

APPENDIX I

Phase I Cultural Resources Assessment



PHASE I CULTURAL RESOURCES ASSESSMENT: SAPPHIRE SOLAR PROJECT, RIVERSIDE COUNTY, CALIFORNIA

CONDITIONAL USE PERMIT 220035
PUBLIC USE PERMIT 220002



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April 13, 2023

Keywords: Desert Center; Riverside County; Victory Pass, California and East of Victory Pass, California, 7.5' USGS topographic quadrangle maps; 1,252 acres of private land; Parcel Numbers: 807172010, 807172011, 808240002 to 808240006, 808240009 to 808240016, and 808250001 to 808250010; 11 resources.

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MANAGEMENT SUMMARY

PaleoWest, LLC (PaleoWest) has been retained by EDF Renewables Development, Inc. on behalf of Sapphire Solar, LLC. to complete a Phase I cultural resources assessment for the proposed Sapphire Solar Project (Project) near the community of Desert Center in Riverside County, California. The proposed Project would encompass approximately 1,192 acres with 1,082 acres of private land and 110 acres of Bureau of Land Management (BLM) administered lands. The proposed Project includes the development and operation of a 117-megawatts (MW) photovoltaic solar generation facility with 117 MW of battery storage.

The portion of the Project on private land is subject to the California Environmental Quality Act (CEQA) with the County of Riverside (County) acting as the CEQA lead agency. This report summarizes the methods and results of the Phase I cultural resources assessment of the 1,082 acres of the Project that is under the jurisdiction of the County and subject to CEQA. This investigation includes background research, an intensive pedestrian survey, and resource documentation and evaluation. A supplemental survey of the 110 acres of BLM administered lands will be conducted following the second pre-application meeting for the project, and the results will be provided in an addendum to this report.

Existing cultural resources data from surrounding projects, including the Easley Solar Project and Oberon Solar Project, were compiled as part of the background research effort.¹ The record search data indicate that 22 cultural resource studies have been conducted within a 1-mile radius with five of these studies intersecting the Project area. The records search also indicated that two historic built-environment resources, the 161kV Blythe-Eagle Mountain Transmission Line (P-33-019415) and a set of earthen berms (P-33-022247), and a prehistoric isolated flaked stone artifact (P-33-022253) have been previously identified within the Project area. P-33-019415 had been determined not eligible for listing on the California Register of Historical Resources (CRHR); none of the other resources appear to have been evaluated for listing on the CRHR. The record search data indicate that no prehistoric or historic period archaeological sites have been documented in the Project area.

A Sacred Lands File search was also conducted by the Native American Heritage Commission (NAHC) on June 21, 2022, with negative results. PaleoWest sent informal scoping letters to 22 individuals listed as contacts on a list provided by the NAHC. To date, PaleoWest has received two responses to the scoping effort.

PaleoWest archaeologists conducted an intensive pedestrian survey of the portion of the Project (1,082 acres) that is under County jurisdiction between September 12-22, 2022. The survey resulted in the documentation of 11 cultural resources, including the two previously documented historic built-environment resources and nine newly discovered resources. The newly discovered resources include four historic period archaeological sites, one historic period built-environment resource, three isolated prehistoric artifacts, and one isolated historic period artifact. PaleoWest analyzed the CRHR eligibility of the cultural resources under Criteria 1 - 4. None of the resources are recommended as historical resources under CEQA, and none appear to meet any criteria that would make them eligible for listing in the CRHR. No further management of these cultural resources is recommended. However, Riverside County requires archaeological monitoring

¹ The use of existing data in lieu of a record search at the Eastern Information Center of the California Historical Resources Information System was approved by the County of Riverside and BLM.

whenever resources have been identified within a Project regardless of significance. Additionally, monitoring is recommended due to the potential for buried archaeological resources within the Project area. PaleoWest also recommends cultural resource best management practices be implemented if archaeological resources and/or human remains are inadvertently discovered during construction.

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1 INTRODUCTION

PaleoWest, LLC (PaleoWest) was retained by EDF Renewables Development, Inc. (EDFR) on behalf of Sapphire Solar, LLC. to complete a Phase I cultural resource assessment for the Sapphire Solar Project (Project) near the community of Desert Center, Riverside County, California (Figure 1-1). The Project requires compliance with the California Environmental Quality Act (CEQA); the County of Riverside (County) is the CEQA lead agency. The study included background research, an intensive pedestrian survey, and resource documentation and evaluation of the portion of the Project under County jurisdiction. This report presents the methods and results of the Phase I cultural resources assessment.

1.1 PROJECT LOCATION AND DESCRIPTION

The proposed Project is approximately 4.25 miles north-northeast of Desert Center and east of State Route 177 in unincorporated Riverside County. The Project area is within the Chuckwalla Valley in a rural setting and has been previously used for agricultural purposes. It encompasses 25 Assessor's Parcel Numbers: 807172010, 807172011, 808240002 to 808240006, 808240009 to 808240016, and 808250001 to 808250010. The Project includes portions of Section 36, Township 4 South, Range 15 East, Sections 1 and 2, Township 5 South Range 15 East, and Section 6, Township 5 South, Range 16 East, on the *Victory Pass, California* and *East of Victory Pass, California*, 7.5' USGS quadrangle topographic maps (Figure 1-2). Elevations within the Project area range from approximately 570 to 660 feet (ft) above mean sea level (amsl).

EDFR on behalf of Sapphire Solar, LLC (Applicant) proposes the development and operation of a 117-megawatt (MW) photovoltaic solar generation facility with 117 MW of battery storage and an associated generation tie (gen-tie) line. The proposed Project would encompass approximately 1,192 acres with 1,082 acres of private land and 110 acres of Bureau of Land Management (BLM) administered land. The photovoltaic panels, a single-axis tracker system, inverters, converters, transformers, electrical collection and communication lines, a 12-kilovolt (kV) distribution line for backup power, an on-site electrical substation, a battery energy storage system, security fence, an operations and maintenance facility including a standalone storage building, up to three onsite groundwater wells, meteorological station and albedometer weather station, a microwave/communication tower, and a supervisory control and data acquisition system would be on private land. The proposed Project would also include up to three options for a single 230-kV generation tie (gen-tie) line alignment, main and secondary access road, 12kV distribution line and collector line routes, that will be on the BLM-managed land. The Project would interconnect with the Southern California Edison Red Bluff Substation via the existing Desert Harvest gen-tie line. This report analyzes impacts to cultural resources within the 1,082 acres of private land that comprise the Project area. A supplemental survey of the additional 110 acres of BLM-administered lands will be conducted following the second pre-application meeting for the Project, and the results will be provided in an addendum to this report.

The Project has been determined by the County, acting as the CEQA lead agency, to require preparation of an environmental impact report (EIR) to evaluate the proposed impacts of the Project. This Phase I cultural resources assessment has been prepared in accordance with the County's requirements for compliance with CEQA. The information contained herein will be used



Figure 1-1. Project vicinity map.

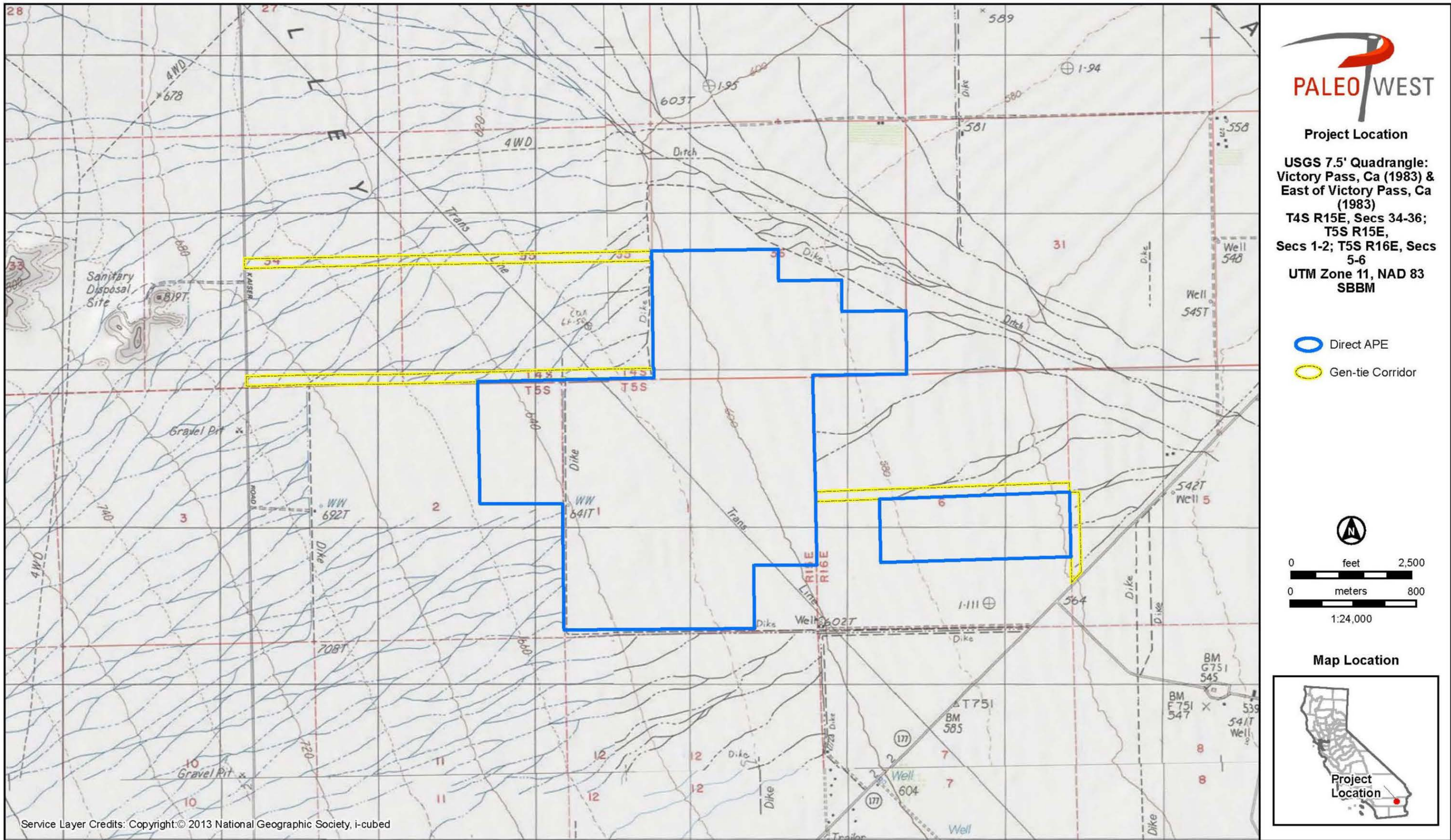


Figure 1-2. Map showing portion of Project area in County jurisdiction.

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to assess the potential impacts of the proposed Project on cultural resources on lands under County jurisdiction.

1.2 LIST OF PERSONNEL

The Phase I cultural resources assessment was conducted under the oversight of Principal-In-Charge, Matthew Tennyson, M.A., Registered Professional Archaeologist (RPA). Mr. Tennyson is listed as a Certified Archaeologist with the County of Riverside. Kyle Knabb, Ph.D., RPA, served as Project Manager and directed all fieldwork and reporting efforts. Dennis McDougall was the primary report author. Kurt McLean acted as Field Director. The field staff also included Eunice Ambriz, Alex Wechter, and Jackson Case. Michael Mirro, M.A., RPA, authored the environmental background for the report. Finally, Tiffany Clark, Ph.D., RPA served as Principal Investigator and was responsible for overall quality assurance and senior technical review.

2 REGULATORY CONTEXT

2.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT

The proposed Project is subject to compliance with CEQA, as amended. Compliance with CEQA statutes and guidelines requires both public and private projects with financing or approval from a public agency to assess the Project's impact on cultural resources (Public Resources Code Section 21082, 21083.2 and 21084 and California Code of Regulations 15064.5). The first step in the process is to identify cultural resources that may be impacted by the Project and then determine whether the resources are "historically significant" resources.

Cultural resources are buildings, sites, human modified landscapes, traditional cultural properties, structures, or objects that may have historical, architectural, cultural, or scientific importance. CEQA defines historically significant cultural resources as "resources listed or eligible for listing in the California Register of Historical Resources" (Public Resources Code Section 5024.1). A cultural resource may be considered historically significant if the resource is 45 years old or older, possesses integrity of location, design, setting, materials, workmanship, feeling, and association.² In addition, it must meet at least one of the following criteria for listing in the CRHR:

1. Is associated with 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 in 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 (Public Resources Code Section 5024.1).

Even if an archaeological site does not meet the definition of a "historical resource", the lead agency may determine that the resource is a "unique archaeological resource." (CEQA Guidelines, § 15064.5(c)(3).) As defined in Public Resources Code Section 21083.2(g) "unique archaeological resource" is "an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

²The Office of Historic Preservation (OHP) guidelines recognize a 45-year-old criteria threshold for documenting and evaluating cultural resources (assumes a five-year lag between resource identification and the date that planning decisions are made) (OHP 1995:2). The age threshold is an operational guideline and not specific to CEQA statutory or regulatory codes.

If a project would cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to be made to permit any or all of these resources to be preserved in place or left in an undisturbed state.

CEQA states that if a project will have a significant impact on important cultural resources, deemed “historically significant,” then project alternatives and mitigation measures must be considered. Per CCR Section 15064.5[b], a significant impact is defined as substantial adverse change in the significance of a historically significant resource. A substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired. The significance of a historical resource is materially impaired when a project:

1. Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or
2. Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
3. Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

2.1.1 Mitigation of Adverse Impacts

Mitigation of adverse impacts is required if a proposed project will cause substantial adverse change to a historical resource (14 CCR Section 15064.5[b]). Preservation in place is the preferred manner of mitigating impacts to archaeological sites (14 CCR Section 15126.4(b)(3)). Mitigation measures must be enforceable through permit conditions, agreements, or other legal means and must be proportional to the expected impacts. Mitigation measures for historical resources may include but are not limited to:

1. Altering a proposed project to avoid damaging effects on any historical resource in a significant manner, such as by not taking a certain action or parts of an action.
2. Rectifying impacts through maintenance, repair, stabilization, rehabilitation, restoration, preservation, conservation, or reconstruction of the historical resource in a manner consistent with the Secretary of Interior’s Standards for the Treatment of Historic Properties.
3. Documentation of the historical resource, by way of historic narrative and photographs or architectural drawings meeting California OHP recommendations prior to demolition.
4. Deeding the site into a permanent conservation easement.

5. Abandonment of the proposed project.

CEQA Section 15064.5(b)(3) states that generally, a project that follows the *Secretary of the Interior's Standards for the Treatment of Historic Properties (SOI Standards)* shall be considered as mitigated to a level of less than a significant impact on the historical resource.

2.2 COUNTY OF RIVERSIDE GENERAL PLAN

The Multipurpose Open Space Element of the County of Riverside General Plan (2015) identifies the following five policies related to the preservation of historic properties:

OS 19.1 Cultural resources (both prehistoric and historic) are a valued part of the history of the County of Riverside.

OS 19.2 The County of Riverside shall establish a Cultural Resources Program in consultation with Tribes and the professional cultural resources consulting community that, at a minimum would address each of the following: application of the Cultural Resources Program to projects subject to environmental review; government-to-government consultation; application processing requirements; information database(s); confidentiality of site locations; content and review of technical studies; professional consultant qualifications and requirements; site monitoring; examples of preservation and mitigation techniques and methods; curation and the descendant community consultation requirements of local, state and federal law. (AI 144).³

OS 19.3 Review proposed development for the possibility of cultural resources and for compliance with the cultural resources program.

OS 19.4 To the extent feasible, designate as open space and allocate resources and/or tax credits to prioritize the protection of cultural resources preserved in place or left in an undisturbed state. (AI 145)

OS 19.5 Exercise sensitivity and respect for human remains from both prehistoric and historic time periods and comply with all applicable laws concerning such remains.

³ AI refers to an Action Item contained in the General Plan Implementation Program (County of Riverside 2015).

3 ENVIRONMENTAL CONTEXT

This section discusses the natural setting of the Project area. The information below has been largely adapted from the Class III survey report for the nearby Oberon Solar Project (Knabb et al. 2021), the Class III survey report for the Arica Solar Project (Thomas et al. 2021a), and the Class III survey report for the Victory Pass Solar Project (Thomas et al. 2021b).

3.1 ECOLOGY

The Project area is in Chuckwalla Valley on the western edge of the Colorado Desert, a subdivision of the Sonoran Desert, which covers the northwestern Mexican states of Sonora, Baja California, and Baja California Sur, as well as part of southwest Arizona and southeast California. Conditions within the Colorado Desert are among the hottest found in the United States. Average daily temperatures typically range from the low 40 degrees Fahrenheit in winter to 105 degrees Fahrenheit in summer, although summer temperatures can exceed 120 degrees Fahrenheit. A high of 127 degrees Fahrenheit was recorded at the Gold Rock Ranch station in the central Colorado Desert, approximately 15 miles northwest of Yuma, Arizona and 70 miles southeast of the Chuckwalla Valley. This region also experiences rapid heat loss at night, resulting in a wide daily temperature variance of approximately 30 degrees Fahrenheit. Annual rainfall totals within the Colorado Desert are among the lowest in the Sonoran Desert, averaging less than two inches per year in the Salton Trough and from two to four inches along the Colorado River (Crosswhite and Crosswhite 1982). However, summer monsoons have been known to produce more than the average yearly precipitation in a single rainfall event.

