nature seeking to prevent his neighbor from securing a share. Then all shouldered their bundles of pods and departed for home.

During the month of November, just after harvesting and before people departed from the agricultural areas of the flood plain and made their way to the mesa for the winter, harvest

festivals were held. The fall Harvest Festival was similarly more of a social gathering and less of a religious event. Castetter and Bell (Ibid: 230) further describe the festival:

> The Indians sang songs of rejoicing and old men made speeches about the goodness of nature. Foot races, wrestling matches, kicking ball contests, gambling games, and later horse races characterized the celebration during which men bet articles of clothing, etc. If the harvest were abundant in any section of a tribe's territory, the chief or some other prominent individual summoned the tribe to a prearranged point for the celebration. … The host families were instructed to bring generous contributions of pumpkins, maize, etc., being certain to bring the best of each crop, for it was the habit of the tribes to give away only the best. Families brought this produce with no thought of their own later needs. The products were sorted and stacked in large heaps in front of a special shelter constructed for the event. … Yuma singing , dancing, frolic, and feasting continued throughout the night, songs having to do particularly with the growing and abundance of crops. … The following morning the guests departed, and as they were leaving each passed in front of the shelter and gathered up an arm load of the crop, which he took home.

Keruk Ceremony

The Keruk Ceremony is generally covered in a previous section concerning burial practices. After a funeral there is generally a year of grieving which is then followed by a separate ceremony to move the soul along the dream trail towards Spirit Mountain and the afterlife in the above world. This journey of the deceased, grieving family members, and the traditional specialist who assists in this journey is further described in the following section titled Keruk/Xam Kwatcan trail.

4.9.2 Sacred Trails

Salt Song Trail – Southern Paiute, Chemehuevi

The Salt Song Trail has been researched and described in a previous Energy Commission document (Gates 2012: 72-7411 AFC-02 Log #66701, Redacted Version Hidden Hills Ethnographic Report, Gates, 2012: 72-74). The previous study, conducted in response to the proposed Hidden Hills Solar Electric Generating System project in the Pahrump Valley, was done in collaboration with a traditional Salt Song practitioner. The following has been excerpted from that study.

> Many and various Southern Paiute still believe in, practice, understand, and educate others concerning the Salt Song trail. The song trails are for all Southern Paiute. It can

be argued that Salt Song trails are the most important of all trails for Southern Paiute because, sooner or later, all Southern Paiute will travel that trail (Stoffle 2009: 40).

Upon death, a person's spirit or soul travels to a place towards the north called *Naugurivipi*, or the "spirit land." The funeral ceremony is held soon after death. Within three months to a year later the *Yagapi* or "Cry" or "Mourning" ceremony is held. Several deaths could be handled in one ceremony. Runners were sent out to travel the trails to send word of the selected date for the ceremony. Parties traveling to participate in the Cry ceremony would collect items useful for constructing the ceremonial structures. Singers were selected to sing the deceased along the Salt Song trail and eventually on to permanent residence in the afterlife.

The Salt Song is sung at the Annual Morning Ceremony or Cry Ceremony. The Song ushers the ceremony participants and the spirit of the deceased from place to place in a circuit and naming places, landforms and other natural phenomena. The song-travels are done at night. Each place along the way has its own story and part of a song. The man shakes the rattle and both man and woman sing the songs. The Salt Song describes where to go and how to get there and what can be found at specific places. Southern Paiute people travel on these trails physically across the land, mentally in a dream state, and spiritually after death.

The following additional information was provided by a Salt Song singer. This information is provided to summarize what Salt Song trails mean and how they function in the Southern Paiute world today.

Various trail songs are vocal snapshots of the landscape. Various places and geographic features are covered, but that does not mean that a song has less significance for a particular area because a place is not mentioned in a song. However, playas and flat desert areas are mentioned in songs… not just prominent landscape features, such as springs or mountain ranges/peaks. There are 364 plants and 170 animals mentioned in the songs. The vocal snapshot is a total experience; not just a visual experience. It is sung and therefore it is an auditory experience. Therefore, there is a reverberation, resonance quality that rings throughout valley/mountains.

When something is taken that was not properly requested, then traditional Southern Paiute believe that physical and spiritual imbalance results. Imbalance causes sickness and that increased imbalance places a burden on singers and healers. It is not a matter of whether a traditional system works in the face of incompatible change, but rather the

difficulty or additional burden to continue adapting and adjusting to incompatible change.

When singing, the traditional system is very complex and requires cognizance of ten directions: cardinal directions (4), up/down (2), past, present and future (3), and self (1)

Songs follow a tradition, but also are individual expressions that resonate, reverberate with the land, the songs both re-make the land and are made by the land. Because of individual singers with multiple directions, there are multiple landscape iterations. Songs do not follow linear trails, but fill/make space. Prayers/Songs respond to the land and the land speaks back. This is two way "memory lane." Weather and climate are part of this memory.

Singing requires a visual, auditory, and spiritual solitude. Large land developments in the midst of these song-scapes cause havoc or chaos … not just for the singer, not just for what the singer seeks to balance, but also the entire Paiute world…and the entire world …cosmos.

Havoc or chaos confuses and angers spirits who are the environment and its constituent plants and animals. Water spirits are one such spirit. Magma is a type of water spirit… just from a lower world. It can be angered.

The land has emotions just like humans: joy, anger, jealousy, confusion, clarity etc. The songs are an antidote to harm. (Interviewee – Personal Communication)

The following information concerning the Salt Song trails is provided.

Salt Songs can be obtained by going to certain caves (Laird 1976: 38-39).

Every tribe and practitioner has a different version of the songs so it can be confusing.

Performing the Salt Song ceremony is an obligation.

The grieving family is the host. The singers meet in a common area before entering into the host's place. The host sends a runner to meet the ceremonial singers, who are then ushered into the funeral/ceremonial area. The host then announces to the assembled group who the singers are.

The funeral ceremony can go on for days and in the past it was expected that all attendees were required to stay for the entire duration of the ceremony. Now-a-days, the people come and go to pay respect. But the singers still stay for the whole ceremony. The bird songs and ceremony are for the one-year memorial. Some other

> tribes sing the bird songs for entertainment. All of these ceremonies are serious matters and should be taken seriously. These are not things to be played with. [this phrase: "the Salt Song trails are very sacred and are to be taken seriously and are not to be played with", was repeated several times throughout the interview]. Larry Eddy is a traditional singer and is related to people in the area. (Hidden Hills Ethnographic Report 2012)
>
> The Salt Songs trails continue to be sung and travelled into the present. The following summary information comes from a publication of the Storyscape Project of The Cultural Conservancy.
>
> The Salt Songs are the sacred songs of the Nuwuvi people and describe a physical and spiritual landscape spanning ocean and desert, mountains and rivers, life and death. The landmarks identified on the map, are described by the songs and represent ancient villages, gathering sites for salt and medicinal herbs, including routes, historic events, sacred areas, and cultural landscapes. At memorial ceremonies, Salt Song singers "throwing the gourd" are accompanied by dancers as they perform the 142 song cycle from sunset to sunrise to assist the decreased in their sacred journey. The Salt Songs begin their journey at *AviNava/Ting-ai-ay* (Rock House), a sacred cave at the confluence of the Bill Williams and Colorado Rivers. The songs travel north along the Colorado River to the Kaibab and Colorado Plataeu, into Southern Utah, and then west to the great mountain *NuvaKaiv* (Mt. Charleston) – the place of origination of the *Nuwuvi* People – and then further west to rise above the Pacific Ocean before arcing back east through the Mojave desert to their origen at *Avi Nava*.
>
> At memorials it is the responsibility of the lead singer to guide the singers across the spiritual landscape to gather at *NuvaKiav* [Mt. Charleston] at midnight when the mourners assist the deceased in their spiritual crossing. (Klasky 2009: 1-2)
>
> "I am like a bus driver … making sure that the singers visit all the right stops at the right times along the way," said a lead Salt Song Singer. (Larry Eddy quoted in Klasky: ibid)

A map of the Salt Song trail is provided at Figure 11 of this report. This map was produced in 2009 and was constructed based upon input from current practitioners, including those of Chemehuevi descent. The Figure 11 map depicts the trail corridor coming to the Colorado River from the west and across the Chocolate Mountains and Indian Pass area towards the Colorado River. The trail corridor then follows the Colorado River up-river and past the project area. An early map provided by Laird (1975) has the Salt Song Trail proceeding southward along the western side of the McCoy Mountains, and cutting across the northern tip of the Mule

Mountains as it makes an eastward turn towards the Colorado River. Practitioners today adhere to the course depicted in the more recent 2009 map.

The Salt Songs cross, reverberate and provide passage for deceased Southern Paiute in the vicinity of and to the immediate north and south of the project site.

Keruk/Xam Kwatcan Trail

The Keruk/Xam Kwatcan trail runs the length of the Colorado River between Spirit Mountain (Newberry Mountains) in the north and Pilot Knob, (Carzo Machacho Mountains) in the South. This distance, approximately 140 miles in length, is depicted on Figure 12 located at the back of this report. The trail follows the river along the various mesas that align the river and, where possible, avoids the river's various flood plains. In some places, particularly along the southern extent the trail is located on both sides of the river. The trail on the eastern side that stops in Parker Valley has relevance for plant medicinal journeys. Three "Big Houses," Spirit Mountain in the North, Pilot Knob in the south and Palo Verde Peak in the middle are abodes of ancestor sprits (relatives who have passed away) (Johnson 2003: 163). After the deceased's funeral, a year of mourning is completed as discussed in earlier sections of this report. The Keruk ceremonial function is intended to bring closure to the grieving family and community. Family members will travel near to the big houses and utilizing the various earth figures along the trail will address the ancestor spirits and ask that they move on to the next world. The Mule Mountains, located adjacent to Palo Verde Peak are thought to be a place of wandering ancestral spirits waiting to depart. The area reserved for beseeching ancestral spirits to depart this world are often marked with earth figures, cairns, trails, and at a comfortable distance away from the earth figures are cleared camp sites. Hence the earth figure sites (approximately 300 sites) along the Keruk/Xam Kwatcan trail are major foci for intense activity between the living and the deceased. The larger earth figures sites (three of which are near the project site), also tend to be crossroad locations for trails running east and west. Along the outer perimeters of this trail corridor are smaller earth figures with accompanying cairns, cleared rings, nearby campsites and smaller interconnecting trails. Lithic scatters, including crushed quartz rock, are sometimes found in association with the other site types. Throughout the entire Keruk/Xam Kwatcan trail corridor the areas are covered with various specific objects of archaeological importance and cultural relevance such as lithic sites and pot drop shards (See Appendix 2 for a listing of archaeological objects and sites found in or near the project area that may have ethnographic importance related to trail systems).

The entire system of the Keruk/Xam Kwatcan Trail consists of various segments of the trail, several significant mountain ranges and specific peaks, numerous side trails, numerous earth

figures, areas, and thousands of objects such as lithics, cairns, pot sherds and cleared sleeping or camping areas. The trail system, being along the river, was also a route for secular travel.

4.10 Analysis Summary

This report's analysis has divided some of the Native American life-ways, and how those life-ways are intertwined with a landscape, into eight attributes: water, plants, agriculture, animals, trails, landforms, mortuary treatment and ceremonies and sacred trails. The reader will note that there is crossover between categories. For example trails are waterways, trails are songs, trails are ceremony, trails are for hunting and gathering, and trails run through all of the landforms that allow traditional practitioners (and others), to travel between the mountains, valleys, gardens, plants and animals and homes and camps. Likewise any of the other attributes can be explained in terms of, or have overlaps with, the other attributes. The world is one holistic phenomenon. This whole is segmented into attributes so that non-Native Americans can understand something about the life-ways of a different people.

Native Americans from the various tribes consulted for this study, continue to practice their traditional ways as best they can against the backdrop of modern dominant society and the various developments that come with modern society.

This area is comprised of several overlapping ethnographic landscapes which have as their contributing attributes or elements: water, plants, agriculture, animals, trails, landforms and ceremonies and sacred trails. These ethnographic resources encompass the project area.

The following section will evaluate the eligibility of these resources for the National or State Registers, per what criteria, for what periods of significance and with what levels of integrity.

5.1 ETHNOGRAPHIC RESOURCE _ELIGIBILITY EVALUATIONS

5.2 Ethnographic Landscapes

An ethnographic landscape is defined generally as a landscape containing a variety of natural and cultural resources that associated people define as heritage resources. Ethnographic landscapes can have considerable overlap with what are called traditional cultural properties. Traditional cultural properties are synonymous with the term "place." Places and areas are types of historical resources that can be synonymous with traditional cultural properties and ethnographic landscapes. The term ethnographic landscape will be used to generally refer to the types of resources that are considered in this report; however staff, by using the term ethnographic landscape also intends that usage to also mean an "area" or "place" per the definition of historical resources for the purposes of the California Environmental Quality Act.

5.21 Ethnographic Resources/ Landscapes Generally Described

There are 3 ethnographic landscapes that this report describes and that, to varying proximity, are in the vicinity of the project:

1. Salt Song Trail Landscape
2. Keruk Trail/Xam Kwatcan/Earth Figures Landscape
3. Palo Verde Ethnographic Landscape

Salt Song Trail Landscape

The Salt Song trail is a Southern Paiute sacred trail corridor that crosses several states and circuits between the Mohave Desert and the southern portions of the Wasatch Range. It closely follows the Colorado River past the project area. It is a trail system that is travelled by the deceased with the aid of traditional practitioners who, through song, story and prayer usher the deceased along the path in an effort to assist the deceased on their post burial journey to the afterlife and to alleviate the mourning grief of the deceased's living family and friends. The trail consists of physical marks on the land, both trail marks and natural land patterns, wayside locations where specific songs and other rituals are song or conducted, and a corridor along the trail system.

Keruk /Xam Kwatcan/Earth Figures Landscape

The Keruk Xam Kwatcan/Earth Figures Landscape is a Yuman sacred trail corridor that parallels the Colorado River between Spirit Mountain in the north (near Laughlin, Nevada) and Pilot Knob in the south (near Yuma, Arizona). A significant third sacred mountain located in the approximate mid portion of the trail corridor is Palo Verde Peak. It is a trail system that deceased follow, after the cremation ceremony, as they make their way to the afterlife, and

that living people travel to assist in the departure of their deceased ancestors. It is also a trail that traditionally minded Yumans take as a pilgrimage of return to the place of creation. The trail can be physically travelled as well as, for those who have trained, a trail to travel in dreams. The trail is a physical mark on the land (in some places consisting of parallel trails and trails on both sides of the river) and has numerous wayside locations, namely many of the earth figures. The earth figures also have many contributing features such as cleared circles, rock cairns, altars, cul de sac trails, altars and lithics including shattered quartz. The Mule Mountains and immediate surrounding environs are considered one place where souls might go to wait out the year of mourning between the cremation ceremony and the final journey to the afterlife. The project vicinity is one place where grieving families go to petition the deceased to move on.

Palo Verde Ethnographic Landscape

The Palo Verde Flood Plain, Mesa and the two mountains that form the Mesa in relation to the Colorado River is one of approximately seven broad valleys that define the western edge of New World agriculture[5]. To the west of the Colorado River, hunting and gathering subsistence strategies predominated. To the north of the Colorado the cultivation of plants is better described as horticulture and the indigenous peoples of those areas relied heavily upon hunting and gathering. The tribes of the lower Colorado practiced a unique mixture of agriculture and hunting, fishing and gathering. The Palo Verde area is a place where at least four distinct tribal groups over time, vied for prime agricultural and hunting and gathering areas. The landscape consists of the river, the flood plain, the mesa and two mountains where these practices played out for millennia. This study focuses on a proto-historic period when the Quechan had control over the southern portion of the valley for several decades before newcomers were successful in introducing a new form of agriculture in the valley that relied upon control of the river and resultant irrigation and landownership patterns. The major contextual theme of this landscape is the subsistence dynamic between cultivation, and hunting and gathering that Yuman people conducted between four landforms: the river, the flood plain, the mesa, and the surrounding mountains and how those subsistence practices gave way to newly introduced forms of agriculture that relied upon controlling the river, parceling land and infusing capital investments in irrigation infrastructure, wage labor and land leases.

5.22 Contributing Attributes, Elements or Features

The National Park Service Cultural Landscape guidelines provide various terms for the smallest units that collectively define any landscape. These units are called synonymously, “attributes”, “elements” or “features”. The following tables (Tables 11, 12 and 13) provide features listings,

[5] New World Agriculture featuring maize (corn) as the primary grain, is contrasted with the Old World agriculture of the fertile crescent of the Middle East that centered around wheat cultivation and the agriculture that arose in the Orient that centered around the cultivation of rice.

description and other relevant information for understanding the natural and cultural make-up of the three landscapes discussed in this report.

Table 11. Contributing Features of the Salt Song Landscape Related to the Rio Mesa Solar Energy Generating Facility Project Vicinity

FEATURE	DESCRIPTION	ADDITIONAL INFORMATION
Water	Pu ha (power), spirits, springs, creeks, washes, river	The trail follows the river in the vicinity of the Project area. Refer to the water section of this report.
Plants	Pu ha (power) Plants along the trail and in the project vicinity	Refer to Table 4, Appendix 3 of this report.
Agriculture	Flood Plain	Agriculture is a secondary aspect to the floodplain, which is created by the river by past flooding. Refer to the agriculture section of this report.
Animals	Pu ha (power) animals along the trail and in the project vicinity	Refer to Table 8, Appendix 4 of this report.
Trails	Pu ha (power) Spirits, human, animals	All southern Paiute, living and deceased, participate in the Salt Song Trail. The trail is a path on the ground, a corridor on and above the ground, and an auditory sound-scape. Further information will be provided once an on-going trail study is complete.
Ceremony	Pu ha (power)	Refer to section 4.8.1 Chemehuevi Mortuary Practices.

Table 12. Contributing Features of the Keruk Trail/Xam Kwatcan/Earth Figures Landscape Related to the Rio Mesa Solar Energy Generating Facility Project Vicinity

FEATURE	DESCRIPTION	ADDITIONAL INFORMATION
Water	Colorado River, washes	The trail follows the escarpment that defines the mesa and the river floodplain in the vicinity of the Project area. Refer to the water section of this report. The trail generally follows the

		river corridor.
Plants	A portion of the trail on the eastern side is used for gathering medicinal plants	Refer to Table 4, Appendix 3 of this report.
Agriculture	Keruk ceremonies require that participants are feed traditional foods	Agriculture is a secondary aspect to the floodplain, which is created by the river by past flooding. Refer to the agriculture section of this report.
Animals	Dreamers have guardian spirits some of which are animals	Refer to Table 8, Appendix 4 of this report.
Trails and associated sites	Trails documented as linear archaeological sites cairns, cleared circles, Cleared rings, rock rings, pot drop shards, associated lithics, Geoglyphs	Yuman people, living and deceased, participate in the Keruk/Xam Kwatcan/Earthfigures Trail. The trail is a path on the ground, a corridor on and above the ground, and an auditory sound-scape. Further information will be provided once an on-going trail study is complete and further tribal consultations are conducted.
Landforms	Pilot Knob, Palo Verde Peak, Spirit Mountain, Mule Mountains, Colorado River	There are many landforms associated with the trail. The first three listed mountain landforms and the river generally define the trail. The Mule Mountains and Palo Verde Mountains and Peak are associated with the trail.
Mortuary Treatment	Cremation, Cremation sites in the project area	A ceremony for separating the spirit from the corpse and introducing a period of mourning for the living.

Ceremony and Sacred Trails	Keruk Ceremony Cultural Pattern Dreaming	Refer to section 4.8.1 Mohave, Quechan, Cocopah Mortuary Practices.

Table 13. Contributing Features of the Palo Verde Ethnographic Landscape Related to the Rio Mesa Solar Energy Generating Facility Project Vicinity

FEATURE	DESCRIPTION	ADDITIONAL INFORMATION
Water	River, Sloughs, lagoons, Clapp Spring, Mule Spring	Refer to the water section of this report. The agricultural section of this report discusses methods for which the Yumans manipulated flood waters and siltation for preparing agricultural lands.
Plants	Wild and Semi wild plants used for subsistence, the preparation and cultivation of foods, the preparation and hunting of animals, and for building summer and winter houses	Refer to Table 4, Appendix 3 of this report.
Agriculture	Garden varietals	The agricultural section provides information on Yuman agricultural practices.
Animals	Fish, Rabbits, Birds	Refer to Table 8, Appendix 4 of this report.
Trails	Trails among the river, flood plain, mesa and through and around the Palo Verde and Mule Mountains	Further information will be provided once an on-going trail study is complete and further tribal consultations are conducted.
Archaeological Sites	Camp Sites, Village I,	Further information will be provided once an on-going archaeological testing plan is implemented/completed and further tribal consultations are conducted.
Landforms	River, Palo Verde Valley, Flood Plain, Palo Verde Mesa, Palo Verde Mountains and Peak, Mule Mountains.	
Ceremony	Mesquite and Harvest Festival	Refer to Section 4.9.1

5.2.3 Boundary Justifications

Salt Song Trail Boundary

A precise delineation and boundary justification for the Salt Song Landscape is not necessary for this project because the landscape, extending over a large swath of the Southwest and California, far exceeds the area of the project. Energy Commission project review time constraints also prohibit such a robust delineation. Figure 11 provides the general parameters of the Salt Song Landscape. Viewsheds and soundscapes are essential features for traditional Salt Song practitioners. In the vicinity of the Rio Mesa SEGF, the Keruk/Xam Kwatcan/earth figures landscape boundaries encompass the Palo Verde Valley, Palo Verde Mesa, Palo Verde Mountains and the Mule Mountains. The Salt Song Landscape is ubiquitous throughout, saturates and exceeds the Rio Mesa SEGF project site.

Keruk Trail/XamKwatcan/Earth Figures Landscape Boundary

A precise delineation and boundary justification for the Keruk Trail/Xam Kwatcan/Earth Figures Landscape is not necessary for this project because the landscape, extending along the Colorado River, far exceeds the area of the project. Energy Commission project review time constraints also prohibit such a robust delineation. Figure 12 provides the general parameters of the Keruk/Xam Kwatcan/Earth Figures Landscape. View sheds, soundscapes and dream scapes are essential features for traditional Keruk and Xam Kwatcan practitioners. In the vicinity of the Rio Mesa SEGF, the Keruk/Xam Kwat can/Earth Figures Landscape boundaries encompass the Palo Verde Valley, Palo Verde Mesa, and eastern sides of the Palo Verde Mountains and the Mule Mountains. The Keruk Trail/Xam Kwatcan Landscape is ubiquitous throughout, saturates and exceeds the Rio Mesa SEGF project site.

Palo Verde Ethnographic Landscape Boundary

The boundary of the Palo Verde Mesa Ethnographic Landscape exceeds the limits of the Rio Mesa SEGF project site. Conservatively, it includes part of the Colorado River floodplain and mesa of the southern Palo Verde Valley and Mesa. The boundary also includes the Palo Verde and Mule Mountains as follows:

The area is drawn from the middle of the Colorado River and going south follows a secondary river channel that cuts just south of Davis Lake. The boundary follows Highway 78 for a few miles to where the highway intersects with Milpitas Wash. The boundary then forms the southern end of the landscape by following the Milpitas Wash for approximately a 10 mile length to where the main branch of the Milpitas Wash takes a significant bend to the west. The

boundary departs the main branch of the wash and heads due north between the west side of the Palo Verde and Mule Mountains. The boundary intersects Coon Hollow Camp Ground and Wiley's Well Campground. North of Wiley's Well Campground, the boundary follows the Wiley Well Road for several miles before departing the road and following a number of parallel washes toward the northeast and Highway 10. Approximately two miles south of the highway the boundary runs east. After two miles, the boundary runs in a southeast direction back to the Colorado River and intersects the town of Ripley.

5.2.4 Periods of Significance

Salt Song Trail Period of Significance

The period of significance for the Salt Song Landscape spans from the time of primordial instruction, just after the great flood and Coyote's creation of Paiute up to the present. Technically, the end of period of significance is 45 years ago or 1967. However the landscape is actively used to day by traditional practitioners, and those participating in the Salt Song ceremony.

Keruk Trail/Xam Kwatcan/Earth Figures Landscape Period of Significance

The period of significance for the Keruk/Xam Kwatcan/Earth Figures Landscape spans from the time of primordial instruction, just after the creator Mastamho sent forth Pai people in migratory waves down the Colorado River and instructed them in how to conduct the Keruk Ceremony up to the Present. Technically, the end period of significance is 45 years ago or 1967. However the landscape is actively used to day by traditional practitioners, those participating in the Keruk ceremony and those making pilgrimages along the Xam Kwatcan Trail.

Palo Verde Ethnographic Landscape Period of Significance

The period of significance for the Palo Verde Mesa Landscape has been narrowly defined as the period between 1829 and after the Halchidoma left the Palo Verde Valley and Mesa and up to 1905 when the Palo Verde Land and Water Company completed the first modern irrigation system that facilitated a new form of agriculture in the Palo Verde Valley. The following table provides a time sequence that further delineates the Palo Verde Ethnographic landscape's period of significance. Those entries between the red lines show significant events that support the ethnographic landscape.

Table 14 Palo Verde Ethnographic landscape – Time Table for the Period of Significance 1829 - 1905

1827 -1829	Mohave – Quechan – Halchidoma Wars
1828	Jedediah Smith crosses the Colorado River and skirmishes with Mohave

1829	Halchidoma exit the Palo Verde Valley
1830	Chemehuevhi move into north western edge of Palo Verde Mesa
1850	Quechan move into Southern Palo Verde Valley
1858 - 1859	Mohave attack American wagon train and U.S. Military retaliates killing many Mohave warriors
1865	Mohave Chief Irrateba moves some Mohave to the Colorado River Indian Reservation located in Parker Valley and to the north eastern part of Palo Verde Valley
1865 - 1867	Chemehuevi - Mohave War
1867 - 1871	Blythe Grant – Dent Irrigation Canal established for irrigating Colorado River Indian Tribe Lands. Individual Indian families begin switch from traditional subsistence patterns to reservation – allotment cash labor and land-leasing incomes.
1870 - 1890	Time of abject misery, poverty, disease and rapid indigenous population decline
1864 - 1884	Thomas Blythe, Callaway and Irish attempt to establish the first irrigation canal in Northern Palo Verde Valley – Blythe dies, Callaway is killed by Chemehuevi during an argument that partially involves Indian wage labor opportunities.
1890	Palo Verde Valley Quechan move back to the Western portion of the Yuma Reservation.
1890	Boarding schools established to deny Indian culture and language from Indian children.
1890s	Some Chemehuevi, Mohave and Quechan continue traditional farming methods and migratory lifestyles including construction of summer houses near gardens in flood plains and winter houses along the mesas.
1890 - 1905	Chemehuevi and Mohave engage in cash labor for Americans interested in developing the Palo Verde Valley by attempting to control the river through Dams, Levees, and irrigation canals.
1890 - Present	Reservation lands along the Lower Colorado River corridor are converted to modern agriculture and are farmed by Chemehuevi, Mohave, and Quechan or are leased out to non-Indian farmers.
1894 ?	The Colorado River Indian Tribes requests that a levee be built along the river where it passes through the southern end of the reservation (Northern Palo Verde Valley) in order to improve their agricultural lands. The Tribe requests a 1500 foot flood plain be maintained to preserve some of the habitat along the river for traditional subsistence activities.
1904	Blythe Irrigation System completed.
1905	A new form of agriculture takes root in the Palo Verde Valley
1905 -1915	The Lacuna Dam is built below Yuma, and irrigation canal breaches diverting the Colorado River into the Salton Sea forcing the Cocopa farmers to relocate their traditional farms from the Colorado River Delta to the New River near the southern end of the Salton Sea.