Surface water within the region includes both perennial and seasonal sources. Nearby perennial water sources are limited to the Colorado River approximately 50 miles east of the Project area, which is one of the major river systems of North America. Formed high in the Colorado Rocky Mountains and fed by numerous tributaries, the Colorado River travels 1,400 miles to the Gulf of California, picking up vast quantities of silt along the way that is deposited in the Gulf. Prior to the completion of a series of dams on the Lower Colorado River, beginning with the Hoover Dam (later renamed Boulder Dam) in 1935, the river frequently changed its course and overflowed its banks, adding to the volume of silt carried by the river.

3.2 FLORA AND FAUNA

The environmental record of the California deserts is based primarily on plant macrofossils from packrat middens and paleo-hydrological records from desert lake basins. While these records are consistent in representing the basic outlines of the region's environmental history—generally cooler and wetter conditions during late glacial and early post-glacial times, followed by warming and increasing aridity during the early and middle Holocene—it now appears that the timing of specific changes was variable at different locations (Grayson 2011; West et al. 2007).

Because the Project area is near the Colorado Desert/Mojave Desert boundary, the characteristic Sonoran Desert plants are relatively uncommon. Near Ford Dry Lake, creosote scrub is the dominant vegetation community, with a greater variety of species occurring along the seasonal washes.

Although the vegetation communities are similar as those of the Mojave Desert to the north, the Colorado Desert's biannual pattern of rainfall allows for greater diversity. Species commonly found throughout both deserts are varieties of agave (*Agave* spp.), including the desert agave or century plant (*Agave deserti*), creosote (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), and saltbushes (*Atriplex* spp.). However, the Sonoran Desert is effectively defined by the distribution of ocotillo (*Fouquieria splendens*), and the Mojave Desert by Joshua trees (*Yucca brevifolia*).

The Colorado Desert subdivision differs from other Sonoran subdivisions by having mostly small cacti. Creosote scrub is the dominant vegetation community through most of the desert, with a greater variety of species occurring along the Colorado River corridor, seasonal washes, and the Salton Sea.

On sandy flats and slopes, and desert pavement terraces, the usually sparse vegetation is dominated by creosote bush, white bursage, and brittlebush (*Encelia farinosa*), with saltbushes occurring where the soil becomes more alkaline. Along seasonal washes the vegetation is more verdant, with a greater variety of species. In these washes small trees, including blue palo verde (*Cercidium floridum*), ironwood (*Olneya tesota*), catclaw acacia (*Acacia greggii*), and smoke trees (*Psoralea arguta*) are found. Shrubs such as mesquites (*Prosopis* sp.), burrobush (*Hymenoclea salsola* var. *pentalepis*), and desert broom (*Baccharis sarothroides*) also occur along dry water courses. Seeps and oases are marked by the presence of California fan palm (*Washingtonia filifera*) (MacMahon 1985; Minckley and Brown 1994; and Schoenherr 1992).

Active dunes, such as those near Palen Dry Lake, require specialized plant adaptations. The soil is poor and provides unstable ground for rooting; shifting sands can either bury plants or expose the root systems to the sun. However, the dunes retain moisture from infrequent rainfall. Plants such as sand dune buckwheat (*Eriogonum deserticola*) and croton (*Croton wigginsii*) have adapted to this environment with a high tolerance of low nutrient conditions and long horizontal roots that help anchor the plant (MacMahon 1985).

On upper rocky slopes, particularly on the eastern side of the Peninsular Ranges, is the cactus scrub community, consisting of succulents and other drought-resistant plants. The eastern slopes are marked by distinctive bands of vegetation communities, with cactus scrub in the lower elevations, replaced by desert chaparral higher on the slopes. Cactus scrub can occur with creosote scrub and includes brittlebush, ocotillo, and a variety of cacti (*Opuntia* sp.). Desert chaparral consists of open stands of big berry manzanita (*Arctostaphylos glauca*), western mountain mahogany (*Cercocarpus montanus*), and California buckwheat (*Eriogonum fasciculatum*) (Schoenherr 1992; Raven 1966). In the desert slopes of the Transverse Ranges, chamise is often a dominant species in the desert chaparral community (Schoenherr 1992).

Along the Colorado River floodplain, riparian communities are dominated by cottonwood (*Populus fremontii*) and sycamore trees (*Platanus racemosa*) close to the river, and varieties of mesquite (*Prosopis* sp.) in the drier parts of the floodplain. Two species of mesquite (honey and screwbean) were key food sources for native inhabitants along the river. Mesquite, along with cottonwood, was also used to make arrow shafts, digging sticks, mortars, and pestles (Forde 1931). Wildflowers, including the desert lily (*Hespercallis undulata*) are found in abundance in wet seasons, though less so during dry seasons. Sporadic blooms demonstrate the resilience of seed banks in desert environments (Bean and Saubel 1972). Dense stands of willow (*Salix gooddingii* var. *variabilis*) and arrow weed (*Pluchea sericea*) are also found bordering the river, although today this area is used primarily for agriculture. In portions of the floodplain, salt cedar or tamarisk

(*Tamarix chinensis*) has replaced much of the mesquite and other native vegetation (Minckley and Brown 1994).

Because of high diurnal temperatures, most desert mammals have adapted by spending much of the day underground in burrows or aestivating. Small, burrowing rodents are particularly abundant in sandy plains. Animals commonly found in dry desert lands include black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audoboni*), kit fox (*Vulpes macrotis*), and a variety of rodents such as round-tailed ground squirrel (*Spermophilus tereticaudus*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), desert and Merriam kangaroo rats (*Dipodomys merriami*), and desert pocket mouse (*Perognathus penicillatus*). Larger mammals are usually limited to desert bighorn sheep (*Ovis Canadensis nelsoni*), Sonoran pronghorn antelope (*Antilocapra americana sonorensis*), and coyote (*Canis latrans*). Several species of bat are found, including California leaf-nosed bat (*Macrotus californicus*).

In the sandy plains and dunes of the Colorado Desert regions there are several species of reptiles with unique adaptations to sandy environments, including fringe-toed lizard (*Uma inornata*, *U. notata*), flat-tailed horned lizard (*Phrynosoma m'calli*), banded sandsnake (*Chilomeniscus cinctus*), and sidewinder (*Crotalus cerastes*). Other reptiles include desert tortoise (*Gopherus agassizi*), chuckwalla (*Sauromalus obesus*), desert iguana (*Dipsosaurus dorsalis*), and snakes such as the rosy boa (*Lichanura trivirgata*) and western diamondback (*Crotalus atrox*) (Schoenherr 1992; Turner and Brown 1994).

This is the poorest subdivision of the Sonoran Desert for birds, as the open, sparsely vegetated areas provide little suitable habitat. More commonly occurring species are burrowing owl (*Aiherne cunicularia*), turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), common raven (*Corvus corax*), and cactus wren (*Polioptila melanura*). The riparian vegetation along the Colorado River and the Salton Sea attracts and supports a variety of birds, including migratory birds such as ducks and geese. Resident species include roadrunner (*Geococcyx californianus*), mourning dove (*Zenaidura macroura*), Gambel's quail (*Callipepla gambelii*), and black-tailed gnatcatcher (*Polioptila melanura*). Also found are numerous bats, a variety of rodents, both large and small game, and along the river, the Colorado River toad (*Bufo alvarius*) (Minckley and Brown 1994). Migratory birds commonly found at the Salton Sea include pelicans, cormorants, and eared grebes.

The nearest perennial water source is the Colorado River, approximately 50 miles to the east, and the Salton Sea, approximately 40 miles to the southwest. Native fish species found in the main channel of the Colorado River are limited, consisting primarily of Colorado squawfish (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), and bonytail chub (*Gila elegans*). Woundfin (*Plagopterus argentissimus*) and flannelmouth sucker (*Castosomus latipinnis*), although rare, are also native to the stretch of river below Boulder Dam. Non-native species now found in the river include largemouth and smallmouth bass, striped bass, lesser sunfishes, cichlids, mosquitofish, and flathead catfish (Minckley and Brown 1994). Within the Salton Sea native razorback sucker and bonytail chub, and several species of sport fish, including tilapia (*Tilapia mossambica*), croaker (*Bairdella icistia*), and sargo (*Anistramus davidsoni*) are found. The desert pupfish (*Cyprinodon macularis*), now an endangered species, is also found in the Salton Sea.

3.3 GEOLOGY

The Project is in the Chuckwalla Valley situated in the intervening valley forming the boundary between the Mojave Desert and eastern Transverse Range geomorphic provinces (California

Geological Survey [CGS] 2002; Hall 2007). Basin and range topography with ranges oriented generally north-south, typical of the eastern Mojave Desert and eastern California, extends to the north and east (CGS 2002) while mountains comprising part of the eastern Transverse Ranges that are generally oriented east-west (and east-southeast to west-northwest), outcrop west and south (Powell 1981).

Mountain ranges surrounding Chuckwalla Valley and the Project area include the Palen and Coxcomb ranges to the north and northeast; the McCoy, Little Maria, Little Chuckwalla, and Mule ranges to the east, northeast, and southeast; the Chuckwalla Mountains immediately to the south; and the Orocopia and Eagle mountains to the southwest and west. Together these ranges surround and form the Chuckwalla Valley basin. The Palen, Coxcomb, Little Maria, Mule, and McCoy ranges exhibit typical basin and range topography, characterized by narrow faulted mountain chains separated by subsiding flat alluvial basins (Peterson 1980) with the pattern continuing north into the Mojave Desert Province. Transverse Ranges include the Chuckwalla, Little Chuckwalla, Orocopia, and Eagle mountains and represent the easternmost extent of the Transverse Ranges (Hall 2007:180; Powell 1981). Four dry lakes or playas are present within the Chuckwalla Valley basin and include Palen Lake, Ford Lake, Hayfield Lake, and an unnamed playa between the McCoy Range and Mule Mountain. The eastern end of the valley is on a drainage divide at the base of the Mule and McCoy mountains where the Palo Verde Mesa extends east.

North and east of the Project area, the Palen Mountains are surrounded by fans of Quaternary alluvial deposits, interspersed with sedimentary rocks, which are composed of weakly consolidated mudstone, siltstone, and fine to medium grained arkosic sandstone (Stone and Pelka 1989). Higher up in the Palen Mountains, older alluvium, diorite, and andesite are found with what appear to be volcanic-lithic sandstone, mudstone, and siltstone that is dark gray to dark greenish gray in color. These are beneath arkosic to volcanic-lithic sandstone, conglomerate, and light gray phyllitic shale where conglomerates include clasts of granite, quartzite, volcanic rocks, and minor carbonate rocks (Stone and Pelka 1989).

The Chuckwalla Valley is a broad alluviated enclosed tectonic basin or bolson (Peterson 1980), which is an alluvium-filled, internally drained structural depression with outlets blocked by alluvial divides (Peterson 1980; The American Geological Institute 1976). The valley is filled with 1,200 ft (366 meter [m]) to 3,000 ft (915 m) of Pliocene to Quaternary-age deposits divided into the Pliocene-aged Bouse Formation; Pleistocene-aged Pinto Formation; and Pleistocene and Quaternary-aged alluvium (DWR 2003). The bulk of deposition on many of the alluvial fans observed in the Mojave Desert Region of California occurred during the Pleistocene Period, primarily during the latest Pleistocene (9.4 to 14 kilo annum) as a response to a climatic transition during the Pleistocene-Holocene transition (McDonald et al. 2003). A secondary effect of these large storms was the entrenchment of the upper fan and fan apex. A second period of major fan aggradation occurred between three and six kilo annum. It is theorized that this second period of increased fan aggradation was a response to warmer Gulf of California water temperatures, which caused an increase in monsoonal rains in the Mojave Desert region (Miller et al. 2010).

4 PREHISTORIC CONTEXT

This section discusses the prehistoric setting of the Project area. The information below has been adapted from the Class III survey report for the nearby Oberon Solar Project (Knabb et al. 2021), the Class III survey report for the Victory Pass Solar Project (Thomas et al. 2021b), and the Class III survey report for the Arica Solar Project (Thomas et al. 2021a).

As stated above, the Project is situated near the boundary between the Colorado and Mojave Desert ecological zones. This, together with its position near a known prehistoric and historic travel corridor, suggests that the Project area likely was used by groups whose home ranges included portions of the Mojave Desert, the interior Colorado Desert, and the Colorado River, as well as by travelers from more distant locations such as the Peninsular ranges or the Southwest. It is possible, therefore, that the area's archeological record may reflect affinities with any or all these regions. In consideration of these various influences, the prehistoric context presented here draws on current knowledge from both the Mojave and Colorado Desert regions.

The Colorado Desert, rich in prehistoric archaeological sites, has been studied intensively by archaeologists for 80 years. Interregional comparisons are used to order and interpret the culture-historical framework as sites with substantial subsurface components are quite rare, which has hampered chronology building (Schaefer 1994a, 1994b). The site assemblage of the Colorado Desert is particularly diverse for sites associated with what might generally be termed "ritual events." In addition to the remains of Native American habitations and resource procurement activities, there are abundant figures and shrines, petroglyphs, pictographs, and well-preserved trail systems (Altschul and Ezzo 1994; Cachora 1994; Johnson 1985; McGuire and Schiffer 1982; Pendleton et al. 1986; Pignuolo et al. 1997; Rogers 1939; Schaefer 1994a, 1994b; von Werlhof 1987).

In the 1930s, Rogers (1939) proposed the San Dieguito Complex as representing a terminal Pleistocene and/or Early Holocene cultural tradition in the Colorado Desert based on surveys of the Southern California coastal and desert areas. He suggested that subsistence relied primarily on highly ranked resources such as large mammals, although numerous small mammals were also used. This subsistence strategy may have encouraged a pattern of relatively high residential mobility.

Cultural materials have often been assigned to the San Dieguito Complex based on desert varnish patination and degree of embeddedness in ancient desert pavements which places various cleared circles, trails, and geoglyphs within the San Dieguito Complex in the desert regions. However, these assignments must be considered tentative at best as degrees of patination and embeddedness have not been demonstrated as reliable dating techniques (McGuire and Schiffer 1982).

San Dieguito materials have been found near now-dry inland lakes, on old desert terrace deposits, at Ventana Cave, and near the California coast where they were first documented at the Harris Site (Rogers 1966; Warren 1966). Dating of the San Dieguito Complex has proven to be difficult. The related Lake Mojave Complex in the Mojave Desert to the north is thought to have existed 12,000 to 7,000 years ago (Warren and Crabtree 1986). More recent work might suggest a terminal date of around 8,000 B.P. (Schroth 1994), or 8,500 B.P. (Sutton et al. 2007).

4.1 PALEOINDIAN

Although a variety of claims have been made for an “early man” presence in the California deserts, these are considered speculative (Schaefer 1996; Sutton et al. 2007) and the earliest conventionally accepted human occupation of the region continues to be represented by the distinctive fluted projectile point of the Clovis culture. Thought to date between approximately 13,500 and 11,000 calendar years before present (cal. B.P.), fluted projectile points are most common along the shorelines of Pleistocene lakes in the northern Mojave Desert and San Joaquin Valley (Dillon 2002; Rondeau 2009; Rondeau et al. 2007) and likely reflect an early focus on lacustrine settings and the resources (including large game) associated with them. However, isolated specimens have been found throughout California, including one at Pinto Basin approximately 30 miles (48 kilometers [km]) northwest of the Project area (Campbell and Campbell 1935 as cited in Dillon 2002), and one fragment discovered near McCoy Spring in the northern Chuckwalla Valley (Rondeau 2012). These latter specimens suggest a sparse and highly mobile Pleistocene population in the southern Mojave and northern Colorado deserts.

Whereas Clovis appears to represent an adaptation to full Pleistocene conditions, the transition to the Holocene was marked by adjustments to the rapidly changing environments in the California deserts. For example, Pluvial lakes were rapidly retreating, as indicated by the final desiccation of Lake Mojave by around 8,700 B.P. (Wells et al. 2003), and desert plant communities began to assume their modern form. Sutton et al. (2007) suggest that human land-use strategies at this time may have been adapted to monitor and exploit a wide variety of productive resource patches that were emerging. These patches would certainly have included the remaining lakes and marshes, but also streamside and upland settings.

The cultural complexes representing this interval (ca. 10,000–8,000 B.P.) include the San Dieguito in the Colorado Desert and the related Lake Mojave Complex in the Mojave Desert. Both are characterized by stemmed projectile points (Lake Mojave and Silver Lake), crescentics, abundant bifaces, a variety of well-made scrapers, and other flake tools. Milling equipment is uncommon and tends to reflect only light use, which has led to the assumption that plant foods were less important than in later periods (Sutton et al. 2007). Early Holocene sites are uncommon in the Colorado Desert, which may relate more to spotty investigations and the instability of landforms than to lack of human occupation (Schaefer and Laylander 2007). This seems especially likely considering the robust Early Holocene record of the Mojave Desert, where Lake Mojave artifacts are found in a wide variety of settings (Grayson 2011).

4.2 ARCHAIC PERIOD

The Archaic Period (ca. 7,000–1,500 B.P.) encompasses the interval between the relatively cool and wet conditions of the Early Holocene and the appearance of the assemblage characteristic of the Late Prehistoric. This period saw the emergence of several distinctive regional complexes and appears to reflect cultural adaptation to the Middle and Late Holocene desert environment (Warren 1984). Regional populations were generally expanding, leading to a diversification and intensification of subsistence strategies and establishment of regional trade networks. Ground stone tools, rare or absent during the Paleoindian Period, became both widespread and abundant in the desert, reflecting increasing reliance on seeds and other plant resources. However, whereas the Archaic Period is well represented in the Mojave Desert, the general scarcity of well-preserved Archaic sites in the Colorado Desert is problematic and remains an important research issue (Schaefer 1996; Schaefer and Laylander 2007).

In the southern California deserts, the best-known regional culture assemblages of the Archaic Period are the Pinto, Elko, and Amargosa, each defined by recognizably distinct projectile point types. The earlier complexes, Pinto in the Mojave Desert and Amargosa I in the Colorado Desert, are both marked by projectile points of the Pinto series, named for sites in the Pinto Basin northwest of the Project area. Warren (1991) sees general continuity between the Lake Mojave and Pinto complexes, suggesting that Pinto groups initially focused on hunting, but adapted to increasingly arid Middle Holocene conditions by broadening diets and decreasing their reliance on artiodactyls. Indeed, recent data from Pinto components in the Mojave Desert suggest some technological parallels, but with some apparent reduction in mobility ranges (Sutton et al. 2007). The major innovation at this time seems to be a widespread increase in the use of ground stone implements, which at some locations are better represented in Pinto components than perhaps at any other time during the Holocene (Grayson 2011; Sutton et al. 2007).

In this context, the dating of Pinto deposits takes on some importance with respect to regional adaptations. Recent research cited by Sutton and others (2007) suggests that the Pinto Complex may have appeared during the Early Holocene, partially concurrent with Lake Mojave materials. If so, they point out that the shift to intensive plant food processing may have taken place by approximately 9,000 B.P., a timing more in line with the appearance of similar plant-intensive adaptations (i.e., the milling stone pattern) along the California coast (Sutton and Gardner 2010). The appearance of Pinto projectile points in the Mojave Desert before the transition to hyper arid Middle Holocene conditions, therefore, is relevant to Warren's hypothesis that the increasing Pinto emphasis on plant foods was a response to the depression of artiodactyl populations brought on by environmental deterioration.

The latest Archaic manifestations in the region are represented by the Gypsum Complex in the Mojave Desert and by the Amargosa II Complex in the Colorado Desert. These complexes appeared during what appears to have been a period of generally cooler and wetter conditions during the initial portion of the Late Holocene (see above). Site distributions in the Mojave Desert may reflect this amelioration of climate in that sites are more numerous but tend to be smaller and appear in a wider variety of settings, suggesting that populations were less tethered to available water. This interval is marked by the appearance of pressure-flaked Gypsum, Elko, and Humboldt type projectile points, while ground stone assemblages became increasingly formalized, and mortars and pestles appear at some locations. In addition to the projectile points, flaked stone assemblages feature a diverse array of choppers, scrapers, and other tools. In Arizona, Amargosa III is marked by increasing frequencies of ground stone and the introduction of long, triangular-bladed, and corner-notched projectile points. In the Colorado Desert, however, Amargosa III is not sufficiently well expressed to draw a distinction between Amargosa II and III.

At Ford Dry Lake and its vicinity, direct evidence for Archaic Period use or occupation is generally limited to occasional isolated projectile points and inferred Archaic occupation at specific sites is often speculative. At sites CA-RIV-1383 and CA-RIV-1814 in the Chuckwalla Valley, excavations revealed limited evidence for a possible "occupation during San Dieguito/Amargosa periods" (Carrico et al. 1982:156). At site CA-RIV-1383, a major campsite with evidence for occupation after 1,500 B.P., a radiocarbon date of ca. 7,000 B.P. was obtained on charcoal from a somewhat questionable context. Also cited as possible evidence of Archaic or earlier occupation at CA RIV-1383 were rock rings with highly patinated stones embedded in the pavement and highly patinated lithic artifacts (Carrico et al. 1982:156). At site CA-RIV-1814, a large quarry site with less definitive evidence of Late Prehistoric occupation, an Amargosa-style projectile point was recovered (Singer 1984:10). According to Singer, "Artifacts from various sites in the Chuckwalla

Valley show a succession of forms and styles, as do the sites themselves. The region may have been densely settled during Playa/San Dieguito times, but only sporadically visited or inhabited during Pinto/Gypsum times, and then reoccupied by later Yuman and Shoshonean peoples (Chemehuevi and Cahuilla)" (Singer 1984:39).

4.3 LATE PREHISTORIC/PROTOHISTORIC PERIOD

Late Prehistoric and Protohistoric periods are represented in this region by the Patayan Complex. These periods date from approximately 1,500 B.P. until the American expansion into the area at the turn of the nineteenth century. The Protohistoric Period encompasses a protracted 300-year period of sporadic European exploration and colonization that had little effect on indigenous lifeways in the southern California deserts. There is a clear correspondence between the geographical distribution of archaeologically recognizable Patayan cultural materials and the historically documented territories of Yuman groups: the Quechan, Mohave, Cocopah, Paipai, Yavapai, Havasupai, and others. Thus, the archaeological Patayan Complex is often taken to be directly ancestral to the ethnographic Yuman cultures of the region. Nevertheless, Schaefer states that non-Yuman groups, such as the Cahuilla and the Chemehuevi, were also active participants in this cultural complex: "The prehistoric Patayan world was multicultural and intercultural, representing many dynamic adaptive strategies and social systems, but sharing common elements of technology, material culture, and ideology" (Schaefer 1994b:66).

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

Bow-and-arrow technology was also introduced at this time, possibly from desert hunter-gatherer groups moving in from the west and north. Smaller, arrow-sized projectile point types of the Cottonwood Triangular and Desert Side-notched series are common. The Cottonwood series projectile points likely predate the Desert Side-notched types, and probably predate the introduction of pottery manufacture in the region. Concomitant with these dramatic subsistence and technology changes were several, apparently related, ceremonial and religious changes. During the Late Prehistoric Period, burial practices shifted from inhumations to cremations and partial cremations. Artistic expression on rock (petroglyphs) and land (intaglios) flourishes at this time in association with expanding trade and trail networks and increasingly elaborate kinship systems tying together extensive territories (McGuire and Schiffer 1982). Warfare likely also increased at this time and was well documented in the Protohistoric and Historic periods.

Like most of the Colorado Desert, it appears that archaeological components in the Chuckwalla Valley date primarily to the Late Prehistoric and Protohistoric periods. For example, Ritter (1981:9) noted a Rose Spring (Rosegate) projectile point, Tizon Brown Ware, and Parker series pottery at site CA-RIV-1515 along the Palen Dry Lake bed, estimating occupation of the site from 1,450 B.P. to 950/750 B.P. Several sites near the Ford Dry Lake playa margin also contain ceramics, indicating relatively late occupations. Additionally, most of the earth art and rock art sites, as well

as many trails and ceremonial sites, are interpreted to date to the Late Prehistoric Period (Altschul and Ezzo 1994; Hedges 1982; McCarthy 1982; Schaefer 1994b; Whitley 1996). Many of these ceremonial features continued to be used after European contact, and even into the present day.

Additional clues to Late Prehistoric use of the area may also be found in debitage profiles of local sites; for example, a detailed study by Flenniken and Spencer (2001) conducted at sites in the McCoy Valley suggests that most of the lithic reduction (stone-tool making) was directed at the production of relatively small, thin flakes suitable for the creation of arrow-sized projectile points. Comparable findings are reported by Singer (1984), who noted a similar reduction technology at site CA-RIV-1819, a site south of the Genesis Solar Energy Project at the foot of the nearby Mule Mountains. The raw material source at the site is a river cobble deposit, as opposed to a bedrock deposit, resulting in a reduction trajectory oriented toward the production of relatively small, thin flakes suitable for use as small flake tools or for blanks for the creation of arrow-sized projectile points.

4.4 ETHNOHISTORIC CONTEXT

Ethnographic and archaeological evidence indicates that ancestors of Yuman language groups and several other Native American groups, such as the Cahuilla and Chemehuevi, were present in the area (e.g., Bean 1978; Kelly and Fowler 1986; Laird 1976). Many of these tribes consider the Chuckwalla Valley as part of their traditional use area. Most groups living in the vicinity of the Project area when the Spanish first made forays into the region spoke languages in the Yuman family of the Hokan language stock. These include the Halchildhoma and Mohave, and the Quechan. Surrounding groups spoke languages belonging to the Uto-Aztecan language stock; the Chemehuevi speak a language of the Numic branch, and the Cahuilla speak a language of the Takic branch.

The final desiccation of Lake Cahuilla is thought to have caused major disruptions in the population in the Colorado Desert, perhaps contributing to the persistent warfare reported along the Lower Colorado and Gila rivers (Aschmann 1973; Castetter and Bell 1951; Schaefer 1994b; Stone 1981; Weide 1976; White 1974).

4.4.1 Quechan

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

At the time, the Quechan economy was based on a combination of horticulture, fishing, and gathering. During the winter and spring, Quechan groups lived in seasonal village settlements on terraces above the river floodplain. After the spring floods receded, small family groups would disperse to their agricultural plots along the river to plant crops. After the harvest in the fall, the Quechan would gather again in the large villages on the terraces, where stored agricultural foods, fishing, and limited gathering allowed them to live together through the winter (Bee 1983; Forde

1931). In all times but high flood, fishing in the Colorado River provided an important source of protein.

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

4.4.2 Halchidhoma

Although no longer in the area, the Halchidhoma (also known as the Panya) are a Yuman group who, until about 1825, lived along the Colorado River between the present-day cities of Blythe and Needles. The Halchidhoma were known to travel and trade over great distances. The Cocomaricopa Trail, leading west from a portage point across the Colorado River adjacent to the City of Blythe, linked the Halchidhoma with the Pacific Coast (Dobyns et al. 1963). Ceramic seriation and radiocarbon dates from marine shell artifacts indicate that an extensive trade network between the Pacific Coast and the Lower Colorado River region was established by at least 1,100 B.P. (Sample 1950). The Halchidhoma traded with the Cahuilla, Hualapai, Papago, and Pima of Arizona, and were closely allied with the Maricopa (Bean and Vane 1978).

By all accounts, the Halchidhoma were frequently in conflict with their Colorado River neighbors, the Quechan and Mohave (e.g., Bean and Vane 1978; Kroeber 1925). During decades, if not centuries of open hostility, the Halchidhoma established strong alliances with Yuman Maricopa and Cocopa peoples who lived to the east along the Gila River. Ultimately, the Halchidhoma went to live with and intermarried with their allies, the Maricopa, and are therefore, poorly documented in the ethnographic literature. Spier's (1933) ethnography of the Maricopa touches only briefly on the, by then historical Halchidhoma. Other sources include Castetter and Bell (1951), Kroeber (1925), and a more recent summary article by Harwell and Kelly (1983). Bean and Vane (1978) discuss the central role the Halchidhoma, or Panya, people played in the intertribal trading network known as the Northern Sonoran Desert Amity-Enmity System, as well as their eventual migration to the east.

4.4.3 Mohave

The Mohave were one of the most respected and feared groups in California at the time of European contact. They were known equally for their military might, powerful shamans and religious ceremonies, and proclivity for long-distance travel. The Mohave are also notable for their understanding of themselves as a unified "nation" of people, known as the *Hamakhava*, rather than as a series of loosely related clans or villages (Kroeber 1925:727). The Mohave acted together in defending their territory and attacking their enemies. Visiting parties of Mohave also traveled far and wide, apparently largely out of curiosity and almost entirely without fear. Thus, the Mohave became spiritually and socially influential over a vast portion of the U.S. Southwest and Southern California. Even the notably insular Zuñi pueblo people "perform dances that they attribute to the Mohave" (Kroeber 1925:599).

In 1604, the Oñate Spanish expedition encountered the Mohave as far south as the present Colorado River Indian Tribes Reservation (Stewart 1969), although their largest settlements were

known to be farther north. Kroeber (1959) reported that a majority of the Mohave population lived along both sides of the Lower Colorado River from south of Davis Dam to Topock. According to Stewart (1969), the Mohave also extended their territory south into the Chemehuevi and Colorado valleys, and intermittently controlled areas as far south as the Palo Verde Valley (cf., Kroeber 1959). After the Halchidhoma vacated the Parker-Blythe area between 1825 and 1830, the Mohave briefly settled there, but soon returned to their stronghold in the Mohave Valley (Bean and Vane 1982).

During much of the year, the Mohave lived in villages on terraces above the Colorado River, only moving down onto the floodplain in the spring to plant crops after the seasonal floods. Like other Lower Colorado River peoples, the Mohave relied on floodplain horticulture, fishing, and gathering for subsistence. Planted crops included maize, black-eyed beans (cowpeas), squash, pumpkin, and several local grasses. Cultivated plants were supplemented by the collection of wild plant foods including honey mesquite (*Prosopis glandulosa*) and mesquite screwbean (*Prosopis pubescens*), which could be stored for long periods of time and were traditional staple foods. Although the pods of both plants could be eaten green, they were usually pounded into flour using long stone or wooded pestles. Additionally, screwbean pods were often processed in large pits dug into sandy soil where the pods were placed, covered with vegetation, and then periodically watered to leach out bitter compounds (Lightfoot and Parrish 2009:355).

The bulk of the traditional Mohave diet was vegetarian but hunting and fishing were nonetheless important components of the seasonal subsistence cycle. Mohave hunters considered spring the best time to hunt, when they could lie in wait next to springs where the young grass would attract deer. Rabbits and other small game were also targeted, although they were more often taken in traps, snares, and communal drives. When the high waters of the Colorado River receded in July and August, the Mohave turned to fishing and caught a variety of Colorado River fish species by driving them into shallow sloughs or trapping them in seines (Kroeber 1925:737; Stewart 1957).

The Mohave are well known for their long-distance travel. Like other Colorado River tribes, they participated in a trade network extending east to the Pueblos of Arizona and west to the Pacific Coast (Bean and Vane 1978). Several important passes and routes of travel, including the well-known Mohave Trail connecting the high deserts with the southern California coastal valleys, were developed, or frequented by the Mohave. The endurance and speed of Mohave travelers were legendary at the time of European contact. According to one hyperbolic account, groups of Mohave men, running only at night, were said to be capable of traveling from the Colorado River to the Pacific Coast in only three days, although the typical duration of such a trip was 15 to 16 days (McCawley 1996:112; see also Bean and Vane 1978:5–25). During the Colonial era, the Spanish frequently encountered groups of traveling Mohave who continued the tradition of desert-coastal travel and trade throughout the Mission Period, occasionally in conflict with the wishes of Spanish officials (Cook 1962:158–159).

The general Yuman belief in the importance of dreaming, and the fundamental interrelationship between the mundane and spiritual worlds, was particularly developed among the Mohave (Kroeber 1925:754). All people were capable of meaningful dreaming, and most individuals came to their chosen roles in life because of their dreams. In dreams, the Mohave travel in a mythical place and time when the world was first formed and the important places, such as mountains and springs, came into being. Dreams also inform public rituals, and the many complicated “song series” that singers perform from memory are said to be dreamed as much as learned. The songs

of the Mohave are remarkably specific geographically, noting “the exact spot at which each character journeyed or slept or stood or looked about” (Kroeber 1925:755). Thus, Mohave songs seem to act as a means of storing and transferring important landscape knowledge; they are, among other things, a collection of meaningfully constituted mental maps of the Mohave territory and beyond (Stoffle et al. 1997:235). Many nearby groups, including the Chemehuevi, borrowed extensively from the Mohave song series repertoire.

Among the Mohave, individuals and families owned specific parcels of farmland, as well as individual mesquite trees. Disputes over privately owned resources were usually settled through physical contests “calculated to prevent fatalities” and avoid violent reprisals (Kroeber 1925:744). Primary ethnographic sources for the Mohave include Castetter and Bell (1951) and Kroeber (1920, 1925). More recently, Kenneth Stewart (1983) summarized the ethnographic literature regarding the Mohave for the Handbook of North American Indians series.

4.4.4 Chemehuevi

The Chemehuevi are the southernmost of 16 groups of Southern Paiute peoples (Kelly and Fowler 1986), and the only non-Yuman group living along the Lower Colorado River at the time of European contact. The traditional territory of the Chemehuevi was an extensive area southwest of Las Vegas, including portions of the eastern Mojave Desert of California. Describing the Chemehuevi territory, Alfred Kroeber observed that it was “the largest in California occupied by a people of uniform dialect,” but also “easily one of the most worthless, and certainly among the two or three most thinly populated” (Kroeber 1925:595). Lowell Bean and colleagues have challenged the view that the Chemehuevi population was extremely low at the time of European contact (Bean and Vane 1978:5–20). Citing work by Richard Stoffle and Michael Evans (1976), Bean argues that there were at least 13,000 Southern Paiute people (Chemehuevi and Las Vegas groups) “living in a territory running from Las Vegas south to the Palo Verde Valley and from the Colorado River west to the Iron Mountains” (Bean and Vane 1978:5–20).