5.2.5 Eligibility Criteria

The California Register maintains four criteria for eligibility to the California Register of Historical Resources. These are provided below.

1. Is associated with the events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important to our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

These criteria are applied to the ethnographic resources described above.

Salt Song Trail landscape Eligibility

This landscape in its entirety is eligible for the California Register of Historical Resources under Criteria 1 at the regional level for its broad contributions to the unique historic events that shape Southern Paiute understanding of the landscape, through repeated affirmation of the landscape through song and movement, and the conveyance of the deep oral tradition through the generations, for the unborn, living and deceased. Additionally the particular segment that is within the viewshed of the proposed Rio Mesa SEGF is eligible under Criteria 1 at the local level.

This landscape is also eligible for the California Register of Historical Resources under Criteria 3 for its contributions to the production of the salt songs for which, without the salt song landscape, the high artistic value of the songs would be degraded without the landscape- songs sung during a ceremony that moves a group of living people and the deceased through a landscape is most aesthetically and culturally appropriate when the songs are sung in the landscape, in contrast to being sung for a studio recording or transcribed into musical notation and then heard, read or duplicated by others. The landscape provides an auditory quality to the aesthetics of the song.

Keruk Trail/Xam Kwatcan/Earth Figures Landscape Eligibility

This landscape in its entirety is eligible for the California Register of Historical Resources under Criteria 1 at the regional level for its broad contributions to the unique historic events that shape Yuman understanding of the landscape and of the place and role of the creator in the Yuman origin stories; and for the ability of the trail system, in physical and dream travel, to allow the dreamer to return to the place or origins; and for the power that boosts the

deceased, through the cultural behaviors of the living, on to the afterlife; and for its mapping and conveyance, through song and movement of the deep oral tradition through the generations for the unborn, living and deceased.

In addition, the various earth figures that are contributing elements to the landscape convey a great aesthetic expression as power images etched in the desert pavements of the mesas and bajadas of the lower Colorado River corridor. These earth figures are sufficiently significant to be considered world heritage sites, although efforts to achieve this designation have yet to be undertaken. These earth figures, as contributing elements to the Keruk/Xam Kwatcan Landscape, make the landscape eligible to the California Register of Historical Resources under Criteria 3 as great artistic expressions.

The particular segment of the landscape within the project vicinity, which the project's access roads would cross and which is visually within the viewshed of the proposed Rio Mesa SEGF, is also eligible to the California Register of Historical Resources under Criteria 1 and 3 at the local level of significance for the same reasons stated above.

This landscape is also eligible for the California Register of Historical Register under Criteria 3 for its contributions to the production of the Keruk and Xam Kwat can songs, whose high artistic value would be degraded without the landscape. Songs sung during a ceremony that moves a group of living people and the deceased through a landscape is most aesthetically and culturally appropriate when the songs are sung in the landscape, as contrasted with being sung for a studio recording or transcribed into musical notation and then heard, read or duplicated by others. The landscape provides an auditory quality to the aesthetics of the song.

Palo Verde Ethnographic Landscape Eligibility

This landscape is eligible for the California Register of Historical Resources under Criteria 1 at a local level for its broad contributions to the unique historic events associated with the evolution of agriculture in the New World. The Palo Verde Valley and particularly its southern portion participated as one of approximately seven valleys in the Lower Colorado River corridor that were the cradle of a subsistence strategy that relied partially on the cultivation of agricultural crops and partially on hunting, gathering and fishing. This hybrid system, evolving on the geographic fringe of New World agriculture, provided the basis for a vibrant series of cultures that combined the use of variable subsistence sources, unique storage strategies, a clan system, leisure time that allowed the perfection of the role of dreaming in human culture and consciousness, intensive trading and warfare that occurred along one of the most extensive aboriginal trail transportation networks existent in the North America.

This landscape is also eligible for the California Register of Historical Resources under Criteria 4 at a regional level for the information potential locked within its archeological contributing attributes. Specifically the information potential of Village Site I, the long term occupation area surrounding Clapp Spring, and the various and numerous archaeological sites scattered across the Mesa and the project area provide centuries of occupational evidence that show the difference between summer flood plain and winter mesa occupation. Various archaeological sites located throughout the Palo Verde Mesa and the Palo Verde and Mule Mountains show the relationship between long term occupational camps, over night camps and those camps' relations to lithic reductions and quarrying and subsistence hunting and gathering.

5.2.6 Integrity

Salt Song Trail Integrity

The Southern Paiute Salt Song Landscape along the portion of the Colorado River near the project area has been visually and physically compromised by some modern developments, such as the presence of Blythe, modern river controls such as levees and dams that prevent natural flooding, modern day agriculture and other infrastructure, such as vehicle transportation (Interstate 10 Corridor) and airplane transportation such as the Blythe Airport and transmission corridors such as the Devers-Palo Verde Transmission line. In addition, auditory and olfactory characteristics and nightscapes have been compromised by vehicles, farm equipment, and dust from extensive and intensive farming activities and industrial scale renewable energy projects that result in dust storms. In the northern Palo Verde Valley lies the City of Blythe that casts a modest amount of light into the night sky. However, the general landscape of the Palo Verde Valley retains a rural feeling and is relatively unmarred by development.

In addition, Southern Paiute traditional singers must continue the singing and funerary tradition lest they void their obligations to the deceased and ultimately to themselves, their descendents yet to be born, and their very identity and continuance of the Southern Paiute as a people. No amount of landscape alteration can prevent them from continuing this tradition. However, increased infrastructural intrusions increase the burden and challenges to traditional practitioners to continue traditions vital to their community and related heritage. Their landscape remains aesthetically pleasing despite intrusions due to the beauty, balance, and sustenance by which they are provided a unique identity, handed down through generations and originally provided to them in a pact with their creator.

The Salt Song Landscape maintains, particularly from the perspective of traditional practitioners, integrity of association, felling, setting, and location.

Keruk Trail/XamKwatcan/Earth Figures Landscape Integrity

The Keruk Trail/XamKwatcan/Earth Figures Landscape, along the portion of the Colorado River near the Rio Mesa SEGF project vicinity, has been visually and physically compromised by some modern developments, such as the presence of the City of Blythe, modern river controls such as levees and dams that prevent natural flooding, modern day agriculture and other infrastructure, such as vehicle transportation (Interstate 10 Corridor) and airplane transportation such as the Blythe Airport and transmission corridors such as the Devers-Palo Verde Transmission line. Some segments of the physical trail have been damaged or completely removed from the land by modern day activities mostly related to road construction and on the Palo Verde Mesa by activities related to the historic Desert Training Center World War II activities. In addition, auditory and olfactory characteristics and nightscapes have been compromised by vehicles, farm equipment, and dust from extensive and intensive farming activities and large utility scale renewable energy projects that result in dust storms. To the north of the Valley lies the City of Blythe that casts a modest amount of light into the night sky. However, the general landscape of the Palo Verde Valley retains a rural feeling and is relatively unmarred by development.

Several of the earth figures in the vicinity of Palo Verde Valley, mesa and surrounding mountains are intact, but some have incurred damage from off road vehicles. Some of this activity has been curtailed by the erection of fences and public interpretation to bring awareness to the uniqueness of the earth figures. However the fences, providing a necessary function to separate disparate human activity, may also contribute to the reduction of the earth figures' integrity.

Despite landscape alterations, Yuman traditional practitioners, grieving families and those making pilgrimages to Spirit Mountain, physically by walking (or driving) or by dreaming must continue these traditions lest they void their obligations to the deceased, to themselves, to their unborn descendents, and to their very identity and continuance as a people. No amount of landscape alteration can prevent them from continuing this tradition. However, increased infrastructural intrusions increase the burden and challenges to traditional practitioners to continue traditions vital to their community and related heritage. Their landscape remains aesthetically pleasing to them despite intrusions, due to the beauty, balance, and sustenance by which they are provided a unique identity, handed down through generations and originally provided to them in a pact with their creator.

The Keruk Trail/XamKwatcan/Earth Figures Landscape maintains, particularly from the perspective of traditional practitioners, integrity of association, feeling, setting, and location.

Palo Verde Ethnographic Landscape Integrity

Integrity of the Palo Verde Mesa Ethnographic Landscape is best considered by evaluating the integrity of each of its four constituent landforms or zones: River, Flood Plain, Mesa, and Mountains.

River Integrity

The river over the last 200 years has struck three different courses through the Palo Verde Flood Plain. Historic maps suggest three separate channels that either represent older river channels, channels that were formed separately from the main course that accommodated overflowing river water, or a combination of both. While flooding was a yearly event, from time to time, the river changed from its channelized course in part, or in entirety as it incised its way through prior depositions of flood delivered sediments. That the Palo Verde Valley has flooded on several occasions since 1905 (with the 1922 event being noteworthy as flooding happened in May and again in June of that year), attests to the river's staying power, despite human efforts to control its flow, directional course and siltation periodicity.

The twentieth-century stabilization of the Lower Colorado River by means of dams and levees characterizes the later years of the Palo Verde Mesa Ethnographic Landscape. The River is no longer a free-flowing river. However, the flanking levees on both sides have a setback from the actual river banks, allowing the river to meander within the broader confines of the levees. Thus the river has integrity of location, feeling, association and setting.

Flood Plain Integrity

At the lower end of the Palo Verde Valley, the flood plain consists of a deep bed of silt at least 100 feet deep. Modern agriculture is a viable mainstay of the Palo Verde Valley because of the rich bed of soil and the shallow aquifer that supplies farms with crop water. While the river has breached the levees on several occasions since construction in 1905, spreading silt where it inundated the Valley, for the most part the river has stayed in its course along the eastern side of the valley. Siltation has not happened on a regular basis since the construction of the 1935 Boulder Dam and the 1938 Parker Dam.

The floodplain during the period of significance was a quilted pattern of inundated sloughs, lagoons and back water ponds amidst thickets of lush growth of native grasses, reeds, arrow weed, willows and cottonwoods. Within the flood plain and particularly along the sloughs, native agricultural patches were cleared and maintained in a mosaic of gardens. It is unlikely

that more than 50 percent of the flood plain was in managed garden plots. During the era of disease and poverty and at the beginning of reservation establishment (circa 1865 – 1890) tribal populations generally declined by 50 percent resulting in a cultivation area that was less than 25 percent of the Flood Plain. However, due to the expelled absence of the Halchidoma allowing other tribal groups to take advantage of the open and fertile area and attempting to escape the imposition of the American presence, the cultivated area percentage of the Palo Verde Valley may have been slightly higher then the rest of the Colorado River valleys. Today, approximately 90 percent the Palo Verde floodplain is dedicated to agricultural production.

The Flood Plain maintains integrity of location, setting and association

Mesa Integrity

The Mesa bore the brunt of the wide-scale Desert Training center activities. Tracks, surface gouging and refuse disposal, some of which are considered historic in their own right, are abundant across the Mesa. In addition several mines dot the lower flanks of the Mule Mountains, with tailings, leveled bench mining, shafts, and related mining equipment, infrastructure and related refuse, which may also be considered historic. Roads that accommodated early transportation between the Palo Verde Valley and the Salton Sea and lower Coachella Valley, and that also accommodated the various defunct mining activities, cross the Mesa in several places. In more recent years, the area has accommodated off-road enthusiasts accessing desert backcountry and wilderness areas. A transmission line traverses and crosses over the mesa near the project area. A mesa area of approximately 5 acres has been used as a burrow pit. Many modern transportation routes and transmission lines obscure or cross traditional indigenous trails that accommodated Yuman travelers. Nonetheless traditional plants and animals continue to thrive on the mesa top and continue to provide the subsistence benefits (whether or not those benefits are presently utilized by Native Americans) as they did for Yuman hunters and gatherers of more than a hundred years ago. Despite the visual intrusions, as seen from close-up, of these various activities related to modern culture and society, from a distance are not visually intrusive.

The Mesa maintains integrity of location, setting, association and feeling.

Mountain Integrity

The mountains are partially marred with historic mining activity along the flanks in several places. Roads cut through the Mule and Palo Verde Mountains in three places. Roads also encircle the two mountains allowing travelers to circumnavigate the two-mountain complex. However, due to wilderness designation for the Palo Verde Mountains and Peak and Area of

Critical Environmental Concern designation for the northwest portion of the Mule Mountains, the mountains are remarkably intact.

The Mule and Palo Verde Mountains maintain integrity of location, setting, association and feeling.