The vast Chemehuevi territory contains some of the driest deserts in the west, and the traditional Chemehuevi subsistence system was the most attuned to desert resources of all the groups discussed herein. The Chemehuevi living in the deserts practiced a relatively nomadic hunting and gathering way of life, with larger settlements near reliable water sources, but no permanent villages. Groups moved with the rhythm of the seasons, arriving to harvest plant foods as they matured and hunting primarily small game. Hunting parties also traveled to the San Bernardino Mountains and visited with their allies the Northern Serrano. Owing to the impermanence of most desert encampments, housing was typically of brush erected to protect inhabitants from the harsh sun and wind (Kroeber 1925:597–598; Laird 1976:5). Several foods, including dried meats, dried melon and squash, agave hearts, and various seeds, were stored in specially prepared baskets, earth pits, and caves. Chemehuevi groups did not live permanently with their food caches, though, and the stealing of cached food was apparently a grave issue, one that could incite war and inflict spiritual harm (Laird 1976:6).

Until their expansion into the Lower Colorado River region, the Chemehuevi did not use ceramics but relied instead on a variety of woven baskets and implements, often with painted designs. Chemehuevi hunters were known for their recurved, sinew-backed bows, which, though shorter than comparable Mohave bows, were nonetheless accurate, powerful, and well-suited to hunting deer and other big game (Laird 1976:6). Those groups that settled along the Colorado River

adopted agriculture, more substantial wooden dwellings, ceramics, and several other cultural features from their riverine neighbors.

Despite an underlying friction, the Chemehuevi were traditional allies of the Mohave, and after the Halchidhoma were driven from the Colorado River area in the early nineteenth century, the Chemehuevi moved into the Parker/Blythe area vacated by the Halchidhoma. Bean, following Roth (1976:81), suggests that the Chemehuevi may have settled in the Palo Verde Valley vicinity before the expulsion of the Halchidhoma. According to Mohave tradition as recounted by Kroeber (1925:594), the Chemehuevi were invited to come to the Colorado River after 1830 by the Mohave. According to Laird's (1976:123) Chemehuevi sources, though, the Chemehuevi Valley and Cottonwood Island along the Colorado River were part of the Chemehuevi traditional territory prior to the 1800s. Kelly's (1934:556) ethnographic work suggested that the southern expansion of the Chemehuevi was relatively "recent," dating to the early 1800s. This continues to be a point of disagreement between scholars and between the descendants of the historical Mohave and Chemehuevi.

In the Protohistoric and historic periods, the Chemehuevi traveled extensively through the deserts and as far west as the Pacific Coast "just to look around," and to exchange goods and obtain marine shell ornaments and raw materials (Kelley and Fowler 1986:377). Periodically, small groups of Chemehuevi and Las Vegas Southern Paiute would travel together to Hopi villages in Arizona, although those trips were described as purely social visits involving gift exchanges, not trading expeditions (Kelley and Fowler 1986:377).

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

4.4.5 Desert Cahuilla

The Desert Cahuilla traditionally occupied the Coachella Valley, west of the Project area, near the present-day towns of La Quinta and Indio, where desert and montane geographies collide. During the Late Prehistoric and Protohistoric periods, the Cahuilla were in regular contact with groups along the Lower Colorado River. The traditional route to the river crossed south of the Project area along the course of the modern Interstate 10 freeway. Along with other Takic language groups, the Cahuilla are believed to have migrated into southern California from the Great Basin. Scholars do not agree on the timing or effect of the Takic migration, and it remains an important topic of ongoing research (e.g., see Golla 2007; Sutton 2009). Based on linguistic data and archaeological materials, researchers have suggested migration dates from 1,500 B.P. to as early as 2,500 B.P. Before inland Lake Cahuilla dried up around 500 B.P., Cahuilla peoples lived densely along the shoreline, making ceramics very similar to that fashioned by the Yuman peoples of the Colorado River. Historically, the Cahuilla territory spanned from the Orocopia Mountains in the east, to the San Gorgonio Pass and the San Jacinto Plain near present-day Riverside (Bean and Vane 1978:5–8).

Cahuilla subsistence was an extensive hunting-gathering system tethered to permanent villages near reliable water. Most large Cahuilla villages were inhabited year-round by a single, related lineage group. Aside from the Lake Cahuilla settlement system, high desert canyons with perennial springs were particularly favored village locations. High canyon villages straddled several ecological niches and afforded protection from wind, weather, and enemies. The Cahuilla were organized into several clans, each consisting of several lineage groups tracing their ancestry to a single male ancestor. Each lineage group controlled a territory spanning four critical ecotones or "life zones": the low desert, high desert, transition, and mountain life zones (Bean and Bourgeault 1989:38). Specific resources within these zones, such as springs and mesquite patches, were owned by lineage groups. Traditional songs and stories, some related to specific resources and landscape features, could also be owned exclusively by lineage groups and larger clans.

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

In the Northern Sonoran Desert Amity-Enmity System (Bean and Vane 1978), the Cahuilla were key trading partners with the Halchidhoma (Panya), moving a majority of the traded goods through the Southern California desert valleys and mountain passes. In the historic period, the Cahuilla, along with the Maricopa, were instrumental in reopening trade and communication between the Spanish settlements along the California coast and the Sonoran Desert (Bean and Vane 1978:5–39).

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

5 HISTORIC CONTEXT

The Project site is in a historically remote area, distant from centers of development and settlement. From the period of Spanish exploration of the Colorado Desert to the present, the region has encompassed transportation routes, mining claims, homesteads, military training grounds, nurseries, and residences. The history of the area relates to themes involving the development of the West and the Colorado Desert, mining and homesteading activities, military desert training, and agribusiness in the late twentieth century.

This section discusses the historical setting of the Project area. The information below has been adapted from the Class III survey report for the nearby Oberon Solar Project (Knabb et al. 2021), the Class III survey report for the Victory Pass Solar Project (Thomas et al. 2021b), and the Class III survey report for the Arica Solar Project (Thomas et al. 2021a).

5.1 EARLY SETTLEMENT

The sixteenth-century Spanish explorers Francisco de Ulloa, Hernando de Alarcon, and Francisco de Coronado led expeditions from the Gulf of Mexico up the Colorado River past the Gila confluence, but it was not until 1702 that Father Eusebio Francisco Kino, a Jesuit missionary and cartographer, explored the interior of the Colorado Desert. One focus of Kino's exploration was to dispel the myth that Baja California was an island, which led him to seek routes from Arizona to the Pacific Ocean. The establishment of an overland route to Monterey to access the Manila galleon trade was rejected by New Spain officials in Mexico City, who felt that the idea was too risky and that resources could be better spent elsewhere (Lavender 1972; Rice et al. 1996). The inhospitable nature of the route deterred further immediate exploration.

Kino's route was later followed by Father Francisco Garcés, who reached the confluence of the Gila and Colorado rivers in 1771. The Garcés expedition, assisted by Native American guides, crossed the Colorado River (near present-day Needles) and traveled west through the desert until the San Jacinto Mountains were visible in the distance before returning to Sonora. Garcés attempted an overland route to Monterey again three years later, accompanying border captain Juan Bautista de Anza. When they reached the Colorado River, the local Yumans assisted them in fording the river, locating wells and trails, and rescuing an exploring party lost in the desert. Anza and Garcés crossed the desert to the west, eventually crossing the San Jacinto Mountains by way of a small canyon, arriving at Mission San Gabriel in March 1774. Due to a shortage of supplies, most of the party, including Garcés, turned back, while Anza continued to Monterey (Rice et al. 1996). Garcés' route across the desert became part of what was known as the Old Spanish Trail, an important transportation link between New Mexico and California. The major route of migration to the north primarily circumvented the Colorado Desert, and early Spanish development of the region was tied to activity along the Colorado River.

In 1780, missions *La Purísima Concepción* and *San Pedro y San Pablo de Bicuñer* were established under the direction of Father Garcés on the west bank of the Colorado River near present-day Yuma. Although the Yumans were initially welcoming, assisting the early settlements, abuse and theft of prize farmland by the Spanish soldiers resulted in escalating hostilities between the two groups. In 1781, the Quechan attacked a military camp and both missions. More than 30 soldiers and settlers were killed, including Garcés. The women and children were taken prisoner by the Quechan, although they were eventually ransomed (Lavender 1972). This action, dubbed

the “Yuma massacre,” effectively closed Anza’s trail, halting further immigration and forcing Spain to supply the new colonies by the expensive and unreliable sea route (Rice et al. 1996:99–100). Subsequent military campaigns by Spain and, later Mexico, failed to defeat or subdue the Quechan, and the area was effectively closed to European exploration, settlement, and mining until after the Republic of Mexico was established in 1823.

Into the early nineteenth century and the period of Mexican rule until 1848, development in the Colorado Desert remained sparse. The Romero Expedition was undertaken during this time (between 1823 and 1826) and crossed into Cahuilla territory near the San Gorgonio Pass in 1823 and may have explored as far east as present-day Desert Center (Bean and Mason 1962). Meanwhile, early Euro-American settlers began arriving in California. Jedediah Smith blazed a new trail to California in 1826 through present-day Needles. As the migration into California continued and later boomed with the Gold Rush after the 1848 discovery of gold at Sutter’s Mill, and tensions between the settlers and Native Americans increased, the U.S. Cavalry developed camps and forts throughout the Arizona, Nevada, and California deserts to protect settlers and immigrants from hostile tribes. One of the earliest camps was Camp Calhoun, established in 1849 by the Americans on the banks of the Colorado River near present-day Yuma. In 1855, the name was changed to Fort Yuma.

5.2 REGIONAL DEVELOPMENT

Following the establishment of forts throughout the area, the California desert region again opened for exploration and settlement. As part of an effort to establish a railroad route from St. Louis to the Pacific Ocean, the U.S. government conducted a series of surveys from 1853 to 1855 to identify feasible routes. Lieutenant Amiel Weeks Whipple, a topographical engineer in the Army, was assigned the task of determining the westernmost section from Arkansas to Los Angeles. Whipple passed through Mohave territory in 1854, crossing the Colorado River near present-day Needles (Rice et al. 1996). The railroad surveys also recorded the terrain and geology of areas of the Colorado Desert. The land that includes the Project area was included in the survey in 1853 (Bureau of Land Management [BLM] 2022).

After the Treaty of Guadalupe–Hidalgo in 1848, the U.S. took control of the U.S. Southwest in the same year that gold was discovered in California. Mining camps were established in the desert as early as 1850, with the beginning of gold mining at Salt Creek in the Amargosa Desert. Along the eastern bank of the Colorado River, the town of La Paz, once known as Pot Holes, developed when gold was discovered nearby. The subsequent mini-gold rush in the area made La Paz an instant boomtown whose population peaked at 1,500 in the 1860s (Wilson 1961:25). Along the stage line between San Bernardino and the Colorado River, La Paz was an important stop, serving as the county seat for Yuma County until 1870 (Thompson 1985). The La Paz mining district yielded placer gold for only a short period, and by the end of the nineteenth century, La Paz passed from boomtown to ghost town.

The first Euro-Americans to arrive in the Colorado Desert in any numbers were prospectors hunting for the next big gold strike. Regionally, mining and prospecting activities were most intense in the mountains and high deserts of the Mojave, but small-scale mining has been a consistent feature of the Colorado Desert from the 1800s to the present day. By 1863, between “2,500 and 3,000 Americans and Mexicans were on the river between Palo Verde Valley and El Dorado Canyon,” most of them engaged in mining (Poston 1863:387, cited in Bean and Vane 1978:5–21).

In the 1820s, limited placer mining began in the eastern Colorado Desert. In the early 1800s, prospectors were some of the only Euro-Americans traveling in the California deserts, and they frequently came into conflict with Native American groups. From the 1840s through the 1880s, the U.S. Cavalry established a series of camps and forts throughout the Arizona, Nevada, and California deserts to protect settlers and immigrants from the often hostile tribes whose territories they were invading. In 1848, the discovery of gold at Sutter's Mill brought a tremendous influx of American and European settlers to California. Between 1849 and 1860, an estimated 8,000 emigrants crossed the Colorado Desert on their way to California (Laflin 1998:10). In the 1850s, some would be miners tried their luck in the eastern Colorado Desert but found very little gold. Most miners simply passed through the desert on their way to the larger strikes to the west and north.

Significant economic development of the Colorado Desert region began in the 1870's and came to fruition in the early part of the twentieth century. Development was dependent largely on two things, transportation and water. The first of these came in 1872, with the construction of the Southern Pacific Railroad from Los Angeles to present-day Indio and eventually, Yuma. The early townsite of Indio, the mid-point between Los Angeles and Yuma, was created to provide living quarters for train crews and railroad workers. A nearby Native American reservation provided some of the labor force. The first trains ran on May 29, 1876 (Pittman 1995:36). Railroad stops were built at Walters (now called Mecca), Woodspur (Coachella), and Thermal, among others. The second transcontinental railroad was completed when the Southern Pacific and the Atchison, Topeka, and Santa Fe Railroads were linked at Deming in New Mexico Territory on March 8, 1881, providing settlers relatively quick and easy access to the region.

The Southern Pacific Railroad reached Yuma on September 30, 1877. The railroad was the single most important boost to mining in the southeastern Colorado Desert, offering convenient transportation of heavy mining equipment, supplies, personnel, and bullion. By 1880, the Southern Pacific Railroad was providing regional access to gold and silver ore deposits in the Chocolate Mountains, Cargo Muchachos, and Palo Verde Mountains. When mines opened at the turn of the twentieth century, stamp mills and small tracks leading from the mines to the stamp mills were built. Mining productivity in the southeastern Colorado Desert was greatest between 1890 and 1910, with a brief resurgence in the 1930s (Morton 1977; Rice et al. 1996).

A further boost to regional development in the Colorado Desert was the rail rate war of 1887, when fares from the Missouri River to California were slashed to \$1. Advertising programs were developed to attract settlers to the West. With the railroad to transport crops and the consistently warm climate, irrigated areas in the desert were attractive places for prospective farmers of the time. Besides settlers, others were attracted to sanitariums that took advantage of the warm climate and desert hot springs at Palm Springs for health reasons.

5.2.1 Transportation

The first road through present-day Riverside County was constructed by William Bradshaw in 1862 as an overland stage route beginning at San Bernardino, California, and ending at La Paz, Arizona (present-day Ehrenberg). Early in the 1860s, Hank Brown and John Frink independently developed routes to access the gold mines in the vicinity of La Paz, Arizona (von Till Warren et al. 1980). Frink's route was an east-west road established as an alternative to the more southern Butterfield Stage route. Apparently, this was the first development across the Palo Verde Mesa, although it has since all but disappeared (von Till Warren and Roske 1981:17-18). In 1862, William

D. Bradshaw opened a route, later known as the Bradshaw Trail. This route crossed the desert to the La Paz mining district. Bradshaw also operated a ferry across the Colorado River near Providence Point, opposite a small community that would become Ehrenberg, Arizona.

The east-west overland stage route was used extensively between 1862 and 1877 to haul miners and other passengers to the gold fields at La Paz (Lyman 2004). The trail has been largely or completely obliterated and is now a 65-mile-long graded road that traverses mostly public land south of the Chuckwalla Mountains.

Bradshaw developed his road partly along Brown and Frink's previous routes, although Bradshaw's trail headed more directly east from Salt Creek Pass to the north slopes of the Chocolate Mountains. Bradshaw, like many early trailblazers, used Native American routes that predated Spanish exploration. Part of Bradshaw's Trail may have been the Coco-Maricopa Trail, which intersected the Colorado River near Blythe and may have passed south of the Project area. The Bradshaw Trail is near Corn Spring, approximately 10 miles south of the Project site (Ross 1992:129). Like many other cross-country routes, the trail became largely obsolete with the arrival of rail service in the desert and the depletion of the La Paz gold fields in the late 1870s. The railroads re-oriented the development of trails and wagon roads that connected new mining communities to major routes of transportation. Railroad stops became destinations for wagon roads, allowing points of access to develop the remote desert interior (von Till Warren et al. 1980).

The early highway system in the U.S. developed out of a patchwork of trails that later became unimproved roads and eventually were connected into an integrated system of paved routes. Early roads in the U.S. often followed prehistoric trail systems. One of the earliest transportation corridors through the Chuckwalla Valley included U.S. Highway 60/70, which is currently known as Chuckwalla Valley Road. Portions of Chuckwalla Valley Road were still unpaved as late as 1926.

Today, Interstate 10 is the major transportation corridor through the Chuckwalla Valley. The highway is the major connector between Los Angeles and Phoenix. The road was completed in 1968 and has become a major east-west corridor for travelers and commerce.

5.2.2 Mining

Mining, particularly of precious metals, was a fundamental factor in California's early economy, culture, and politics. Gold and silver mines from the mid- to late nineteenth century and the wealth that they generated were central to the influx of prospectors and settlers that transformed the former Mexican outpost into a land of plenty. The Colorado Desert's mining history, albeit less intensive than in other areas of California, similarly fostered the arrival of prospectors and the subsequent development of numerous towns and communities. Between 1849 and 1860, an estimated 8,000 emigrants crossed the Colorado Desert (Laflin 1998:10). The surge in mining activities in the early 1850s led to rapid changes in mining technology and the character of the industry.

Before the 1850s, mining activities in the Colorado Desert region were limited. Franciscan monks began hard rock and placer mining near present-day Yuma by 1780. Some of the earliest mining activity in the region occurred at Pot Holes, approximately 10 miles north of present-day Yuma. Pot Holes is named for the placer deposits that were worked there by the Spanish from 1779 until 1781 (Morton 1977:27). In the 1820s, limited placer mining occurred in the eastern Colorado Desert. These early Spanish prospectors named the Cargo Muchacho ("loaded boy") Mountains

after the gold they found there (Rice et al. 1996). These activities continued into the mid-nineteenth century.