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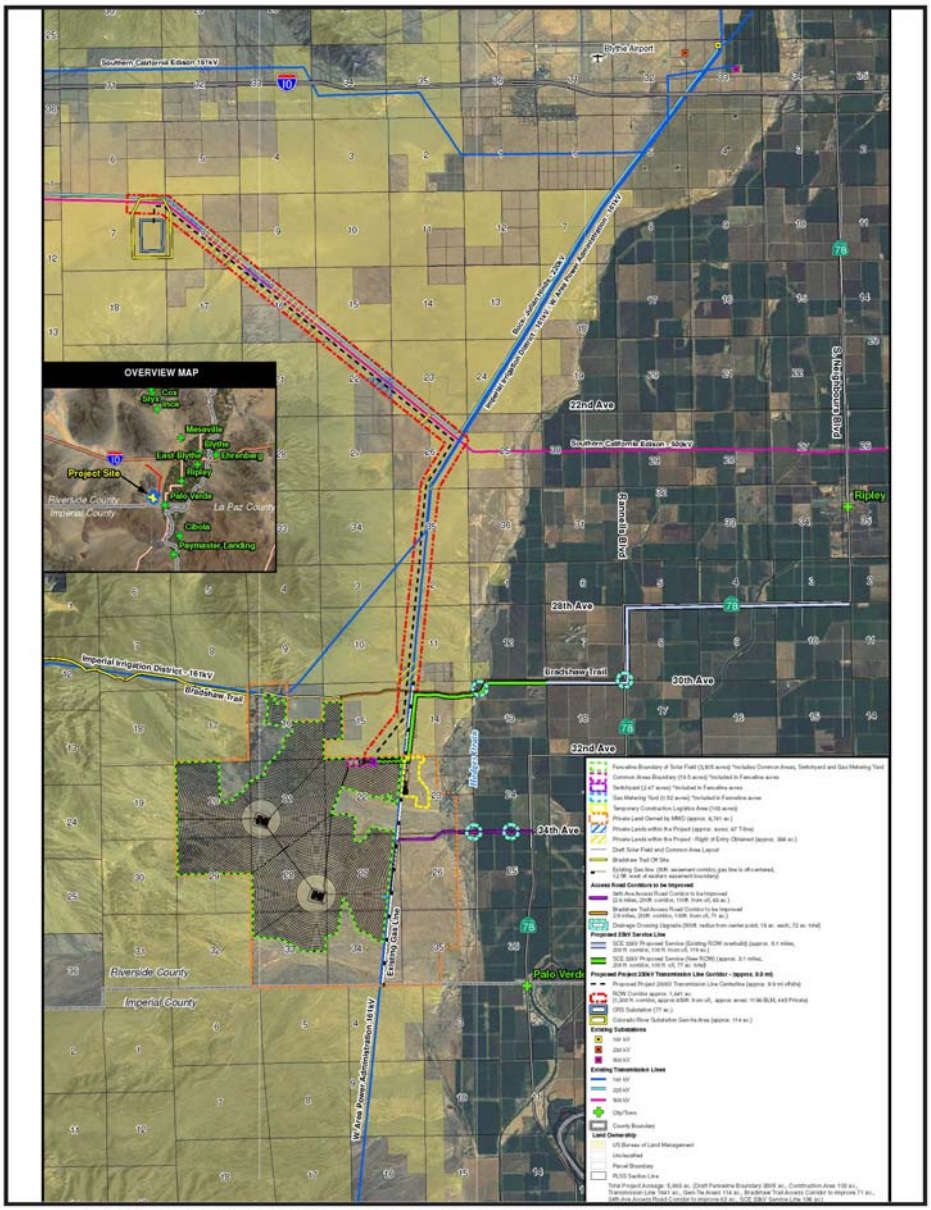
Figures

Figure 1

Project Vicinity

Figure 2

Project Area



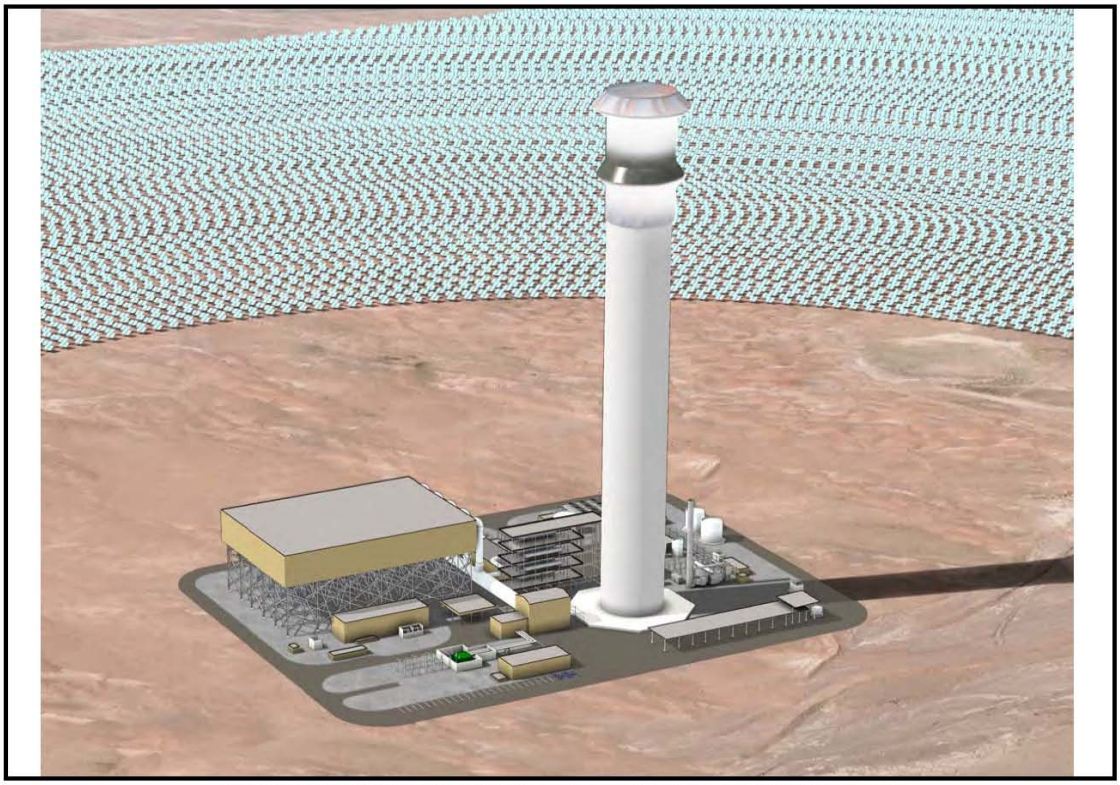
CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: Applicant's Supplemental Response to Data Request 16 and 26

CULTURAL RESOURCES

Figure 3

Diagram of Facility

CULTURAL RESOURCES - FIGURE 3
Rio Mesa Solar Electric Generating Facility - Typical View of Power Block from Northeast Facing Southwest



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CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: Applicant's Supplemental Response to Data Request 16 and 26, AFC Supplements, Fig. 2-8 (Rev)

Figure 4

This figure displays the general area where the prehistoric Patayan culture was located.

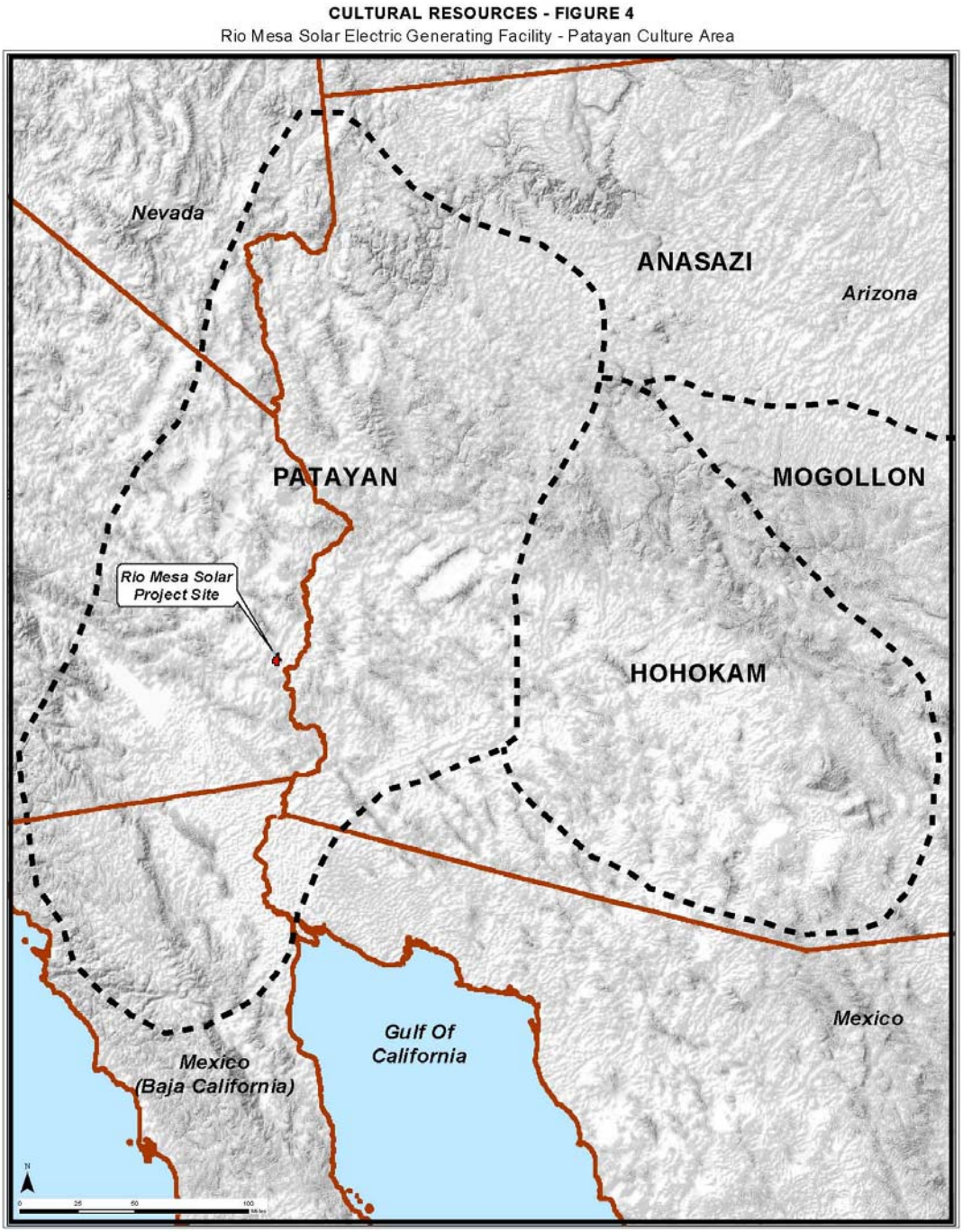


Figure 5

This map depicts where early European explorers noted where tribes were documented to be located at the time of contact. However, there is no mention of the Quechan at this time, and Forde (1931) suggests that the lack of mention of this tribe was because they were located on the west bank of the river, an area that had not yet been explored.

Figure 6

This map is also based on the accounts of Europeans and Americans who had travelled to the area. The biggest difference with respect to the project area is that the Halchidhoma are known to have been in the Blythe vicinity, and the Quechan were located at the Gila and Colorado confluence, on both banks.

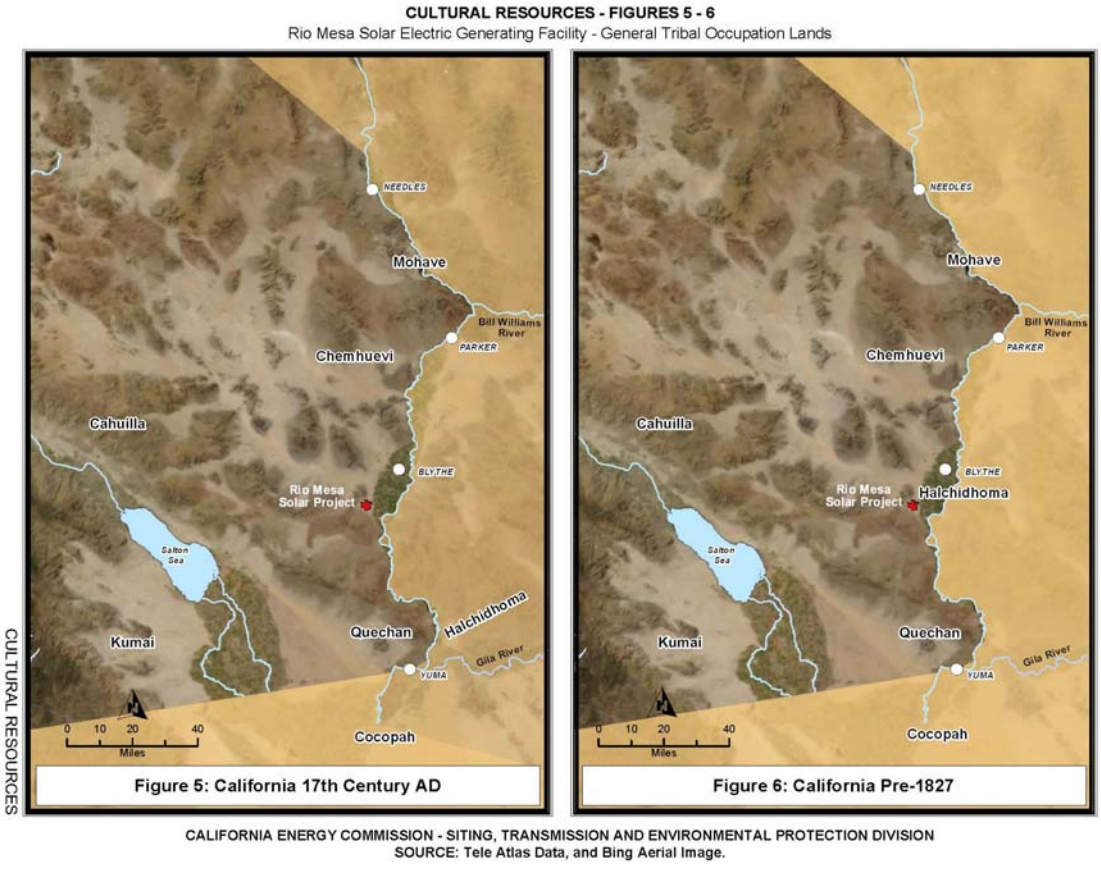


Figure 7

Around 1827 the Mohave and Quechan tribes attacked the Halchidhoma in the vicinity of the project area. After the battle, the Halchidhoma fled east to their Maricopa neighbors along the Gila River, and the Chemehuevi tribe moved into the area which the Halchidhoma had occupied.

Figure 8

Around 1851 the Mohave launched an offensive against the Chemehuevi, forcing them away from the river valley and back into the desert, although some of the Chemehuevi likely merged with the Mohave. The Quechan spread farther north into the vicinity of the project area, and also at this time tribes were forced onto reservations, as denoted on the map.