Survey and prospecting of the mountains near Palen Lake began to increase in the 1860s. With declining results in lode mines in the Sierra Nevada, mineral exploration was being undertaken in other areas. In the 1860s, mining districts were established at La Paz and Castle Rock on the Arizona side of the Colorado River near Blythe. Miners moved into the area in the 1860s and 1870s. No large-scale mining took place in what is now Riverside County, but small-scale mining operations were present in isolated spots throughout the Colorado Desert (Caltrans 2008:18).

Prospects for mining were known to have existed in the Mule Mountains in 1861, the Big Maria Mountains, and McCoy Mountains (named for prospector William McCoy) in 1862. These mines were part of the larger Ironwood Mining District (Gunther 1984; von Till Warren et al. 1980; Vredenburgh et al. 1981). The Big Maria Mountains were originally called the Half-Way Mountains by the Ives expedition, and the Chemehuevi Mountains on maps dating to the 1860s (Gunther 1984:310–311). In addition to mines that were part of the Ironwood Mining District, the Chemehuevi Mining District included mines in the Big Marias, McCoy, and the Palen Mountains (named for prospector Matt Palen) (Gunther 1984).

Eagle Mountain (west of the Project site) was prospected by Joe Torres between the late 1870s and early 1880s. Jack Moore staked a claim with his father at the Eagle Mountains in the early 1880s. They established the Eagle Mountain Mining District for the extraction of iron, gold, and silver. They were unsuccessful in maintaining the mine, and it was abandoned shortly after it was founded. The mine was reopened in 1895 by L.S. Barnes as part of a consolidation of Joe Torres's former claims (Belden 1964).

Small-scale mining also took place in the Chuckwalla Mountains near Corn Springs. The Bryan Mine and a stamp mill were near Corn Springs between 1898 and 1900, operated by two men. Adams and Pickering processed their ore at the stamp mill and may have processed ore from other nearby mines (Vredenburgh et al. 1981). In 1909, the Chemehuevi Mountains were divided and renamed the Big Maria and Little Maria Mountains. Mineral deposits at these mines included gold, silver, fluorite, manganese, copper, gypsum, and uranium (Warren et al. 1981).

Mining continued at Corn Springs into the early twentieth century. The "Hotel de Corn Springs," a small house nearby, shows evidence of approximately 20 to 40 visitors per year. Two prospectors are known to have lived near Corn Springs, Terry Jones lived there until his death in 1923, and Gus Lerder (the so-called "Mayor of Corn Springs") lived there until his death in 1932 (Vredenburgh et al. 1981).

With the onset of World War II (WWII), the demand for steel increased. However, the iron ore in the Eagle Mountain claims was protected as part of the Joshua Tree National Monument. Henry J. Kaiser had a steel mill at Fontana and the Vulcan iron mine near Kelso that supplied materials for his west coast shipyards. Kaiser purchased the mine and succeeded in having the boundaries of Joshua Tree Monument shifted to exclude Eagle Mountain. Kaiser constructed a rail line that connected to the Southern Pacific Railroad, and ore mining commenced in 1948. By 1971, the Eagle Mountain Mine produced 90 percent of California's iron (USDI Bureau of Mines 1971).

At its height, the mine employed more than 4,000 people, making it the largest employer in Riverside County. The town of Eagle Mountain included schools, fire and police departments, facilities, 416 rental houses, 185 trailers, 383 dormitories, and 32 apartments (Bull et al. 1991). Kaiser Steel needed to provide medical care for the residents of Eagle Mountain, and medical

care provided by the company eventually became what is today Kaiser Permanente (Love 1994). The mine closed in 1983 due to economic factors and competition from abroad.

5.2.3 Water Conveyance

The Colorado River Aqueduct (CRA) is a water conveyance system operated by the Metropolitan Water District of Southern California. Construction began in 1933 and water first flowed through the system in 1941. The CRA system carries Colorado River water, impounded at Lake Havasu on the California-Arizona border through, over, and across mountains and desert to the coastal and inland valleys of southern California. The CRA stretches 242 miles from Parker Dam to Lake Mathews (formerly known as Cajalco Reservoir). Water from Lake Mathews was then distributed to local water districts in the Los Angeles Basin and Lower Santa Ana River drainage. The system is composed of two reservoirs, five pumping plants, 63 miles of canals, 92 miles of tunnels, and 84 miles of buried conduit and siphons. The nearest pump station is the Eagle Mountain Pump Lift, 7 miles north of Desert Center.

The Project involved ingenious engineering solutions and newly introduced equipment at the time of its construction. It also employed over 35,000 people during an eight-year span of construction, and as many as 10,000 people at one time, making it Southern California's single largest work opportunity during the Great Depression (Gruen 1998). Due to its many engineering merits, the CRA has been named a National Historic Civil Engineering Landmark by the American Society of Civil Engineers. Today, it is one of the principal water supplies for Southern California.

In building the CRA, Metropolitan chose an aqueduct route that required four pump lift stations. A fifth pump lift station was added when the Granite Mountains tunnel could not be easily holed-through. Each station was built with three pumps and the capability for expansion to nine pumps (Gruen 1998). Large amounts of electricity were required to operate the pumps, which necessitated the construction of the transmission lines from Hoover Dam to the pump stations.

Construction of the transmission lines to power the system began in 1934 with the grading of dirt roads to provide access to the tower locations. The line is constructed of single H-frame steel towers with cross supports. The contractor for construction of the transmission lines was Fritz Ziebarth of Long Beach. He established a construction camp at Camino where the steel towers were assembled using steel made in San Francisco. The steel was sent by rail to Goffs on the Santa Fe Railroad line and then by truck to Camino. Reinforced concrete footings were poured at each tower location and then the towers were erected on the footings. Erection of the towers began in February 1936 and the line from Hoover Dam to Iron Mountain Pump Lift was completed by the end of 1936. Construction of the line from Iron Mountain Pump Lift to Hayfield Pump Lift was completed in July 1937 (Gruen 1998).

5.2.4 Desert Training Center (DTC/C-AMA)

Evidence of military training is present across the Colorado Desert. George Patton's Desert Training Center/California-Arizona Maneuvers Area (DTC/C-AMA) and Operation Desert Strike have left many artifacts, features, and sites across the region. The Project is near the western edge of the where previous military training took place, evidence of which can be found within the vicinity of the Project area.

During WWII, shortly after the bombing of Pearl Harbor and the U.S. entry into the war, Lt. General Lesley J. McNair, Director of Army Ground Forces and Combat Training for the War

Department, decided to establish the DTC in southeastern California, Arizona, and Nevada to train U.S. troops in the event that they would be sent to North Africa to fight. It would be the first simulated theater of operations in the United States (Meller 1946: Introduction). Major General George S. Patton, Jr., the first DTC Commanding General, was tasked with overseeing the transformation of the desert stretching from the California/Arizona border and the Mexican border, north to the southern part of Nevada. Participation in large-scale maneuvers was a standard practice for all divisions and corps prior to deployment to active theaters of operation.

General Patton scouted the area by plane, jeep, and horseback beginning in March 1942. The area was suitable for training because of its openness, established railroads and highways, and the presence of several military installations throughout the region (Henley 1992:5–7). The DTC was also suitable because it contained a variety of terrain types and no large population centers (Howard 1985:273–274). Patton also investigated water supplies, meeting with the Water District Office in Los Angeles to ascertain what facilities would be available (Meller 1946:2). He brokered agreements with the Southern Pacific Railroad to use the only existing tracks between Indio and Yuma, and with the Southern California Telephone Company and the Coachella Valley Home Telephone Company to set up three talking circuits for use at the DTC. Since General Patton wanted no female telephone operators at any of the camps, the Southern California Telephone Company Planned on a private branch exchange which would be controlled by Whitewater, approximately 60 miles from the base camp. (Meller 1946:2). He was “unstinting in his praise of the area,” and found it “probably the largest and best training ground in the United States” (Meller 1946:3). However, the first reaction of the troops was “distinctly unfavorable” (Meller 1946:11).

The DTC was the largest training installation ever created (approximately 16,156 square miles). Its purpose was to train soldiers for the harsh conditions of North Africa, as well as to field test equipment and supplies. The original facility extended from the Colorado River on its eastern border to just west of Desert Center, California and from Searchlight, Nevada in the north to Yuma, Arizona in the south. After 19 months of training and expansion, the DTC was officially named “The Desert Training Center California-Arizona Maneuver Area” (DTC/C-AMA) and had grown to an area twice the size of Maryland. Patton established his base of operations at Shaver’s Summit (present-day Chiriaco Summit) at Camp Young in the Chuckwalla Valley. Troops began arriving at the DTC/C-AMA in April 1942 and endured harsh physical training that included restricted access to water, physical endurance training, and lack of sleep. Life at the DTC/C-AMA was so difficult that the officers and enlisted men came to refer to it as “the place that God forgot” (Henley 1992:22–24).

Patton commanded the DTC/C-AMA until July 1942, when he was placed in charge of “Operation Torch,” the Allied invasion of North Africa. Patton had developed tactics at the DTC/C-AMA that he would use in his campaign. When Patton was replaced by Major General Alvan Gillem, Jr., 12,000 troops were stationed at the DTC/C-AMA. As WWII continued, that number grew to more than 200,000 troops by May 1943 (Henley 1992:25). The need for troops around the world during WWII meant that the various units stationed there were to be sent to places other than North Africa. Considering this need, the DTC/C-AMA was closed in April 1944.

With the end of WWII came a reduction in military activity in the Colorado Desert region. Civilian buildings and airports converted for use by the military during the war years returned to civilian use. Surplus military barracks were recycled for a variety of uses throughout the local communities. The primary post-war activities in the area were mining and agriculture. Agricultural

practices were primarily confined from the middle to the western portion of the county, but there was also agricultural development in the Palo Verde Valley due to its location near the Colorado River.

The type of resources most likely to be encountered in the Chuckwalla Valley area of the DTC/AMA include foxholes, tank tracks, rock alignments, and trash scatters associated with the training activities. These locations include Maneuver Areas, the Desert Center Airport, the Desert Center Observer's Camp, the 18th Ordinance Battalion Campsite, the Small Arms Range-Desert Center, the Desert Center Supply Depot, and the Desert Center Evacuation Hospital. These use areas are discussed below.

Maneuver Areas: The Chuckwalla Valley

The greater Chuckwalla Valley was a maneuver area consisting of 11,520 acres and was considered "contaminated" immediately after the war. Units moved across this valley in maneuvers, and bivouacs and defensive positions were established in many locations. The valley, with its many washes and arroyos surrounded by rugged mountains, made an apt place for training for war in North Africa. These washes, referred to as wadis overseas, were often places of tactical importance as they allowed for the concealment of a variety of types of units. They could also serve as an impediment to rapid movement. Several passes adjacent to this valley also served as good training grounds for movement, attack, and defense.

Desert Center Airport

The Desert Center Army Airfield was first known as the Desert Center Airdrome and was operational beginning in the winter of 1942–1943. The airfield was a sub-base of Thermal Army Airfield, as a support base for the Air Technical Services Command. The airport contained two paved runways, each measuring 5,000 ft by 150 ft, along with taxiways and a parking apron. More than 40 buildings were constructed at the airfield, including an operations building, powerhouse, control tower, pump house and well, and a 10,000-gallon water tower. Other buildings included officer's quarters, mess hall, dispensary, headquarters, recreation hall, link trainer building, hangar, and various supply buildings. Several crash sites are known to exist in the DTC/C-AMA, particularly in those areas close to air facilities.

Air-to-ground ranges are also considered a part of air facilities. For the most part, air-to-ground gunnery practice focused on the toe of mountains. Bombs and .50-caliber shell casings from these activities have been found in the years following the Army's departure from the area. There were likely range markers established on these facilities, along with targets for the aircraft to fire upon.

Desert Center Observer's Camp

A camp was established immediately north of the small town of Desert Center, along the road to Camps Coxcomb and Iron Mountain. It was here that the maneuvers were evaluated and deficiencies pointed out. The camp contained 112 tents, five shower buildings, and eight latrines. The camp was also supplied with water through a well and pump along with a 4,000-gallon storage tank. The land is on the north side of Interstate 10 between Chiriaco Summit and Desert Center as well as immediately to the east of Eagle Mountain Road.

18th Ordnance Battalion Campsite

Approximately 5 miles east of Desert Center, the 18th Ordnance Battalion campsite appears to encompass a watering point. The only structures reported include a capped well, a 50,000-gallon water tank, and a wooden tower. Tent stakes and other refuse have been found in an area that relate to this camp.

Small Arms Range Desert Center

A small arms range was established southeast of the town of Desert Center on the north end of the Chuckwalla Mountains. The type of weapons used here or the units that used it are unknown. In addition to established ranges, troops also developed their own more informal ranges while out on field exercises. In these cases, officers chose a suitable place with appropriate safety precautions (particularly natural features that formed a backstop) and established a firing position for their troops to use live ammunition.

Desert Center Supply Depot / 496th Medium Ordnance Company

The mission of the 496th MEDCO was to supply Camp Desert Center units with weapons and ammunition, including at times their procurement and maintenance. Along with the Quartermaster Corps and Transportation Corps, it forms a critical component of the U.S. Army logistics system.

Quartermaster Truck Company

The Quartermaster Truck Company provided motor vehicle transportation for cargo or for personnel. Its personnel and equipment were required to be ready to haul any kind of cargo, any time of day or night, to and from any place that higher authority may direct.

Ammunitions Depot No. 1

An ammunition depot was established northeast of Desert Center, although its location has not been examined or confirmed.

Desert Center Evacuation Hospital

An evacuation hospital was established near the town of Desert Center on both sides of the road to Eagle Mountain. The hospital site remains in good condition today and retains its basic design and layout. Many rock-lined walkways, roads, symbols, tent sites, and other activity areas remain in place. Artifacts are dispersed across the site as well as in dumps. Artifacts include cans, bottles, bandage spools, glass, wood, and miscellaneous metal. In addition, a motor pool for the hospital site remains. Rock alignments, military vehicle parts, and a solvent basin mark this location today.

Although no formal camps were in the current Project area, facilities associated with the DTC/C-AMA are nearby. Perhaps the most prominent of these is one of the main roads leading from Camp Coxcomb toward Blythe. The Red Route, as it was known, is listed on historic DTC/C-AMA topographic maps of the general area from 1943 (namely Palen Mountains). It runs from Camp Coxcomb along the base of the Palen Mountains to the east of the Palen Lake playa. The road is visible from existing aerial images of the mountains. Red Route may have been used for the transport of troops or tanks between maneuver areas.

Desert Strike

One brief military training exercise, known as Desert Strike, took place in the desert maneuver area in May 1964. Amidst the nuclear arms race, the U.S. Strike Command conducted the joint Army and Air Force field training exercise for the major combat organizations and their support units in employing tactical nuclear and conventional weapons (Desert Strike undated:312). Army and Air Force troop units were trained in passive and active tactics, and concepts and procedures for joint operations.

The exercise was a two-sided enactment, with fictitious world powers “Calonia” and “Nezona” sharing a common border at the Colorado River. The premise of the conflict between these two entities, each led by a Joint Task Force, was a dispute over water rights. Major tactical operations during the exercise included deep armor thrusts, defensive operations along natural barriers, counterattacks including airmobile and airborne assaults, and the simulated use of nuclear weapons. The Air Force provided fighter, air defense, interdiction, counterair reconnaissance, and troop carrier operations in support of both joint task forces (Desert Strike undated:316). In the first phase of Desert Strike, Calonia initiated mock battle with a full-scale invasion of Nezona. A new concept for military river crossings was put into operation during this invasion, accomplished with a combination of assault boats, amphibious armored personnel carriers, ferries, bridges, and fords at eight major sites across a 140-mile-long stretch of the Colorado River. The practice of attack and counterattack continued into a second phase, in which simulated nuclear strikes and airborne assaults were traded between the forces.

Desert Strike “proved once again the lessons [that] had been learned in WWII when this same area had been part of the great California-Arizona Maneuver Area,” with one commander, General Bastion, praising the extensive DTC/C-AMA, as it “provided freedom of maneuver and reduced the dependence of units on existing road nets. The long distances involved, the possibility for uninhibited movement, and the lack of civilian population centers as an alternate supply source provided extremely fine tests in logistics, communications, and maintenance” (Desert Strike undated:325).

The magnitude of the troop movements and the required supplies and equipment created one of the largest operations that occurred in the United States since WWII (Desert Strike undated:319). The nature of the Desert Strike joint training exercise proved cumbersome and somewhat controversial. The total cost of Desert Strike was \$35,342,493, with the participation of 89,788 troops (Desert Strike undated:323). The U.S. Continental Army Command initially critiqued the operation as being inefficiently planned because of poor timing in the unit training cycles, equipment degradation in the difficult environment, and a lack of value in troop training for the time and cost (Desert Strike undated:321). After Desert Strike, large-scale joint field training exercises were discontinued in the DTC/C-AMA.

5.2.5 Agriculture/Ranching

Agriculture became an important industry by the late 1850s. Homesteading formed the foundation for California’s agricultural economy in the nineteenth century, and the official passage of the Homestead Act in 1862 opened vast areas of the public domain to private citizens. The Desert Land Act of 1877 also promoted the acquisition of open tracts of land, with an entitlement to 640 acres for each applicant. Applicants were primarily speculators. Generally, lands that fell under this act were marginal for sustained agriculture. Transforming arid land into productive farming and grazing lands was the key. Although agriculture became an important industry in the

Palo Verde Valley near Blythe and the Colorado River, significant agricultural development did not take place near Desert Center.

Land claims continued into the twentieth century, with numerous Desert Land Entries in the Project area dating to 1909 and 1910 (BLM 2022). However, most twentieth-century claims on residual federal lands were poorly suited for agriculture. Several claims were abandoned or rejected. Many Desert Land Entries were never improved or established due to inadequate water and harsh conditions. Lands available for homesteading also became increasingly marginal over time, requiring ever-larger tracts to achieve success. Large-scale farming came to dominate the regional marketplace.

Jojoba Farming

In the 1950s, jojoba oil (a liquid wax) was found to almost duplicate sperm whale oil and had a wide variety of potential uses, from a high-grade industrial lubricant to a scalp and skin conditioner. But the jojoba supply was so limited and production costs so high that it remained an untapped resource. Jojoba industry got its start in the 1970s, coinciding with the energy crisis that made alternative oils attractive, and the decline in commercial whaling that brought about the need for alternative oils in cosmetics. In 1972, the Office of Native American Programs in the U.S. Department of Health, Education and Welfare sponsored a Jojoba Research and Development Project in southern California and Arizona. Approximately 87,000 pounds of seeds were gathered and sold by Native American tribes of both states (Sheerbrooke and Haase 1974). A decade later commercial farmers began to cultivate the jojoba plants in the 1980s.

Approximately 6,000 acres of jojoba was planted in the Chuckwalla Valley. Most of the land used for jojoba production was acquired from the BLM under their now defunct Desert Land Entry program. Under that program, a person could purchase a minimum of 40 acres for \$2.50 per acre, make improvements within a year and gain ownership of the land. Entrepreneurs from the U.S., Mexico, South America, South Africa, and Australia sowed large crops of wild jojoba seed from the Sonoran Desert. Today, all farms have been abandoned except LaRonna Jojoba Company, a research/mother block farm of a variety of cultivars.

6 RESEARCH DESIGN

A research design is an explicit statement of the theoretical and methodological approaches to be followed in a cultural resources study (OHP 1990). Inventory studies, such as this one, rely on data from archaeological and historical resources visible on or above the ground surface with supplemental information provided by archival research and literature review (OHP 1991). In such studies, the focus of the research design is to ensure the adequacy of the identification effort. Should any identified resources within the Project area have sufficient age and integrity to warrant consideration for CRHR eligibility, then relevant research questions and data requirements may be posed to evaluate the significance of the resource and make recommendations regarding determinations of eligibility.

The archaeology of this area is complex, as it encompasses an extensive time span, numerous Native American and Euro-American cultures, and dramatic environmental changes. The following section presents research domains that encompass this vast temporal span, from the earliest prehistoric periods to the more recent historic periods.

6.1 RESEARCH QUESTIONS

Archaeological investigation generally contributes to our understanding of the past by describing, recording, and reconstructing past lifeways; testing hypotheses regarding activities in the past; and reinforcing, altering, or challenging the current assumptions about the past (Little and Seibert 2000:29). To do this, research questions are identified to structure evaluations. The research questions are separated into prehistoric and historic period subcategories.

6.2 PREHISTORIC RESEARCH DOMAINS

6.2.1 Chronology

Chronological information can be used to understand the trajectory and rate of cultural change and establish relationships among sites at both a local and regional level. This portion of the Colorado Desert has been occupied for more than 6,000 years based on known archaeological data generated for other renewable energy projects (Mirro and Clark 2016). Evidence for Archaic Period occupations has been discovered in the vicinity of the Project area (see AECOM 2016). As such, the further development and refinement of chronological sequences of prehistoric peoples in the Chuckwalla Valley region is an important research emphasis for the Project.

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

Chronology building continues to be a major research emphasis in the Colorado Desert. Most of the sites known in the region are surface sites consisting of small quantities of lithic and ceramic artifacts. Stratified sites of any kind are very rare in the Colorado Desert and along the Lower

Colorado River (Cleland and Apple 2003; Schaefer 1994b). Thus, various factors have conspired to hinder the development of an adequate cultural chronology of the region.

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

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

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

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

The signature archaeological elements of Late Prehistoric occupations include human cremation (in place of inhumation), small projectile points (indicating the replacement of the atlatl and dart by the bow and arrow), and ceramics. Well-dated sites in the Coachella Valley support the proposition that ceramics were not widely used until ca. A.D. 1000, although the tradition is presumed to have been present on the Colorado River by ca. A.D. 500. One aspect to be considered in the introduction of ceramics is the attraction of Lake Cahuilla for groups living on the Lower Colorado River; the lake undoubtedly afforded greater opportunity for cultural interaction, which may have included the sharing of Colorado River ceramics and ceramic traditions. Chronometric dating of archaeological deposits that contain diagnostic Late Prehistoric remains, as well as Late Holocene deposits that lack some or all these diagnostic materials, will

be the key to refining the regional chronology. Relative dating, for instance, based on intra-site vertical superposition or inter-site horizontal contrasts, may also shed light on the sequence in which the Late Prehistoric innovations occurred.

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

Research Questions

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

Data Requirements

The types of data needed to address these questions will derive primarily from field analysis of surface artifacts that are temporally diagnostic, including projectile points, beads, milling tools, or ceramics that have stylistic attributes. Degree of patination on lithic materials may also be indicative of age. Later sites within this period also show greater richness of the types and functions of lithic artifacts within their assemblages (Schaefer 2003). The presence of obsidian artifacts (i.e., Obsidian Butte materials) may also provide chronological information. This study is employing a non-collective strategy. While collection of radiocarbon samples (i.e., charcoal, or other organic material) would be beneficial in addressing questions related to chronology, survey and evaluation will not result in the collection of radiocarbon samples from the Project area.

6.2.2 Settlement and Land Use

Environmental conditions influencing prehistoric use and occupation of the Project area and surrounding regions changed over the millennia. Paleoenvironmental, paleobotanical, and

geomorphologic investigations suggest that the climate, vegetation, and landscape of the Southern California region changed dramatically at the end of the Pleistocene, from wet and cool conditions to a drier and warmer regime. In general terms, the desert interior would have been more productive and more attractive to prehistoric groups than the inland areas farther to the west during the Early Holocene (Mirro and Clark 2016). Human responses and adaptations to those changing environmental conditions would most likely be seen in changes in subsistence and settlement practices. Subsistence and settlement systems of hunter-gatherer societies are flexible, ranging in a spectrum from “foragers” to “collectors” with foragers moving the group to resource patches and collectors moving resources to residential areas (Binford 1980). Archaeological sites that exhibit a rich, diverse, and dense collection of artifacts and features can potentially be indicative of a more permanent habitation site. Archaeological sites with more limited material culture could indicate the location of a temporary or seasonal encampment or site. It is also important to note that the development of modern infrastructure (i.e., roads, gas lines, bridges, etc.) have altered the hydrographic features of the desert landscape. This may have the effect of obscuring the locations of prehistorically favorable washes that would have supported a variety of plant and animal resources. Researchers should consider these landscape alterations in examining prehistoric settlement and land use issues.

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

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

The Project is in what has been categorized as a resource procurement area for highly mobile desert groups and the more sedentary Colorado River populations. According to current knowledge, the area was used most intensively in the Late Prehistoric and Protohistoric periods (Singer 1984). Nevertheless, archaeological research in the Colorado Desert has only begun to address the use of low-yield desert pavement regions with few resources, minimal evidence of human habitation, and no nearby water (e.g., Flenniken and Spencer 2001; Singer 1984).

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

Research Questions

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

Data Requirements

Data requirements involve accurate mapping of all resources, including point provenience mapping of loci, features, and diagnostic artifacts identified within sites. Documentation of artifact types and counts will support analysis of relative site richness, and specific constituents of artifact assemblages could allow sites to be interpreted and categorized by function. Additionally, any potential food remains, such as bone and shell, should be documented and taxa identified as specifically as possible. Any potential stream channels noted should be mapped and analyzed for correlations with the locations of other resources.

6.2.3 Technology

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

production, use, refurbishment, and disposal aids in the understanding of more general questions regarding group territoriality, mobility, settlement patterns, social organization, trade, and exchange. For example, research suggests that highly mobile peoples often make new tools to replace broken or exhausted tools when they encounter high-quality toolstone (Kelly and Todd 1988). In doing so they discard curated tools, often from distant sources, and create a concentration of tool-making debris.

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

Unlike most flaked stone tools, which are relatively lightweight and easily transported, ground stone tools are heavy. Mobile groups rarely carry ground stone tools with them as they move from camp to camp, preferring to leave the tools behind at habitation locales where they intend to return (AECOM 2016). Thus, ground stone tools are often excellent indicators of relatively intensive or long-term habitation. In addition to studying ground stone tool use and disposition, archaeologists have recently investigated the production of ground stone tools along the Lower Colorado River (e.g., Huckell 1986; Schneider 2006). Several quarries have been identified along the Lower Colorado and Gila rivers (Ezzo and Altschul 1993; Schneider and Altschul 2000). Of these, the Bullhead City quarry is approximately 100 miles north of the Project area, on the Colorado River at what is known as Big Bend. Prehistoric communities mined the quarry for a prized stone material, variously referred to as alkali-olivine basalt and andesite, which was particularly suited to the manufacture of metates (Schneider 2006). Huckell (1986) notes that the Mohave appear to have returned to the Bullhead City quarry for several centuries. Huckell further argues that the distinctive and finely made squared metates of the Mohave indicate a specialized production process geared to regional distribution and exchange, rather than simple production for personal use (1986).

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

Research Questions

- Can re-manufacture of earlier projectile point forms be identified in any recovered projectile points? If so, are such artifacts found in sufficient numbers to skew chronological data derived from projectile point styles?
- Does the lithic assemblage present at sites in the Project area reflect material acquisition and initial reduction, or subsequent tool manufacture or re-shaping?

- Do prehistoric sites identified in the Project area show a preference of locally accessible materials for the manufacturing or processing of lithic tools? If so, are there any sites that exhibit a combination of local and imported lithic material?
- Is it possible to determine site functionality based upon the stages of lithic reduction, as determined by the analysis and documentation of debitage, tools, and other implements present?
- Can diagnostic lithic tools, such as projectile points, bifaces, unifaces, or other such items, be identified at prehistoric sites and can these artifacts provide information regarding manufacturing techniques or technology that is believed to be of local origin? Are there diagnostic indicators of technological manufacture techniques or objects that might originate outside of the region and are therefore related to the importation of ideas? If imported, can the region of origin be identified?
- Is there a correlation between material selection and artifact function?
- Are different core reduction technologies apparent in the lithic assemblages examined? How are these related to the size and shape of the source materials chosen for reduction? What regional patterns of material exploitation are suggested by comparing contemporary assemblages across sites?
- Is there any evidence that scatters of flaked stone are the result of ritual activities?
- What types of flaked stone tools are present? Are the tools expedient types, suggesting that they were manufactured, used, and discarded on site, or were they curated types that were intended for later use elsewhere? What regional patterns of tool production and use are suggested by comparing contemporary assemblages across sites?
- Are ground stone implements present that may indicate repeated or relatively intensive habitation? Do the type and size of these implements provide evidence of the plants that were being processed or the seasons in which area was occupied? What regional patterns of ground stone tool production and use are suggested by comparing contemporary assemblages across sites?

Data Requirements

The data required to address these questions would be generated from the diagnostic stylistic attributes of flaked stone artifacts such as projectile points. Additionally, tallies of lithic artifacts by type would be required to assess the relative richness of assemblages at different sites. The reduction stage of each artifact should be noted so the relative prevalence of percussion reduction as opposed to pressure flaking can be analyzed. Additionally, the specific material lithic items are made from should be documented.

6.3 HISTORIC PERIOD RESEARCH DOMAINS

Research domains for historic period resources include military use, transportation, regional development, historic settlement types, and mining. Built-environment resources commonly associated with this period are diverse and could include earthen off-road roadways and metal and wooden pole transmission lines. Typical historic-period archaeological sites that may be

present in the Project area include refuse scatters and features associated with military use of the area.

6.3.1 Historical Settlement

The first use of the area during the historic period was associated with mining. Due to the remoteness and limited accessibility of resources, permanent settlements were few and far between. Despite this, the ever-prominent search for mineral wealth potentially hidden in the remote areas of California brought individuals, as well as more organized mining ventures, to the Colorado Desert. Eventually, the construction of access routes, the establishment of a prosperous mining industry, and the development of essential utilities such as water and electricity during the late nineteenth and early twentieth centuries encouraged an increased settlement of the desert. Beginning in the 1870s, the development of the valley for agriculture spurred settlement.

Research Questions

- Do historic period archaeological sites in the Project area represent early historical settlement, such as homestead structures or features, or historical agricultural pursuits within the Project area?
- What specific activities were performed at these sites? Did these activities change over time?
- What is the age of these sites? How long were these settlements occupied and when were they abandoned?
- How do agriculture and homesteading sites in the Project area reflect or diverge from regional or national trends?
- What was the socioeconomic status, ethnicity, or national origin of the homesteaders?

Data Requirements

- Chronological data from temporally diagnostic artifacts that can be used to assess the age of the sites;
- Artifact assemblages and features to identify the types of activities that were associated with each site;
- Artifacts (e.g., culinary artifacts, food preparation items, food containers and remains, clothing/grooming, personal hygiene, and medicinal items), that may be used to examine the social, ethnic, or economic background of the residents of the sites; and
- Documentary information in the form of U.S. Geological Survey historical maps, BLM GLO township plat maps, BLM land patent records, master title plat maps, and County assessor records to address questions of land ownership.

7 METHODS

The cultural resources assessment involved both background research and fieldwork. The sources consulted as part of the background research are described below. In addition, the Native American Heritage Commission (NAHC) was consulted, and outreach was conducted with tribes that may have knowledge of cultural resources in the area. Fieldwork consisted of an intensive pedestrian survey of the entire Project area.

7.1 BACKGROUND RESEARCH AND LITERATURE REVIEW

PaleoWest compiled existing cultural resources data, which had been acquired as recently as December 2021, from a number of nearby projects as part of the background research and literature review. These projects include the Oberon Solar Project, Desert Harvest Solar Farm Project, Desert Sunlight Solar Farm Project, Athos Renewable Energy Project, and Arica and Victory Pass Solar Projects. The review included a one-mile buffer around the proposed Project area. Tables listing all previously documented cultural resources and studies identified during the search are included in Appendix A. Confidential maps showing the location of known cultural resources and previous studies are included in Appendix B, Figure B-1, and Figure B-2, respectively. Site forms for all previously recorded resources in the records search area are also included in Appendix B.

PaleoWest staff examined additional sources during the cultural resource literature review and records search, including the National Register of Historic Places (NRHP), the CRHR, the OHP's Archaeological Determinations of Eligibility, the OHP Directory of Properties in the Historic Property Data File, historical aerial images and topographic maps, and BLM GLO land patents and survey plats.

7.2 NATIVE AMERICAN HERITAGE COMMISSION

A Sacred Lands File search request was sent to the NAHC for the Project. The objective of the Sacred Lands File search was to determine if the NAHC had any knowledge of Native American cultural resources (e.g., traditional use or gathering area and place of religious or sacred activity) within the immediate vicinity of the Project area. A response was received on June 21, 2022. The response indicated that no sacred lands listed in the Sacred Lands File are present in the Project area and provided a list of 22 Native American individuals/organizations that may have unique knowledge of cultural resources in the area (Appendix C). A Native American outreach program was conducted for the proposed Project, and persons on the list were contacted. The purpose of the outreach was to solicit tribal participation on the pedestrian survey and information regarding Tribal resources of concern within or adjacent to the Project area. The Native American scoping program and a summary table to date are included in Appendix C.

7.3 FIELD METHODS

The primary goal of a pedestrian survey is to facilitate the identification and documentation of cultural resources, the analysis of their cultural constituents, and the evaluation of their eligibility to the CRHR. It was anticipated that the results obtained from the survey would not only allow for the potential Project effects to be better assessed but would also provide data with which to confirm or elaborate on our current understanding of the prehistory and history of the region.

From a management perspective, the ability of specific resources to address research questions is one of the criteria used to evaluate CRHR eligibility, in addition to the integrity of the resources.

The Phase I survey methods followed County and BLM standards and consisted of parallel pedestrian transects spaced no more than 15 m (33 ft) apart when allowed by terrain and vegetation. Survey crews navigated the transects using georeferenced PDF maps on tablets using the Avenza application and handheld global position system (GPS) units. Field iPads included all Project maps and relevant site forms. All resources were recorded with an iSX-Blue data collector GPS unit with sub-meter accuracy that was compatible with iPad-based ESRI Collector for ArcGIS web application via Bluetooth. No artifacts were collected during the fieldwork effort.

The current conditions of the Project area were documented with digital photographs that included general views of the topography, vegetation density, and other images. A photograph log was maintained to include photograph number, date, orientation, photograph description, and comments. The surveyors carefully inspected all areas likely to contain or exhibit sensitive cultural materials to ensure discovery and documentation of visible, potentially significant cultural resources within the Project area. In particular, the survey crews carefully inspected any subsurface exposures, including rodent burrows and cut banks.