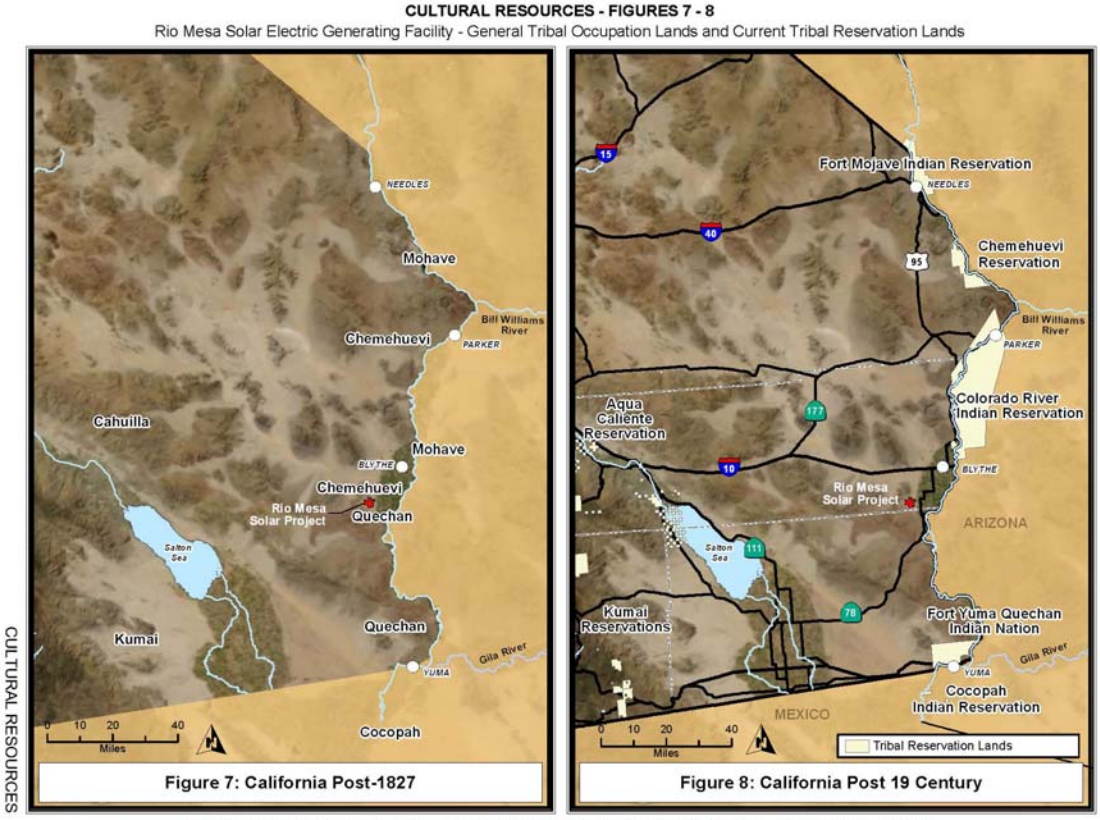
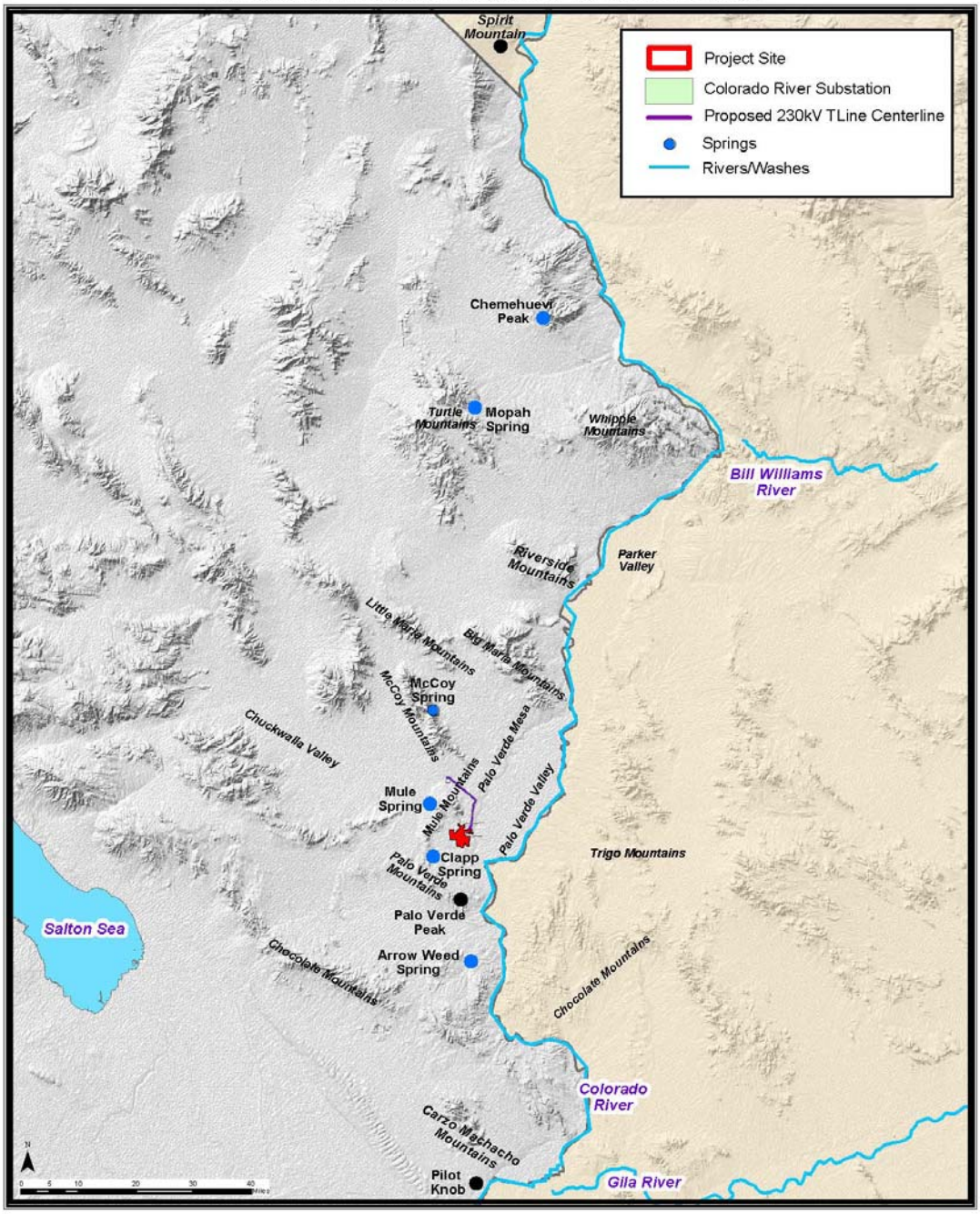


Figure 9

Landforms and springs



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SOURCE: ESRI GIS data and Aerial Imagery

CULTURAL RESOURCES

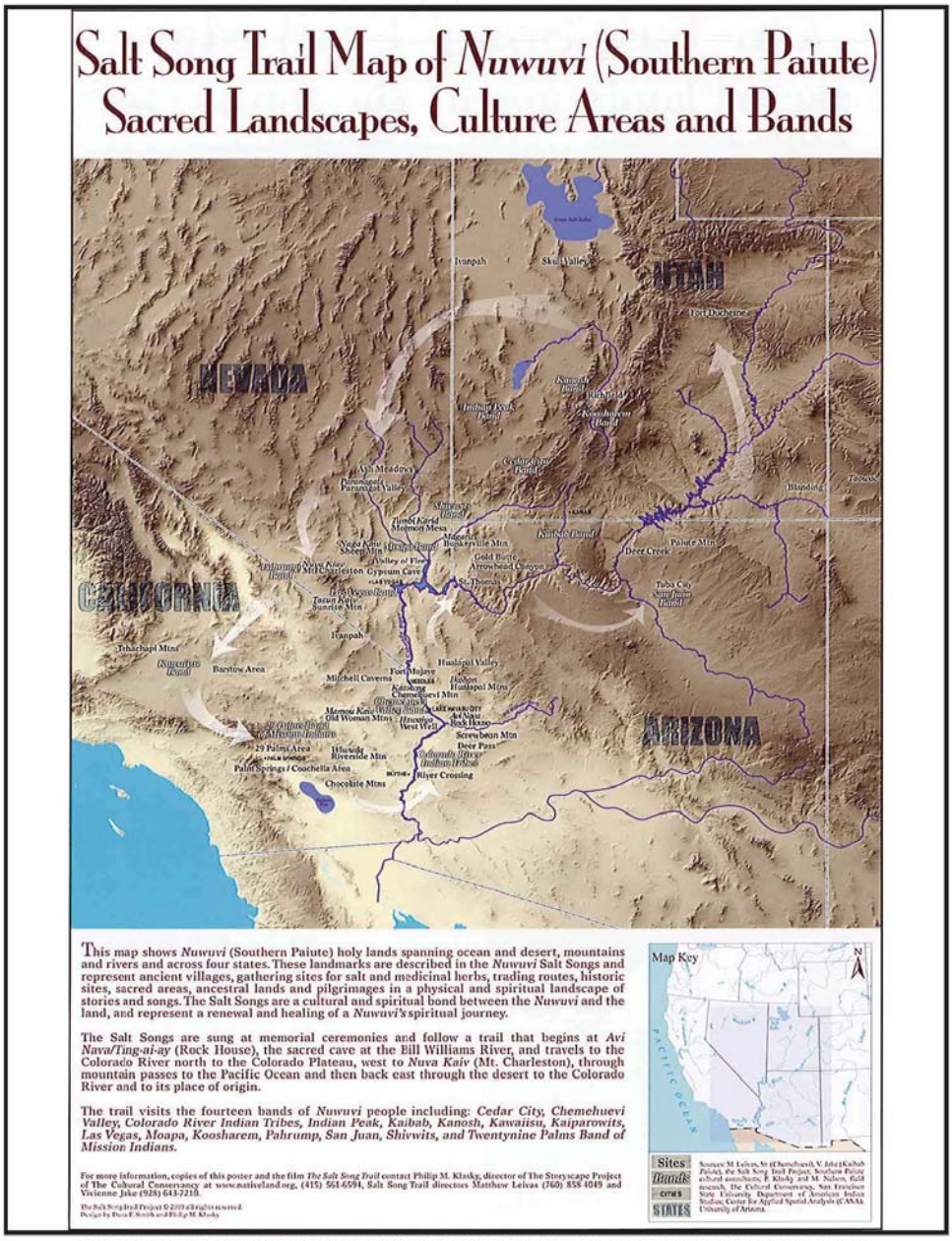
Figure 10

Secular Trails [Reserved for FSA]

Figure 11

Salt Song Trail

CULTURAL RESOURCES - FIGURE 11
Rio Mesa Solar Electric Generating Facility - Salt Song Trail Map of Nuwuvi (Southern Paiute)
Sacred Landscapes, Culture Areas and Bands



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SOURCE: The Salt Song Trail Project (c) 2009 all rights reserved. Design by Dana F. Smith and Philip M. Klasky

CULTURAL RESOURCES

Figure 12

Xam Kwatcan Trail

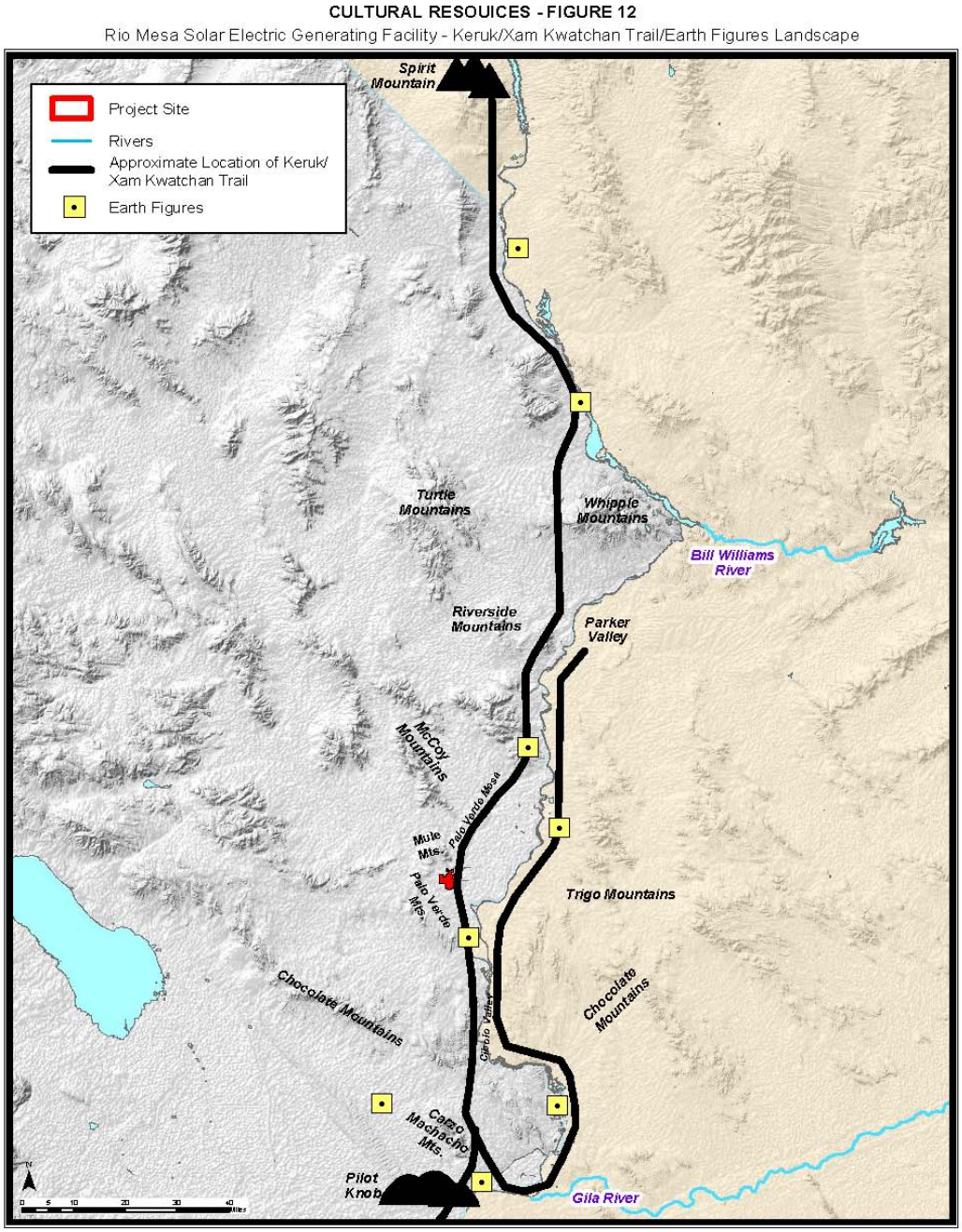
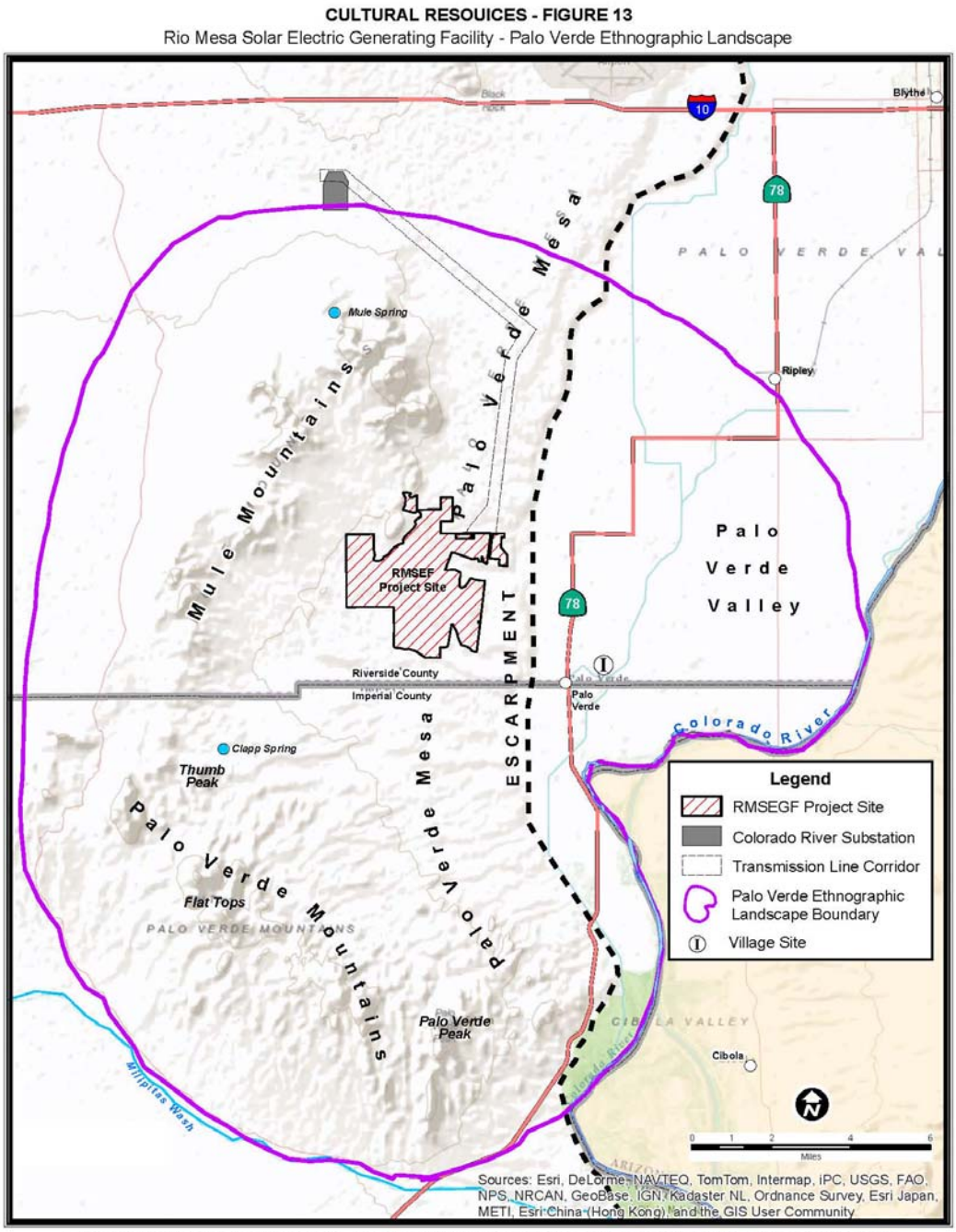


Figure 13

Palo Verde Ethnographic Landscape



APPENDICES

Appendix 1 - Acronym List

- **AFC** Application for Certification
- **BLM** Bureau of Land Management
- **ENERGY COMMISSION** California Energy Commission
- **CFR** Code of Federal Regulations
- **EPAA** Ethnographic Project Area of Analysis
- **HHSEGS** Hidden Hills Solar Electric Generating System
- **MW** Megawatts
- **NAHC** Native American Heritage Commission
- **NPS** National Park Service
- **REAP** Rapid Ethnographic Assessment Procedures
- **SRSG** Solar Receiver Steam Generator
- **TCP** Traditional Cultural Properties

Appendix 2 – Sites with Potential Ethnographic Resources

Note - Camps have been included as a category with this table because even though they are not necessarily a trail related feature, they do have ethnographic significance.

Resource Identifier	Site Type	Location in Relation to PAA	Pot Drops/ Ceramic scatter	Trails	Cairns	Cleared Circles/ Rock rings	Cremations	Camp
CA-RIV-00672/ 05539	Multicomponent lithic quarry/processing/ pot drop; DTC and non-military refuse	Within PAA 1	3		2			
CA-RIV-01748/ 01752	Multicomponent camp; DTC maneuvers	Within PAA 1	22		3	7	?	1
CA-RIV-10023	Prehistoric lithic scatter/processing/ cairn	Within record search area			1			
PVM-MK-014	Prehistoric lithic quarry/cairn	Excluded from PAA			1			
PVM-MN-090	Prehistoric cairn	Excluded from PAA			1			
CA-IMP-02455	Prehistoric cleared circle	Within record search area				1		
CA-IMP-02458	Prehistoric trail/cleared circle	Within record search area		1		1		
CA-RIV-01488	Prehistoric trail/cleared circle	Within PAA 1		1		19		
PVM-CB-030	Multicomponent camp; DTC related food refuse	Within PAA 1				1		1
PVM-MK-056	Multicomponent lithic quarry/cleared circle; government survey marker	Excluded from PAA				2		
PVM-CB-028	Prehistoric camp	Within PAA 1	14				1	

Resource Identifier	Site Type	Location in Relation to PAA	Pot Drops/ Ceramic scatter	Trails	Cairns	Cleared Circles/ Rock rings	Cremations	Camp
CA-RIV-01481	Prehistoric pot drop	Within record search area	1 (n=6)					
CA-RIV-01745	Multicomponent lithic quarry/pot drop; Mid-20th century refuse	Within PAA 1	3 (n=124)					
CA-RIV-01746	Multicomponent camp; DTC maneuvers	Within PAA 1	1	1		?		1
CA-RIV-01749 (P-33-001749)	Multicomponent lithic quarry/processing/ pot drop; government survey marker	Within PAA 1	1 (n=24)					
CA-RIV-1750	Prehistoric camp	Within PAA 1	?					1
CA-RIV-1821	Prehistoric processing	Within PAA 1	?					
CA-RIV-1822	Prehistoric processing	Within PAA 1	?	several				
CA-RIV-05540/ 05541	Prehistoric lithic quarry/pot drop	Within PAA 1	2 (n=115)					
CA-RIV-06613	Multicomponent pot drop; DTC maneuvers	Within PAA 1	3 (n=225)					
CA-RIV-06614	Prehistoric pot drop	Excluded from PAA	1 (n=8)					
CA-RIV-09283	Multicomponent pot drop; DTC related food refuse	Within record search area	1 (n=5)					
CA-RIV-09284	Multicomponent pot drop; DTC maneuvers	Within record search area	1 (n=50)					
CA-RIV-09991	Prehistoric pot drop	Within record search area	1 (n=15)					

Resource Identifier	Site Type	Location in Relation to PAA	Pot Drops/ Ceramic scatter	Trails	Cairns	Cleared Circles/ Rock rings	Cremations	Camp
CA-RIV-09993	Prehistoric pot drop	Within record search area	1 (n=15)					
CA-RIV-09994	Prehistoric pot drop	Within record search area	1 (n=7)					
CA-RIV-10003	Prehistoric pot drop	Within record search area	2 (n=87)					
CA-RIV-10009	Multicomponent pot drop; historic non-military refuse	Within record search area	1 (n=6)					
CA-RIV-10011	Prehistoric pot drop	Within record search area	1 (n=34)					
CA-RIV-10024	Prehistoric lithic scatter/pot drop	Within record search area	1 (n=10)					
CA-RIV-10035	Multicomponent isolated lithic artifacts/pot drop; Isolated historic artifacts	Within record search area	1 (n=14)					
CA-RIV-10036	Prehistoric pot drop	Within record search area	2 (n=9)					
CA-RIV-10037	Multicomponent pot drop; historic non-military refuse	Within record search area	1 (n=7)					
CA-RIV-10038	Prehistoric lithic scatter/pot drop	Within record search area	4 (n=50)					
CA-RIV-10060	Multicomponent lithic quarry/pot drop; isolated historic artifacts	Within record search area	1 (n=31)					
CA-RIV-10064	Prehistoric pot drop	Within record search area	1 (n=30)					
CA-RIV-10068	Prehistoric pot drop	Excluded from PAA	1 (n=19)					

Resource Identifier	Site Type	Location in Relation to PAA	Pot Drops/ Ceramic scatter	Trails	Cairns	Cleared Circles/ Rock rings	Cremations	Camp
CA- RIV-6678 (P-33-011095)	Multicomponent	Excluded from PAA	2					
P-33-013617	Prehistoric pot drop	Within record search area	1 (n=4)					
P-33-013660	Prehistoric processing/pot drop	Within record search area	1 (n=6)					
P-33-014151	Prehistoric pot drop	Excluded from PAA	1 (n=10)					
P-33-014175	Prehistoric pot drop	Excluded from PAA	1 (n=5)					
P-33-014197	Prehistoric pot drop	Within record search area	1 (n=6)					
PVM-CB-020	Prehistoric pot drop	Within PAA 1	2 (n=35)					
PVM-CB-021	Prehistoric pot drop	Within PAA 1	n=11					
PVM-CB-028	Prehistoric camp	Within PAA 1	14					1
PVM-DK-003	Multicomponent lithic quarry/pot drop; DTC maneuvers	Within PAA 1	4 (n=254)					
PVM-DK-045	Multicomponent camp; DTC related food refuse	Within PAA 1	1 (n=39)					1
PVM-DK-046	Prehistoric processing	Excluded from PAA	2					
PVM-DK-047	Prehistoric pot drop	Within PAA 1	3 (n=112)					
PVM-DK-507	Multicomponent lithic quarry/pot drop; historic non-military refuse	Excluded from PAA	2 (n=44)					

Resource Identifier	Site Type	Location in Relation to PAA	Pot Drops/ Ceramic scatter	Trails	Cairns	Cleared Circles/ Rock rings	Cremations	Camp
PVM-EK-040	Multicomponent lithic quarry/ pot drop; DTC maneuvers	Within PAA 1	1 (n=82)					
PVM-JR-001	Prehistoric artifact scatter	Within PAA 1	1 (n=44)					
PVM-JR-007	Prehistoric pot drop	Within PAA 1	1 (n=5)					
PVM-JR-012	Multicomponent lithic quarry; DTC maneuvers	Within PAA 1	2					
PVM-MK-103	Multicomponent artifact scatter/processing/ pot drop; DTC maneuvers	Within PAA 1	1					
PVM-MK-115	Prehistoric pot drop	Excluded from PAA	1 (n=45)					
PVM-MK-117	Prehistoric processing/pot drop	Excluded from PAA	1 (n=27)					
PVM-MK-121	Prehistoric pot drop	Excluded from PAA	2 (n=31)					
PVM-MN-015	Prehistoric lithic quarry/pot drop	Within PAA 1	1 (n=9)					
PVM-MN-031	Multicomponent lithic quarry; DTC maneuvers	Within PAA 1	1 (n=14)					
PVM-MN-036	Multicomponent pot drop; DTC related food refuse	Within PAA 1	1 (n=4)					
PVM-MN-101	Prehistoric lithic quarry/processing/ pot drop	Within PAA 1	2 (n=120)					
PVM-MN-131	Prehistoric lithic quarry/processing/ pot drop	Excluded from PAA	2 (n=84)					

Resource Identifier	Site Type	Location in Relation to PAA	Pot Drops/ Ceramic scatter	Trails	Cairns	Cleared Circles/ Rock rings	Cremations	Camp
PVM-MN-507	Multicomponent lithic quarry/pot drop; Historic non-military refuse	Within PAA 1	2					
PVM-PM-011	Prehistoric lithic quarry/pot drop	Within PAA 1	1 (n=31)					
PVM-PM-043	Prehistoric pot drop	Within PAA 1	1 (n=22)					
PVM-PM-044	Prehistoric lithic quarry/pot drop	Within PAA 1	4 (n=85)					
PVM-PM-048	Prehistoric lithic quarry/pot drop	Within PAA 1	4 (n=81)					
PVM-PM-055	Prehistoric pot drop	Within PAA 1	1 (n=150)					
PVM-PM-097	Prehistoric lithic quarry	Excluded from PAA	1					
PVM-PM-111	Prehistoric artifact scatter	Excluded from PAA	1					
PVM-PM-113	Multicomponent lithic quarry/processing/ pot drop; early 20th century refuse	Excluded from PAA	1					
PVM-PM-163	Prehistoric pot drop	Excluded from PAA	3 (n=85)					
PVM-PM-164	Prehistoric lithic quarry/pot drop	Excluded from PAA	1					
CA-RIV-0612	Prehistoric rock ring	Excluded from PAA				3 (rock rings)		
PVM-MN-124	Prehistoric lithic quarry/rock ring	Within PAA 1				1 (rock ring)		
PVM-MN-510	Prehistoric groundstone quarry	Excluded from PAA				1 (rock ring)		
CA-IMP-00872	Prehistoric trail north-south segment	Within record search area		1				
CA-IMP-00873	Prehistoric trail north-south segment	Within record search area		1				