All cultural materials and features of an eligible age were recorded during this survey in accordance with OHP guidelines (OHP 1995). Materials and features that could not be accurately dated in the field were also recorded. Historic period indicators may include standing buildings, objects, structures such as sheds, roads and power transmission lines, or concentrations of materials at least 45 years in age, such as domestic refuse (e.g., glass bottles, ceramics, toys, buttons, and leather shoes), refuse from other pursuits such as agriculture (e.g., metal tanks, farm machinery parts, and horseshoes) or structural materials (e.g., nails, glass window panes, corrugated metal, wood posts or planks, metal pipes and fittings, and railroad spurs). Prehistoric site indicators include areas of darker soil with concentrations of ash, charcoal, animal bone (burned or unburned), shell, flaked stone artifacts, ground stone artifacts, ceramics, or even human bone.

7.3.1 Site and Isolated Occurrences Definitions

The OHP's *Instructions for Recording Historical Resources* (OHP 1995) defines a site as the location of a prehistoric or historic-era occupation or activity. A district is defined as possessing a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. The term "structure" is used to distinguish from buildings or those functional constructions usually made for purposes other than creating human shelter.

For the purpose of this study, a "site" was defined as a location that has material evidence of past life, activities, and culture. The California standard is to record any cultural resources over 45 years of age, despite the NRHP threshold of 50 years of age. In general, an archaeological site should exhibit at least one of the following:

- One or more features
- Five or more artifacts in clear association within a 25 square meter (5 × 5 meter) area

- Fewer than five artifacts that have data potential or are “diagnostic” (i.e. fluted points)

Examples of archaeological sites found during this survey include prehistoric lithic scatters and historic-period refuse scatters, roads, agricultural remnants, and military related features. Resources separated by more than 30 meters or located on different landforms were recorded as distinct sites or as isolates, unless other indicators suggested a close association. Isolates were defined as fewer than five artifacts that are greater than 45 years old.

7.3.2 Field Conditions

The entirety of the Project area consists of abandoned agricultural fields that were once used for the cultivation of jojoba (Figure 7-1 and Figure 7-2). The area is relatively flat with a slight east-northeast aspect and a slope of 1-2 degrees. During the survey, the area was accessed via existing dirt roads that extend off State Route 177/Rice Road and Kaiser Road.

The ground visibility of much of the Project area ranged from good to excellent (70-90 percent). Little vegetation was present in the fallow fields, which were characterized by north-south oriented windrows with scattered dead jojoba shrubs. Drainage areas adjacent to the old jojoba fields exhibited higher densities of vegetation which partially obscured the ground surface. Vegetation in these areas included, but is not limited to remnant jojoba, ironwood (saplings and isolated mature specimens), palo verde, cheese bush, brittle bush, jimson weed, indigo, burro bush, smoke tree, rare cholla, and other unidentified species.

7.3.3 Geoarchaeological Sensitivity Assessment

Review of geoarchaeological assessments from nearby projects, including the Oberon Solar Project (Tennyson and Knabb 2021a), Arica Solar Project (Tennyson and Knabb 2021b) and Victory Pass Project (Tennyson and Knabb 2021c) indicate that the buried sensitivity of sediments in the Project area vary based on geomorphology and age of underlying deposits. The Project area is located on fans of the Eagle Mountains. Most sediment in the vicinity of the proposed Project is sourced from Big Wash, where it presently debouches from a fanhead trench as a series of coalescing inset fans on the medial and distal piedmont. The surface of this portion of the Chuckwalla Valley is highly alluviated with braided drainages incised into younger sandy Holocene remnant surfaces. These areas are expected to be characterized by relatively young sediments of late Holocene age that were deposited by sheet floods and the intricately braided stream system. The low energy of deposition in these areas suggests a moderate to high degree of potential preservation of buried archaeological deposits in channel settings though potential preservation would be low to moderate within the channels themselves due to higher energy deposition. Additionally, sites may be shallowly buried by coppice dunes and thin sand lenses.



Figure 7-1. View of the fallow jojoba fields within the Project area, facing northeast.



Figure 7-2. View of the Project area showing eroded access road, facing east.

8 RESULTS

8.1 BACKGROUND RESEARCH AND LITERATURE REVIEW

8.1.1 Previous Cultural Resources Investigations

Existing cultural resources data indicate that 13 previous investigations have been conducted and documented within one mile of the Project area since 1977 (Table 8-1). Eight of these studies include portions of the Project area. In total, approximately 85 percent of the Project area has been previously inventoried for cultural resources.

Table 8-1. Previous Cultural Investigations within 1 mile of the Project Area

Report No.	Year	Author(s)	Title	Within Project area
RI-00220	1977	Cowan, Richard, and Kurt Wallof	Interim Report – Fieldwork and Data Analysis: Cultural Resource Survey of the Proposed Southern California Edison Palo Verde-Devers 500kV Power Transmission Line	No
RI-00221	1982	Westec Services	Cultural Resource Inventory and National Register Assessment of the Southern California Edison Palo Verde to Devers Transmission Line Corridor (California Portion)	No
RI-00222	1977	Wallof, Kurt and Richard A. Cowan	Final Report: Cultural Resource Survey of the Proposed Southern California Edison Palo Verde-Devers 500KV Power Transmission Line	No
RI-00982	1980	Harvey L. Crew and James E. Fitting	An Archaeological Survey of Geothermal Drilling Sites in Riverside County, California	Yes
RI-00982	1980	Crew, Harvey L.	An Archaeological Survey of Geothermal Drilling Sites in Riverside County, California	Yes
RI-03949	1994	Love, Bruce	Addendum Cultural Resources Reconnaissance: Eagle Mountain Pumped Storage Transmission Corridor, Riverside County	Yes
RI-08417	2002	Giacomini, Barb, Matt Murray, and Noah Stewart	A Cultural Resources Inventory of Selected Properties along Public Routes from Twenty-Nine Palms, California to Yuma Proving Ground, Arizona, in Support of Operation Desert Scimitar 2002: First Marine Division, Camp Pendleton, California	No
RI-08420	2009	Schaefer, Jerry, and Dave Iversen	A Class III Field Inventory for the Proposed Eagle Mountain Pumped Storage Project, Riverside County, California	Yes
RI-08453	2009	Schaefer, Jerry	A Class I Cultural Resources Investigation for the Proposed Eagle Mountain Pumped Storage Project, Riverside County, California	Yes
RI-08994	2012	Smallwood, Josh, et al.	Assessment of Study Area and Cumulative Effects to Historic Properties for Desert Harvest Solar Farm Project, Desert Center Vicinity, Riverside County, California	No

Report No.	Year	Author(s)	Title	Within Project area
RI-09031	2012	Akyuz, Linda	A BLM Class III Archaeological Resources Inventory for the Desert Harvest Solar Farm Project and Three Gen-tie Alternatives Desert Center Vicinity, Riverside County, California	Yes
RI-09038	2013	Dice, Michael H	Final Phase 1 Cultural Resource Assessment of the Indigo 1 Photovoltaic Project, Community of Desert Center, Riverside County, California, Confidential version: No Public Use	Yes
RI-09102	2011	Evelyn Chandler, Robert Cunningham, Elizabeth Denniston, Cary Cotterman, William Sharp, and Roger Mason	Cultural Resources Evaluation of 57 Resources For the Desert Sunlight Solar Farm Project Desert Center Vicinity, Riverside County, California	Yes
-	2019	Hanes, Richard, Diana T. Dyste, Susan Wood, Jessica Jones, Annie McCausland, Andrew D. Miller, Evan Mills, and Randy Ottenhoff	Class III Cultural Resource Inventory and Evaluation Report for the Athos Renewable Energy Project, Riverside County, California.	No
-	2021	Thomas, Roberta, Tiffany Clark, Matthew Tennyson, Michael Mirro, and Kyle Knabb	Class III Cultural Resource Inventory for the Arica Solar Project, Riverside County, California	No
-	2021	Thomas, Roberta, Tiffany Clark, Matthew Tennyson, Michael Mirro, and Kyle Knabb	Class III Cultural Resource Inventory for the Victory Pass Solar Project, Riverside County, California	No
-	2021	Knabb, Kyle, Roberta Thomas, Tiffany Clark, Evan Mills, Dennis McDougall, and Matthew Tennyson	Class III Cultural Resources Inventory for the Oberon Solar Project, Riverside County, California	No

*Reports in bold intersect the Project area

8.1.2 Previously Recorded Cultural Resources

The records search indicated that 72 cultural resources have been previously documented within the one mile of the Project area (Table 8-2). These resources include 21 historic period sites, 2 prehistoric sites, 5 historic built-environment resources, 41 historic period isolated artifacts, and 3 prehistoric isolated artifacts. Of the 72 previously documented resources, three resources were documented in the Project area: These resources include two historic built-environment resources (P-33-019415, the 161kV Blythe-Eagle Mountain Transmission Line, and P-33-022247, linear earthen berms), and a prehistoric isolated flaked stone artifact (P-33-022253).

A description of each of these resources is provided below. CRHR eligibility recommendations for the previously documented resources in the Project area are discussed in Section 8.3.

Table 8-2. Previously Recorded Cultural Resources within 1 mile of the Project Area

Primary No.	Trinomial	Age	Type	Description	Within Project area
19-387-KJ-001H	-	Historic	Site	Rock pile, tank tracks, and refuse scatter	No
19-387-KJ-002H	-	Historic	Site	DTC-related refuse scatter	No
19-387-KJ-003H	-	Historic	Site	DTC-related depression and refuse scatter	No
19-387-KJ-004H	-	Historic	Site	Refuse scatter	No
19-387-KJ-005H	-	Historic	Site	Refuse scatter	No
19-387-KJ-006H	-	Historic	Site	DTC-related refuse scatter	No
19-387-KJ-007H	-	Historic	Site	DTC-related refuse scatter	No
19-387-KJ-008H	-	Historic	Site	DTC-related refuse scatter	No
19-387-KJ-010	-	Prehistoric	Site	Lithic scatter	No
19-387-KJ-BE-009H	-	Historic	Isolate	County survey marker (iron pipe with brass cap)	No
19-387-WH-008H	-	Historic	Site	DTC-related artifact scatter	No
P-33-006825	-	Historic	Site	Boulder well; well site, boiler site, sand-filled cement reservoir	No
P-33-006836	CA-RIV-10759H	Historic	Site	WWII-era Desert Center Army Airfield	No
P-33-017373	-	Historic	Structure	Circle E Ranch; Totem Pole Date Ranch	No
P-33-018249	CA-RIV-9383	Historic	Site	Prospect pit and associated push pile	No
P-33-018391	CA-RIV-11903	Historic	Site	Refuse scatter	No
P-33-018392	CA-RIV-11904	Historic	Site	Refuse scatter and tank tracks	No
P-33-018472	-	Historic	Isolate	Church key opened beverage can	No
P-33-018612	-	Historic	Isolate	Broken clear glass wide-mouthed jar; Hazel Atlas	No
P-33-018613	-	Historic	Isolate	Complete brown glass crown cap beer bottle	No
P-33-019415	CA-RIV-9854H	Historic	Structure	Blythe-Eagle Mountain Transmission Line	Yes
P-33-020271	CA-RIV-10251	Historic	Site	Trash scatter	No
P-33-020275	-	Historic	Isolate	Whistle	No
P-33-020276	-	Historic	Isolate	Opened metal can	No
P-33-020277	-	Historic	Isolate	Single can	No
P-33-020278	-	Historic	Isolate	Single can	No
P-33-020279	-	Historic	Isolate	Single can	No
P-33-020280	-	Historic	Isolate	Complete, unopened, can of "Barrington Hall Soluble Coffee"	No
P-33-020424	-	Historic	Isolate	Ceramic scatter	No

Primary No.	Trinomial	Age	Type	Description	Within Project area
P-33-020426	CA-RIV-10335H	Historic	Site	Can scatter of 43 hole-in-cap cans	No
P-33-020427	CA-RIV-10336	Historic	Site	WW II-era can scatter	No
P-33-020432	-	Historic	Isolate	Single steel beer can and a section of Lionel model train track	No
P-33-020433	-	Historic	Isolate	Two whole and one fragmentary brown glass 12 oz beer bottles	No
P-33-020434	-	Prehistoric	Isolate	Ceramic pot sherd	No
P-33-020572	CA-RIV-10473H	Historic	Site	Historical survey marker (prev. recorded - more accurate mapping)	No
P-33-020573	CA-RIV-10474	Historic	Structure	Segment of unpaved and gravel-paved, two-lane historical road	No
P-33-022247	CA-RIV-11584H	Historic	Site	Set of seven historic-built berms	Yes
P-33-022250	-	Historic	Isolate	Single glass bottle fragment	No
P-33-022251	-	Historic	Isolate	Metal storage can with pain can-style lid	No
P-33-022252	-	Historic	Isolate	Single metal hole-in-top can with lap seam	No
P-33-022253	-	Prehistoric	Isolate	Piece of flaked white chert	Yes
P-33-022254	-	Historic	Isolate	Single metal vent-hole can	No
P-33-022255	-	Historic	Isolate	Single metal hole-in-top can with lap seam	No
P-33-022256	-	Historic	Isolate	Single metal hole-in-top can with lap seam	No
P-33-022257	-	Historic	Isolate	Single metal hole-in-top can with lap seam	No
P-33-022258	-	Historic	Isolate	Single metal hole-in-top can with lap seam	No
P-33-022259	-	Historic	Isolate	Single metal hole-in-top can with lap seam	No
P-33-022260	-	Historic	Isolate	Single pick opened metal can	No
P-33-022261	-	Historic	Isolate	Fragmented green glass Coca-Cola bottle	No
P-33-022262	-	Historic	Isolate	Fragmented green glass Coca-Cola bottle	No
P-33-022263	-	Historic	Isolate	Two fragmented green glass Coca-Cola bottle	No
P-33-022264	-	Historic	Isolate	Clear glass Coca-Cola bottle with a screw-on cap	No
P-33-022265	-	Historic	Isolate	Single metal hole-in-top can with lap seam	No
P-33-022266	-	Historic	Isolate	Single metal hole-in-top can with lap seam	No
P-33-022267	-	Historic	Isolate	Single metal hole-in-top can with lap seam	No
P-33-022268	-	Historic	Isolate	Metal hole-in-top can with lap seams and machine soldering	No

Primary No.	Trinomial	Age	Type	Description	Within Project area
P-33-022269	-	Historic	Isolate	Metal knife cut hole-in-top can	No
P-33-022270	-	Historic	Isolate	Single metal hole-in-top can with lap seam	No
P-33-022271	-	Historic	Isolate	Metal hole-in-top can with lap seams	No
P-33-022272	-	Historic	Isolate	Punched open metal hole-in-top can	No
P-33-022273	-	Historic	Isolate	Two metal hole-in-top cans	No
P-33-022274	-	Historic	Isolate	Cut open metal hole-in-top can	No
P-33-022276	-	Historic	Isolate	Weathered green glass Coca-Cola bottle	No
P-33-022280	-	Historic	Isolate	Knife cut metal hole-in-top can	No
P-33-022282	-	Historic	Isolate	Single metal hole-in-top can with lap seam	No
P-33-022283	-	Historic	Isolate	Church key-opened round metal hole-in-top can	No
P-33-024144	CA-RIV-11183	Historic	Structure	20-ft-wide paved road; Kaiser Road	No
P-33-025150	CA-RIV-12372H	Historic	Structure	State Route 177/Rice Road	No
P-33-028631	-	Prehistoric	Isolate	Red rhyolite secondary flake	No
P-33-028939	-	Historic	Site	Underground water well	No
P-33-028944	-	Prehistoric	Site	Ceramic artifact scatter	No
P-33-029054	CA-RIV-12979	Historic	Site	Refuse scatter	No

P-33-019415/CA-RIV-9854H (Blythe-Eagle Mountain Transmission Line)

Resource P-33-019415 consists of an approximately 1-mile-long segment of the historic-period 161kV Blythe-Eagle Mountain Transmission Line and associated access road. The linear resource was built in 1950 to bring electricity from Blythe to the townsite and mine at Eagle Mountain near Desert Center. The line provided 161 kV voltage; the highest voltage considered possible for a transmission line at the time of its construction.

The resource was first recorded in 2009 by EDAW (Tennyson and Apple 2010) for the Palen Solar Power Project. The transmission line corridor consisted of double pole construction with wood towers supporting three transmission lines and a graded dirt access road. The site record was updated in 2019 by Applied Earthworks, Inc. (McCausland et al 2019). Resource P-33-019415 was previously evaluated for listing on CRHR in 2011 and recommended not eligible under all criteria (Chandler et al. 2011). The California Public Utilities Commission (CPUC) concurred with the eligibility recommendation in their certification of the EIR prepared for the Desert Sunlight Solar Project (BLM 2011; CPUC 2011).

P-33-022247/CA-RIV-11584H

Resource P-33-022247 was recorded by FirstCarbon Solutions in 2012 (Williams and Dice 2012). The historic built-environment resource consists of a set of seven earthen berms and trenches.

The berms were built up using heavy machinery and are associated with nearby historic jojoba farming activities, although the original site record speculates that two of the seven berms could be associated with DTC activities. The berms range from 3,970 ft to 5,280 ft in length and are 4 to 10 ft tall. The berms are approximately 10 ft wide at the base. The resource does not appear to have been evaluated for listing in the CRHR.

P-33-022253

P-33-022253 consists of a prehistoric isolated piece of flaked white chert. The resource was identified by FirstCarbon Solutions in 2012 (Williams 2012) in a sheet wash area that bisects an alluvial fan. The resource does not appear to have been evaluated for listing in the CRHR.