Resource Identifier	Site Type	Location in Relation to PAA	Pot Drops/ Ceramic scatter	Trails	Cairns	Cleared Circles/ Rock rings	Cremations	Camp
CA-IMP-02457	Prehistoric trail	Within record search area		1				
CA-IMP-02459	Prehistoric trail	Within record search area		1				
CA-RIV-00343	Multicomponent trail/processing; historic non-military refuse	Within PAA 1		1				
CA-RIV-00650	Prehistoric trail north-south segment	Excluded from PAA		1				
CA-RIV-00668	Prehistoric camp	Excluded from PAA		2		3		1
CA-RIV-00673	Multicomponent trail; DTC related food refuse	Within PAA 1		1				
CA-RIV-00772	Prehistoric trail east-west segment	Within PAA 1		2				
CA-RIV-00775	Prehistoric trail northeast-southwest segment	Within PAA 1		1				
CA-RIV-01747	Prehistoric trail	Within PAA 1		6				
CA-RIV-06535	Prehistoric lithic quarry/trail	Within PAA 1		2				
PVM-CB-016	Prehistoric trail east-west segments	Within PAA 1		5				
PVM-CB-018	Prehistoric trail	Within PAA 1		1				
PVM-DK-018	Prehistoric trail east-west segment	Within PAA 1		1				
PVM-DK-048	Prehistoric trail east-west segment	Within PAA 1		1				

Resource Identifier	Site Type	Location in Relation to PAA	Pot Drops/ Ceramic scatter	Trails	Cairns	Cleared Circles/ Rock rings	Cremations	Camp
PVM-DK-050	Prehistoric trail east/northeast-west segment	Excluded from PAA		1				
PVM-DK-051	Prehistoric trail east/northeast-west segment	Excluded from PAA		1				
PVM-MN-066	Prehistoric trail northwest-southeast segment	Within PAA 1		1				
PVM-MN-078	Prehistoric trail north-south segment	Excluded from PAA		1				
PVM-MN-094	Prehistoric trail east-west segment	Excluded from PAA		1				
PVM-MN-132	Prehistoric trail	Excluded from PAA		1				
PVM-PM-042B	Prehistoric trail north-south segment	Within PAA 1		1				
PVM-SM-018	Prehistoric trails	Excluded from PAA		3				
PVM-SM-029	Prehistoric trail	Within PAA 1		1				
PVM-SM-049	Multicomponent trail; DTC maneuvers	Within PAA 1		1				
PVM-SM-073	Prehistoric trail northeast-southwest segment	Within PAA 1		1				
PVM-SM-109	Camp; DTC maneuvers	Within PAA 1						1

Appendix 3

Table 4 Culturally Significant Plant Species in the Project Area

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe

*= those plants which were documented in the Project Area during Biological Survey for the AFC

Common Name	Scientific Name	Indian Name	Use	Potential to Occur in Project Area	Reference
Agave	*Agave sp.*		Food (B, D); cordage (C)	Low	Bean and Toenjes 2012; Driver 1957; Kelly 1977
Arrowhead/ wild onion	*Sagittaria latifolia*	Če (D)	Food (D)	Low	Kelly 1977
Arrow weed	*Pluchea sericea*	ia'va (A), sa'v (C), tše'ā'-t (D)	Traditional house construction (E, B, C, A, D); arrows (B, C, A); fish nets and traps (C); granaries (C); lining earth oven and pit mortars (C); covering of shelter for drying seeds (C); shelter for mourning ceremonies (C); torches for mourning ceremony (C); gum from roots to fasten handle of gourd rattle or gum mixed with mud and plastered on girl's head in puberty rite (C); couch in girl's puberty rite (C); shield (C); stakes for goal in game (C); archery target (C); funeral pyre (C); beater of basket drum (C); glue (A); cradleboards (A); basketry (D)	Moderate	Bean et al. 1978; Driver 1957; Kroeber 1908; Langdon 1976; Kroeber 1925; Kelly 1977; Kroeber 1948

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe

*= those plants which were documented in the Project Area during Biological Survey for the AFC

Common Name	**Scientific Name**	**Indian Name**	**Use**	**Potential to Occur in Project Area**	**Reference**
Barrel cactus	*Ferocactus cylindraceus*	Copash (E)	Drink (E)	High*	Bean et al. 1978; Anderson 2005
Boxthorn	*Lycium cooperi*			Moderate	Bean et al. 1978
Brittlebush	*Encelia farinose*			Moderate	Bean et al. 1978
Bulrush/ Cattail/tule	*Typha latifolia, T. angustifolia*	Saimpiv (B), Atpilya (A)	Flutes (B); pollen (C); rhizomes (C); food (D, C); basketry (C); boats/rafts (D, C, A)	Low	Borrows 1978; Laird 1976; Driver 1957; Kroeber 1925; Kelly 1977
Burrobush	*Ambrosia dumosa*			Moderate	Bean et al. 1978
Bursage	*Ambrosia deltoidea*			Moderate	Bean et al. 1978
Cactus apples			Food (E, F, D)	Unknown	Bean et al. 1978; Kelly 1977

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe

*= those plants which were documented in the Project Area during Biological Survey for the AFC

Common Name	Scientific Name	Indian Name	Use	Potential to Occur in Project Area	Reference
Cactus	*Cylindropuntiaechinocarpa, Cylindropuntiaramosissima, Mammillariatetrancistra, Mammillariagrahamii, Opunitabasilaris, Echinocactuspolycephalus*		Thorns used for fishing and tattooing (C); food (C)	High*	Laird 1976; Driver 1957
California ditaxis	*Ditaxis californica*			Moderate	Bean et al. 1978
Cane	*Phragmites communis*		Arrow (B, C); basketry (C); floats/rafts (C); flutes and whistles (C); funeral effigy (C); scarecrows (C); tobacco pipe (C); myth (A)	Moderate	Kroeber 1925; Driver 1957; Forde 1931; Kroeber 1963a
Carrizo	*Chamaesycepediculifera*	Pagamp (B)	Arrow shafts (B)	Moderate	Laird 1976
Cheesebush	*Hymenoclea salsola*			Moderate	Bean et al. 1978
Chia	*Salvia columbariae*	Av'a (C)	Medicinal (B); food (C)	Low	Bean et al. 1978; Driver 1957

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe

*= those plants which were documented in the Project Area during Biological Survey for the AFC

Common Name	Scientific Name	Indian Name	Use	Potential to Occur in Project Area	Reference
Cottonwood	*Populus sp.*	Soovimp (B), ah'ā' (A), ax'ā' (C), ax'a' (D)	Bows (C); mortars (C); rafts (C); house construction (C); firewood (C); cremations (C); shelters for mourning ceremony (C)	Low	Laird 1976; Driver 1957
Creosote	*Larrea tridentate*	yatamp (B)	Medicinal (B)	High	Bean and Toenjes 2012; Laird 1976
Crucifixion thorn (Special status species - SSS)	*Castlae moryi*		Food (C)	Moderate	Drvier 1957
Curly dock	*Rumex crispus*		Food (C, A)	Moderate	Driver 1957; Kroeber 1925
Devil's Claw (may have been domesticated also) (SSS)	*Proboscidea arenaria*		Basketry (B, F, C)	Moderate	Bean et al. 1978; Bretting and Nablan 1986
Desert lily	*Hesperocallis undulata*		Food (C)	Moderate	Driver 1957
Desert saltbrush	*Atriplex polycarpa*		Food (C)	Moderate	Driver 1957
Fungus that grows on the mesa during spring		Iδ'T (C)	Food (C)	Unknown	Forde 1931

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe

*= those plants which were documented in the Project Area during Biological Survey for the AFC

Common Name	Scientific Name	Indian Name	Use	Potential to Occur in Project Area	Reference
Greasewood	*Adenostoma fasiculata*	Ataqul (E)	Sacred plant placed on walls of ceremonial and private houses for protection (E); medicinal (E, B, F); traditional house construction (E); bedding for sweat bath (C); tea (C); nose piercing (C); lacing (C)	Low	Bean et al. 1978; Borrows 1978; Driver 1957
Ground cherry	*Physalis fendleri, P. pubescens*		Food –fruit only eaten by children (C)	Low	Driver 1957
Hackberry	*Celtis reticulate*		Food (C)	Moderate	Driver 1957
Hog potato	*Hoffmannseggia glauca*		Food (C)	Moderate	Driver 1957
Iodine bush	*Allenrolfea occidentalis*		Food (C)	Low	Driver 1957
Ironwood	*Olneya tesota*	Kelwatqalwiswet (E), ʔaaparkiʔi (B), Axpa'lʔ (C)	Sacred plant used in cremation ceremonies (E); tools (E); food (C); rattles (C)	High*	Bean et al. 1978; Laird 1976; Driver 1957
Jimson weed	*Datura metaloides. D. discolor*	Momopʔ (B); Smalykapita (C); Malykatu	Medicinal/Hallucinogen (B, C); dream inducing (C, A)	Unknown	Bean et al. 1978; Bean and Toejenes 2012;

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe

*= those plants which were documented in the Project Area during Biological Survey for the AFC

Common Name	Scientific Name	Indian Name	Use	Potential to Occur in Project Area	Reference
		(A)			Laird 1976; Kroeber 1925; Driver 1957
Jojoba	*Simmondsia chinensis*		Medicinal (B), Food (C)	Unknown	Bean et al. 1978; Driver 1957
Lamb's quarter	*Chenopodiumberlandieri*		Food (B, F)	Low	Bean et al. 1978
Mecca aster	*Xylorhiz acognata*			Moderate	Bean et al. 1978
Mesquite	*Prosopis glandulosa Torr. var. torreyana*	Eya'c (C), opimp (B); Halyahwai – mallet-headed club (A); Tokyeta - straight club (A)	Food (E, B, F, C, A, D); traditional house construction (E, C); bows (E, C); bark and clay mixed for hair dye and cleaning (F, C, D); firewood (F); mortar and pestle (C); weapons (A, C, D); planting/weeding stick (C); ball (C); shinny stick (C); pottery paddle (C); basketry coiling awl (C); weaving sword (C); fish net (C); cremation torches (C); gum used to fasten gourd rattle and feathers to arrow (C); gum mixed with pigments for paint (C); gum mixed with mud for girl's hair puberty rite (C); charcoal tattooing (C, A); cradle frame and hood (C, A); medicinal (C);	High*	Bean et al. 1978; Kroeber 1908; Laird 1976; Driver 1957; Taylor and Wallace 1947; Langdon 1976; Kroeber 1925; Kelly 1977; Williams 1978

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe

*= those plants which were documented in the Project Area during Biological Survey for the AFC

Common Name	Scientific Name	Indian Name	Use	Potential to Occur in Project Area	Reference
			drink (A); sap used for paint (D); sap for medicinal use (D)		
Orocopia sage	*Salvia greatae*			Moderate	Bean et al. 1978
Paloverde (blue)	*Cercidium floridum*		Food (C)	High*	Driver 1957
Paloverde (yellow)	*Cercidium microphyllum*		Food (C)	High*	Driver 1957
Panic grass	*Panicum hirticaule*		Food (C)	Moderate	Driver 1957
Pigweed	*Amaranthus retroflexus, Amaranthus palmeri*	Koa·p (D)	Food (B,C, D)	Low	Bean et al. 1978; Driver 1957; Kelly 1977
Piñon	*Pinus monophylla*		Food (C, D)	Low	Driver 1957; Kelly 1977
Prickly pear	*Opunita basilaris, O. engelmannii*		Food (B, C)	High	Bean et al. 1978; Driver 1957
Quail brush	*Atriplex lentiformis*		Food (C)	Low	Driver 1957
Sacaton grass	*Sporobolus airoides*		Food (C)	Low	Driver 1957
Sage		Murunav or S ap*i*(B)	House thatching (B); food (B)	Unknown	Bean and Toenjes 2012
Saguaro cactus (SSS)	*Cereus gigantean*	A'a'' (C)	Food (C); drink (C)	Low-moderate	Driver 1957
Sandfood	*Pholis masonorae*		Food (C)	Low	Driver 1957
Santa Rosa sage	*Salvia eremosachya*			Moderate	Bean et al. 1978

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe

*= those plants which were documented in the Project Area during Biological Survey for the AFC

Common Name	Scientific Name	Indian Name	Use	Potential to Occur in Project Area	Reference
Screwbean	*Prosopis pubescens*	Kwiyaramp (B), i'i'c (C)	Food (B, C); fish hooks (C); Myth (A)	High	Bean et al. 1978; Driver 1957; Kroeber 1963a
Seepwillow	*Baccharis glutinosa*		Food (C)	Low	Driver 1957
Smoketree	*Psorothamnus spinosus*	npimahav (B)	Mythological - devil bush (animates whirlwinds) (B)	Moderate	Laird 1976
Spurge	*Chamaesyce platysperma*			Moderate	Bean et al. 1978
Sumac	*Rhus trilobata*		Basketry materials (E)	Unknown	Kroeber 1908
Tansy mustard	*Descurainia sp.*		Food (C)	Unknown	Driver 1957
Tobacco	*Nicotiana sp.*	Mela'v (C)	Smoked (C); used in curing soul loss (C)	Unknown	Driver 1957; Forde 1931
Various collected grasses, seeds and herbs		Akwa'v, ank', kwiskwa'k, óukwatō'e, atp'l (C); akwaya, kupo, hamaswera, koskwaka, ankika (A)	Food (C, A)	Unknown	Forde 1931; Kroeber 1925

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe

*= those plants which were documented in the Project Area during Biological Survey for the AFC

Common Name	Scientific Name	Indian Name	Use	Potential to Occur in Project Area	Reference
Wild rice	*Uniola palmeri*	Nyupa (D)	Food (D)	None	Kelly 1977
Wild grape vine	*Vitis girdiana*	□iyaavimp□ (B); ahtota (A)	Tying house poles (B); food (B); Myth (A)	Low	Laird 1976;
Willow	*Salix gooddingii*	Sagah/Kanav□ (B)	Medicinal (B); basketry (D, B, F,C); house construction (D, B, C, A); cradleboards (B); bows (D, B, C); food (C); tea (E,C); shield (C); apron (D, C); breechcloth (C); fish net (C); twine (C); cordage (C); dress (C, A); pottery (C); scalping (C); shinny stick (C); weaving sword (C); scratching stick for girl's puberty rite (C); firewood (C); drum sticks (C); stick for throwing mud balls game (C); mixed with ashes and bark, paste put on severed umbilicus (C); used in curing soul loss (C); tattooing (A); ball (A); dice (A); rafts (D); rope – bark (D)	Low	Bean et al. 1978; Laird 1976; Hinton and Watahumigie 1984; Driver 1957; Forde 1931; Taylor and Wallace 1947; Langdon 1976; Kelly 1977; Williams 1978
Wolfberry	*Lycium fremontii, L. exsertum*		Food (C)	Moderate	Driver 1957
Yerba del Pasmo			Medicinal (B)	Low	Bean et al. 1978

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe

*= those plants which were documented in the Project Area during Biological Survey for the AFC

Common Name	Scientific Name	Indian Name	Use	Potential to Occur in Project Area	Reference
Yucca	*Yucca mohavensis, Yucca schidigera*	□uuvimp□ (B), kaayuvimp □ (B), sovaramp□ (B)	Pole binding (E); Food (B); cordage (C); carrying strap (C)	Low	Borrows 1978; Bean and Toenjes 2012; Driver 1957

Appendix 4

Table 9 Culturally Important Animal Species in the Project Area

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe

Common Name	Scientific Name	Indian Name	Use	Potential to Occur in Project area	Reference
Arizona cottontail	*Sylvilgus audubonia rizonae*		Food (C); blankets (C)	Low	Driver 1957
Badger (SSS)	*Taxi deataxus*	Huna(B), ma'hoa (A), maxwā' (C), maxwa'' (D)	Sacred (B); Myth (A)	Moderate	Laird 1976; Kroeber 1948; Kroeber 1963a
Bat		Paatsatsi (B)	Sacred (B)	Unknown	Laird 1976
Bighorn sheep (SSS)	*Ovis canadensis*	Naxa(B), Amō'' (c), a'mmo (A), am·o (D)	Food (B, C); sacred (B)	Moderate	Laird 1976; Kroeber 1948
Bobcat	*Lynx rufus*		Skin for quivers or worn on head during Deer dance (C)		Driver 1957
California gray fox	*Urocyon cinereoargenteus*	Y□patsi(B)	Sacred (B, F)	Moderate	Laird 1976; Bean and Toenjes 2012
Cougar	*Puma concolor*	Tukumumuuntsi(B)	Sacred (B)	Low	Laird 1976
Coyote		C□na□avi(B), hu'k□ara (A), xatalAwe'' (C), xatšApá (D)	Creation story/myth (B); food – in times of great hunger (B); sacred (D)	Moderate	Laird 1976; Kelly 1977; Kroeber 1948

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe					
Common Name	**Scientific Name**	**Indian Name**	**Use**	**Potential to Occur in Project area**	**Reference**
Deer	*Odocoile ushemionus*	T?hiy*a*(B), akwa'k, aqwā'q (C), aqwā'qa (A), kwak (D)	Food (B, C); buckskin (B); sacred (B); infant and cradle cover (C); shield (C)	Low	Laird 1976; Driver 1957
Desert cottontail	*Sylvilagus audubonii*	Tavuts*i*(B)	Sacred (B); food (B); blankets (B); myth (B)	Moderate	Laird 1976
Gopher	*Thomomys bottae*		Food (C)	Moderate	Driver 1957
Ground squirrel	*Spermo philustereticaudus*	Tava?ats*i*(B)	Myth (A)	Moderate	Laird 1976; Kroeber 1963a
Jackrabbit	*Lepus californicus*	Kam? (B), ak?lya (A), ak,?'ly (C), Ak'u'l (D)	Sacred (B); food (B, C); blankets (B, C); Myth (A)	Moderate	Laird 1976; Kroeber 1948; Kroeber 1963a
Mouse	*Peromyscus sp.*	Pu??intcasts*i*(B), āvĕ' (A), āvĕ' (C), āwā' (D)	Food (C)	Unknown	Laird 1976; Kroeber 1948
Pronghorn antelope	*Antilocapra americana*	Mo'?'l (c)	Food (C)	Moderate	Driver 1957; Forde 1931
Rat	*Netotoma sp.*	Kaats*i*(B)	Food (C); Myth (A)	Unknown	Laird 1976; Driver 1957; Kroeber 1963a
Skunk	*Spilogale gracilis*	Poniy*a*(B)	Sacred (B)	Moderate	Laird 1976

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe					
Common Name	**Scientific Name**	**Indian Name**	**Use**	**Potential to Occur in Project area**	**Reference**
American egret	*Casmerodiuse gretta*		Feathers (C)	Low	Driver 1957
Blue Jays		ʔangIa (B)	Sacred, myth (B)	Very Low	Bean and Toenjes 2012; Laird 1976
Buzzards		Wiku (B)	Sacred (B)	Unknown	Bean and Toenjes 2012; Laird 1976
Chicken		Kwaroyaaw*i*		Unknown	Laird 1976
Crows	*Crovus coraxsinuatus*	ʔatapʔts*i* (B)	Sacred/myth (B); feathers used on arrows and mourning ceremony (C)	Moderate	Driver 1957; Laird 1976
Dove			Food (C)	Low	Driver 1957
Duck		Tcʔx*a*	Food (B, C); Myth (A)	Low	Laird 1976; Kroeber 1963a
Flickers	*Zenaida macroura*		Sacred (C); myth (B)	Moderate	Bean et al. 1978
Golden eagle (SSS)	*Aquila chrysaetos*	Mʔng*i*(B)	Sacred (B); feathers worn in hair, mourning ceremony, and	Moderate	Bean and Toenjes 2012; Laird 1976; Driver 1957

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe					
Common Name	**Scientific Name**	**Indian Name**	**Use**	**Potential to Occur in Project area**	**Reference**
			arrows (C)		
Hawk			Feathers used for ceremonies, ghost doctors, arrows and war bonnets (C)	Moderate	Driver 1957
Hummingbird		Nyenyene (A)	Myth (A)	Unknown	Kroeber 1963a
Lesser snow goose	*Chen hyperboreus*		Food (C); feathers on arrows (C)	Low	Driver 1957
Little brown crane	*Grus canadensis*		Feathers used in mourning ceremony and war bonnet (C); leg bone used in guessing game (C)	Low	Driver 1957
Magpie		wa?a'ālya	Myth (A)	Low	Kroeber 1963a
Mockingbrd		Yamp*a* (B)	Myth (B)	Low	Laird 1976
Mourning dove	*Zenaida macroura*	Hi?ov*i*	Sacred (B, C)	Moderate	Laird 1978; Bean et al. 1978
Nighthawk		Maumáup?ts*i*		Very low	Laird 1976

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe					
Common Name	**Scientific Name**	**Indian Name**	**Use**	**Potential to Occur in Project area**	**Reference**
Owls (SSS-burrowing owl)	*Athene cunicularia*	muhuump?ts*i*(B), tavamuhuump?s(B)-day owl; Pa?n?nagw?its*i*(B)-burrowing owl	Sacred (B)	Moderate-High	Bean and Toenjes 2012; Laird 1976
Prairie falcons (SSS)	*Falco mexicanus*		Sacred (C)	High	Bean et al. 1978
Quail	*Lophoortyx gambeli*	Kakar*a*	Sacred (B, C); Food (C)	Moderate	Laird 1976; Hinton and Watahumigie 1984; Driver 1957; Bean et al. 1978
Red-tailed hawk		Kwanantsits*i*	Sacred (B); Feathers used for ceremony (F)	Moderate	Laird 1976; Bean et al. 1978
Seagull		Pawanants*i* (B)	Sacred (B)	Unknown	Laird 1976
Shrike	*Lanius ludovicianus*	pari?i	Myth (A)	Moderate	Kroeber 1963a
Snowy egret	*Egretta candidssima*		Feathers (C)	Low	Driver 1957
Sparrow Hawk		Atšyŏra (A)	Myth (A)	Unknown	Kroeber 1963a
Turkey vultures	*Cathartes aura*		Sacred (C)	Moderate	Bean et al. 1978
Woodpecker		a?ikwa	Myth (A)	Unknown	Kroeber 1963a
Bony tail		Meko'ik (C)	Food (C)	None	Forde 1931
Frog		Wagat*a* (B)	Myth	Unknown	Laird 1976

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe

Common Name	Scientific Name	Indian Name	Use	Potential to Occur in Project area	Reference
Humpback fish		Tsáxnap (C)	Food (C)	None	Forde 1931
White "salmon"		Maw'lk (C)	Food (C)	None	Forde 1931
Chuckwalla	*Sauromalus obesusobesus*	Tcagwar*a*(B)	Food (B); sacred (B)	Moderate	Laird 1976
Desert tortoise (Special Status Species [SSS])	*Gopherus agassizi*	aya (B)	Food (E, B, C); sacred (E, B)	Moderate	Bean et al. 1978; Driver 1957
Gecko		Mugwi*a*(B)		Unknown	Laird 1976
Gila Monster (SSS)	*Heloder masuspectum*	tciv*i*(B)	Sacred (C)	Low-Moderate	Laird 1976
Horned toad		Makatcats*i*(B)	Myth (A)	Unknown	Laird 1976
Red racer	*Coluber flagellum piceus*	Nntnav*i*(B)		Moderate	Laird 1976
Sidewinder	*Crotalus cerastes*	Tannakaits*i*(B)		Moderate	Laird 1976
Western diamond-backed rattlesnake	*Crotalus atrox*	Kwiyats*i*(B)	Sacred (B); rattles worn in hair by warriors (C); Myth (A)	Moderate	Laird 1976; Driver 1957; Kroeber 1963a
Black widow spider		Hukamp*i*(B)	Sacred (B)	Unknown	Laird 1976
Fly		Muupits*i*(B)	Myth	Unknown	Laird 1976
Grasshopper		Aatakapits*i*(B)	Sacred (B)	Unknown	Laird 1976
Horsefly		Pipit*a*(B)	Myth (A)	Unknown	Laird 1976
Louse		Poo av*i*(B)	Sacred (B)	Unknown	Laird 1976
Mosquito		Muhav*i*(B)		Unknown	Laird 1976
Red ants		Tsasiyav*i*(large), Angav*i*(small) (B)		Unknown	Laird 1976

Legend: A- Mohave; B-Chemehuevi; C-Quechan; D-Cocopah; E-Cahuilla; F-No specified tribe					
Common Name	**Scientific Name**	**Indian Name**	**Use**	**Potential to Occur in Project area**	**Reference**
Sandbar fly		□Atarakamuupits*i*(B)	Sacred (B)	Unknown	Laird 1976
Sphinx moth	*Celerio lineata*		Food – larvae (C)	Moderate	Driver 1957
Spider		Hokoso□□av*i*(B)		Unknown	Laird 1976
Water spider		Pahokoso□□av*i*(B)	Sacred (B)	Unknown	Laird 1976
Yellow jacket	*Vespulla sp.*		Food – larvae (C)	Moderate	Driver 1957

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE RIO MESA SOLAR ELECTRIC GENERATING FACILITY

DOCKET NO. 11-AFC-04
PROOF OF SERVICE
(Revised 11/2/12)

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DECLARATION OF SERVICE

I, Alicia Campos, declare that on November 26, 2012, I served and filed a copy of the attached document, Rio Mesa Solar Electric Generating Facility Draft Ethnographic Report Informing the Preliminary Staff Assessment, dated November, 2012. This document is accompanied by the most recent Proof of Service list, located on the web page for this project at: http://www.energy.ca.gov/sitingcases/riomesa/index.html.

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit or Chief Counsel, as appropriate, in the following manner:

(*Check all that Apply*)

For service to all other parties:

X Served electronically to all e-mail addresses on the Proof of Service list;

____ Served by delivering on this date, either personally, or for mailing with the U.S. Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses marked *"hard copy required" or where no e-mail address is provided.

AND

For filing with the Docket Unit at the Energy Commission:

X by sending electronic copies to the e-mail address below (preferred method); *OR*

____ by depositing an original and 12 paper copies in the mail with the U.S. Postal Service with first class postage thereon fully prepaid, as follows:

CALIFORNIA ENERGY COMMISSION – DOCKET UNIT
Attn: Docket No. 11-AFC-04
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.ca.gov

OR, if filing a Petition for Reconsideration of Decision or Order pursuant to Title 20, § 1720:

____ Served by delivering on this date one electronic copy by e-mail, and an original paper copy to the Chief Counsel at the following address, either personally, or for mailing with the U.S. Postal Service with first class postage thereon fully prepaid:

California Energy Commission
Michael J. Levy, Chief Counsel
1516 Ninth Street MS-14
Sacramento, CA 95814
michael.levy@energy.ca.gov

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Originally Signed By
Alicia Campos
Siting, Transmission and Environmental Protection Division

*indicates change