8.2 NATIVE AMERICAN COORDINATION

A Sacred Lands File search of the Project area was conducted by the NAHC on June 21, 2022. The search was completed with negative results. Additionally, the NAHC suggested that 22 individuals representing six Native American tribal groups be contacted to elicit information regarding cultural resource issues related to the proposed Project (Appendix C). PaleoWest sent outreach letters to the 22 recommended tribal contacts on August 31, 2022 and follow up emails on September 8, 2022. The purpose of the outreach was to solicit tribal participation on the pedestrian survey and information regarding Tribal resources of concern within or adjacent to the Project area.

To date, PaleoWest has received two responses to the request for information:

- Victoria Martin, Tribal Vice-Chairperson of the Augustine Band of Cahuilla Indians responded via email and stated that the tribe is unaware of specific cultural resources that may be affected by the proposed Project.
- Lacy Padilla, Operations Manager of the Agua Caliente Band of Cahuilla Indians responded via email and stated that the Project is within the tribe's traditional use area and requested additional information. PaleoWest responded and provided the tribe with Project maps and GIS data for the Project area.

PaleoWest received two responses to the invitation for tribal participation on the archaeological survey.

- Joseph Ontiveros, Tribal Historic Preservation Officer for the Soboba Band of Luiseño Indians, replied that the tribe would provide a tribal participant to accompany the archaeologists during the survey.
- Roman Dominguez, Cultural Resources Supervisor for the Agua Caliente Band of Cahuilla Indians, responded that the tribe was not able to send a tribal participant for the survey.

8.3 FIELD SURVEY

PaleoWest's Field Director Kurt McLean conducted the intensive pedestrian survey and site inventory of the 1,082-acre Project area between September 12-22, 2022. He was assisted by Field Technicians Eunice Ambriz, Alex Wechter, and Jackson Case. The survey crew was also accompanied by a tribal participant from the Soboba Band of Indians.

As a result of the fieldwork effort, 11 cultural resources were identified in the portion of the Project area under County jurisdiction. These resources include two previously recorded historic built-environment resources and nine newly discovered resources. The newly discovered resources include four historic-period archaeological sites, one historic-period built-environment resource, three isolated prehistoric artifacts, and one isolated historic-period artifact (Table 8-3). PaleoWest failed to re-identify an isolated chert flake (P-33-022253) that had been previously recorded within the Project area.

Table 8-3. Cultural Resources Recorded in the Project Area

Primary or Temporary No.	Type	Description	CRHR Eligibility Recommendation
P-33-019415	Structure	Blythe-Eagle Mountain transmission line	Not eligible
P-33-022247	Structure	Earthen berms	Not eligible
22-0254-KM-03H	Site	Historic refuse scatter	Not eligible
22-0254-KM-07H	Site	Historic refuse scatter	Not eligible
22-0254-KM-08H	Structure	Transmission line segment	Not eligible
22-0254-KM-09H	Site	Water pump remains	Not eligible
22-0254-KM-10H	Site	Water pump remains	Not eligible
22-0254-KM-IO-001	Isolate	Prehistoric chalcedony edge-modified flake	Not eligible
22-0254-KM-IO-002H	Isolate	Historic ammunition casing	Not eligible
22-0254-KM-IO-004	Isolate	Prehistoric fine-grained black basalt secondary flake	Not eligible
22-0254-KM-IO-005	Isolate	Prehistoric blue-gray felsic volcanic secondary flake	Not eligible

Descriptions and CRHR evaluations for the archaeological sites documented in the Project area are provided below, followed by descriptions of the newly identified isolated artifacts. Finally, the three historic built-environment resources are summarized and evaluated. A map showing the location of the identified cultural resources is provided in Appendix D, with Department of Parks and Recreation (DPR) 523 records in Appendix E.

8.3.1 Archaeological Sites

Site 22-0254-KM-03H

Site 22-0254-03H is a historic-period refuse scatter that measures 52 by 24 m in area. The site is on the edge of a fallow agricultural field and consists of 15 sanitary cans, including 3 knife-opened condensed milk cans, 2 church-key opened 12 oz beverage cans, 6 pull-tab opened bi-metal 12 oz beverage cans, and 4 crushed sanitary cans. The can scatter appears to represent a variety of time periods, most of which post-date 1945. The site is in poor condition with many of the cans appearing to have been displaced by agricultural activities. The scatter appears to largely be surficial, with no evidence found to suggest there are substantial buried deposits.

A review of historical topographic maps indicates that aside from Rice and Kaiser Roads, the area around site 22-0254-03H was largely undeveloped prior to WWII (USGS 1943). By the early 1960s, an unimproved dirt road has been construction approximately 50 ft south of the site (USGS

1963). Other development in the area at this time includes a transmission line, reservoir, and several wells.

CRHR Eligibility

Site 22-0254-KM-03H consists of a scatter of domestic refuse that was likely disturbed by agricultural activities. The site contains no evidence to indicate that the historical refuse is linked to early settlement-related activities that made a significant contribution to the broad patterns of our history. Furthermore, it cannot be associated or linked to any important persons in California's history. As such, the site is not recommended eligible for listing in the CRHR under Criterion 1 or 2. The artifacts do not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; therefore, the site is not significant under Criterion 3. Finally, because the refuse scatter exhibits no clear temporal or historically significant association, it cannot produce information that would answer directed research questions presented in Section 6 and has very limited data potential. As a result, the site is not significant under Criterion 4.

PaleoWest recommends site 22-0254-KM-03H not eligible for inclusion in the CRHR.

Site 22-0254-KM-07H

Site 22-0254-KM-07H is a historic-period refuse scatter that measures 41 by 53 ft in area. The scatter of household refuse consists of 48 sanitary cans that have been recycled and modified for use as planters by perforating the can sidewalls three to four times with a church-key for drainage. Although the sanitary cans are of mid-twentieth century manufacture, the date of their modification to planters cannot be ascertained. The scatter is within a fallow jojoba field adjacent to a series of earthen berms (P-22-022247). The scatter appears to largely be surficial, with no evidence found to suggest there are substantial buried deposits.

CRHR Eligibility

Site 22-0254-KM-07H consists of a scatter of mid-twentieth century metal cans which were recycled for use as planters and redeposited at their current location. Although the site is likely associated with agricultural activities in the Chuckwalla Valley during the mid-twentieth century, there is no evidence to indicate that the historical refuse is linked to activities that made a significant contribution to the broad patterns of our history. Furthermore, it cannot be associated or linked to any important persons in California's history. As such, the site is not recommended eligible for listing in the CRHR under Criterion 1 or 2. The artifacts do not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; therefore, the site is not significant under Criterion 3. Finally, because the refuse scatter exhibits no clear temporal or historically significant association, it cannot produce information that would answer directed research questions presented in Section 6 and has very limited data potential. As a result, the site is not significant under Criterion 4.

Site 22-0254-KM-07H is recommended not eligible for inclusion in the CRHR.

Site 22-0254-KM-09H

Site 22-0254-KM-09H represents the remains of a mid-twentieth century water pump associated with abandoned jojoba farms. The site consists of a roughly L-shaped concrete foundation that measures 33 by 20 ft in area. The foundation exhibits water tank stains and impressions, a capped well-head, and a 9-inch-diameter PVC pipe extending from the ground at a 45-degree angle. Other PVC and metal pipes and fittings surround the foundation but do not appear historical in age. An adjacent historical transmission line (Resource 22-0254-08H) appears to have supplied power to the water pump. No markings or datable artifacts were identified at the site, but the water pump is mapped on the 1963 *Coxcomb Mountains, CA* USGS topographic map. The site is in fair condition with little potential to contain subsurface remains.

CRHR Eligibility

Site 22-0254-KM-09H does not appear eligible for inclusion in the CRHR under any criteria. Although the resource appears to be associated with agricultural activities in the Chuckwalla Valley during the mid-twentieth century, there is no evidence to indicate that the water pump structure is linked to activities that made a significant contribution to the broad patterns of our history. Furthermore, it cannot be associated or linked to any important persons in California's history. As such, the site is not recommended eligible for listing in the CRHR under Criterion 1 or 2. The site does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values and, therefore, is not eligible under Criterion 3. Finally, because the site exhibits no clear temporal or historically significant association, it cannot produce information that would answer directed research questions presented in Section 6 and has very limited data potential. As a result, the site is not significant under Criterion 4.

Site 22-0254-KM-09H is recommended not eligible for inclusion in the CRHR.

Site 22-0254-KM-010H

Site 22-0254-KM-010H consists of the remnants of a mid-twentieth century water pump associated with the now abandoned jojoba farms. The site consists of a roughly L-shaped concrete foundation measuring 37 by 24 ft and surrounded by galvanized fence posts with an "AURORA / VERTI-LINE" pump near the foundation's southwest corner. Other components include a 9-inch-diameter PVC pipe riser/valve extending from the ground on the south side of the foundation, an approximately 15-ft-tall wooden utility pole with ceramic insulator, and a 7-ft-tall metal pole with a 6-inch diameter. Other PVC and metal pipes, fittings, electric fuses and control boxes, milled wood, and particle board surround foundation but do not appear historical. An adjacent historical transmission line (Resource 22-0254-08H) appears to have supplied power to the water pump. No markings or datable artifacts were identified at the site, but the water pump is mapped on the 1963 *Coxcomb Mountains, CA* USGS topographic map. The site is in poor condition with little potential to contain subsurface remains.

CRHR Eligibility

Site 22-0254-KM-10H does not appear eligible for inclusion in the CRHR under any criteria. Although the resource appears to be associated with agricultural activities in the Chuckwalla Valley during the mid-twentieth century, there is no evidence to indicate that the water pump structure is linked to activities that made a significant contribution to the broad patterns of our

history. Furthermore, it cannot be associated or linked to any important persons in California's history. As such, the site is not recommended eligible for listing in the CRHR under Criterion 1 or 2. The site does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values and, therefore, is not eligible under Criterion 3. Finally, because the site exhibits no clear temporal or historically significant association, it cannot produce information that would answer directed research questions presented in Section 6 and has very limited data potential. As a result, the site is not significant under Criterion 4.

Site 22-0254-KM-10H is recommended not eligible for inclusion in the CRHR.

8.3.2 Isolated Artifacts

A total of four isolated artifacts were documented in the Project area (Table 8-3). The isolated artifacts include three prehistoric flakes and one historic period ammunition casing. Isolated occurrences are generally considered not eligible for inclusion in the CRHR unless they possess unique or substantial qualities to warrant their listing. All isolated occurrences are recommended not eligible for inclusion in the CRHR under any criterion.

8.3.3 Historic Built-Environment Resources

P-33-019415/CA-RIV-9854H (Blythe-Eagle Mountain Transmission Line)

P-33-019415 consists of an approximately 1-mile-long segment of the historic-period 161kV Blythe-Eagle Mountain Transmission Line and associated access road. The resource runs in a northwest-southeast direction through the west-central portion of the Project area. The section of the resource in the Project area consists of eight Type "H" wooden towers that support three transmission lines. Together with the access road, the resource is approximately 50 ft wide. The condition of the linear resource has not changed since it was originally recorded in 2011.

CRHR Eligibility

P-33-019415 was previously evaluated for listing in the CRHR in 2011 and recommended not eligible under all criteria (Chandler et al. 2011). The CPUC concurred with the recommendation in their certification of the Environmental Impact Statement prepared for the Desert Sunlight Solar Project (BLM 2011; CPUC 2011). The current study indicates that the resource has not changed significantly since 2011 and the previous determination remains valid. P-33-019415 is not eligible for listing in the CRHR.

P-33-022247

P-33-022247 was previously described as a series of seven earthen berms that appear to have been constructed between 1961 and 1965 to protect the jojoba farms from sheetwash flooding (Williams and Dice 2012). Although the original site record states that two of the berms may have been related to activities associated with the DTC, a review of historical topographic maps indicates that the vicinity was undeveloped until the early 1960s. A series of dirt roads that follow the alignment of two of the earthen berms and two water wells appears on the 1963 *Coxcomb Mountains, CA* USGS topographic map. These features were also likely associated with the operation of the jojoba farms.

PaleoWest revisited an approximately 1-mile-long segment of P-33-022247 that runs along the southern boundary of the Project area. The earthen berms are approximately 10 ft wide with a height of 6-8 ft. An approximately 130-ft-long section of the berm has been destroyed by erosion and vehicular traffic. The condition of the resource has not changed notably since its documentation in 2012.

CRHR Eligibility

P-33-022247 does not appear to meet any of the criteria for listing in the CRHR. Although the berms are associated with mid-twentieth century development of agriculture in the Chuckwalla Valley, there is no evidence to indicate that the resource is linked to specific agriculture-related activities that made a significant contribution to the broad patterns of our history. Furthermore, they cannot be associated with the lives of persons important in California's history. As such, the resource is not recommended eligible for listing in the CRHR under Criterion 1 or 2. The berms do not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; therefore, the resource is not significant under Criterion 3. Finally, because P-33-022247 exhibits no clear temporal or historically significant association, it cannot produce information that would answer directed research questions presented in Section 6 and has very limited data potential. As a result, the site is not significant under Criterion 4.

Resource P-33-022247 is recommended not eligible for inclusion in the CRHR.

22-0254-KM-08H

Resource 22-0254-KM-08H is a historic-period transmission line that is constructed of single wooden T-top poles. Three segments of the transmission line were recorded within the Project area. A description of each segment is provided below.

Segment 1 is 5,492 ft long and runs parallel to P-33-019415 in a northwest-southeast direction across the Project area. It includes 13 wooden poles, four of which have height and date nails embossed with "45" and "57," indicating a 45-ft-tall pole height and 1957 construction (or inspection) date. Segment 1 extends beyond the Project area and appears to provide electricity to various locations in the Project vicinity.

Segment 2 measures 3,048 ft in length and spurs off to the west from Segment 1 at Pole No. 2190713E. This segment includes 11 wooden poles, 2 of which have date nails indicating that they were installed in 1965. This segment appears to supply power to a pump station (Site 22-0254-KM-09H) associated with the operation of the historic-period jojoba farm at the segment's western terminus.

Segment 3 originates at Segment 2 and runs due south for 1,280 ft. The segment contains five wooden poles all of which are in same condition. One of the five poles has date nails that indicates it was installed in 1965. Segment 3 appears to supply power to a pump station (22-0254-KM-010H) associated with the operation of the historic-period jojoba farm at the segment's southern terminus.

CRHR Eligibility

Resource 22-0254-KM-08H consists of three segments of a historic-period transmission line that appears to have provided power to the area. Within the Project area, the line runs to two abandoned water pump stations that were associated with the operation of the historic-period jojoba farms. Although the resource appears to be associated with agricultural activities in the Chuckwalla Valley during the mid-twentieth century, there is no evidence to indicate that the powerline is linked to activities that made a significant contribution to the broad patterns of our history. Furthermore, the powerline cannot be associated or linked to any important persons in California's history. As such, the site is not recommended eligible for listing in the CRHR under Criterion 1 or 2. The transmission line does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values and, therefore, is not eligible under Criterion 3. Finally, because the transmission line exhibits no clear temporal or historically significant association, it cannot produce information that would answer directed research questions presented in Section 6 and has very limited data potential. As a result, the site is not significant under Criterion 4.

Resource 22-0254-KM-08H is recommended not eligible for inclusion in the CRHR.

9 SUMMARY AND MANAGEMENT RECOMMENDATIONS

The Phase I study included background research and a pedestrian survey of the Project area. As a result of these efforts, 11 cultural resources were identified within the Project area. These include four historical period archaeological sites, three historic built-environment resources, three isolated prehistoric artifacts, and one isolated historical artifact. None of the resources are recommended eligible for listing in the CRHR.

The survey of the Project area indicates that surficial sediments throughout the area have been disturbed by the construction and operation of a jobo farm. Although the records search and survey resulted in a paucity of prehistoric archaeological remains, review of nearby geoarchaeological assessments of the Project vicinity suggests that the Project area has a moderate to high potential for preserving intact buried prehistoric archaeological resources. The presence of historic period cultural resources in the Project area and vicinity suggests use of the area focused on military activities that took place in the early to mid-twentieth century and agricultural activities that took place in the mid- and late twentieth century. Most of these remains are limited to surface manifestations suggesting that there is a relatively low likelihood of encountering buried historic period archaeological remains in the Project area.

9.1 ENVIRONMENTAL IMPACTS

Appendix G, Environmental Checklist Form of the CEQA guidelines, addresses significance criteria with respect to cultural resources (PRC Sections 21000 et seq.). Appendix G (V)(a, b, d) indicates that an impact would be significant if the Project will have the following effects:

- Cause a substantial adverse change in the significance of a historical resource;
- Cause a substantial adverse change in the significance of an archaeological resource; or
- Disturb any human remains, including those interred outside formal cemeteries.

Impacts to previously unidentified cultural resources are possible during construction and/or operation. Because none of the cultural resources identified in the field surveys were recommended eligible for the CRHR, significant impacts to those resources are not anticipated.

9.2 RECOMMENDED MITIGATION

9.2.1 Monitoring and Inadvertent Discoveries

Prior to construction, a Cultural Resources Monitoring Plan should be developed in consultation with the Project owner, the County, the BLM, and interested Native American tribes. The plan should identify the procedures for managing any inadvertent discoveries that may occur during Project construction activities. The plan will also identify archaeological monitoring procedures for full-time monitoring during ground disturbing activities and provide a process that should be followed in the event that an inadvertent discovery is identified, including the discovery of human remains. It should also identify the roles and responsibilities of all parties, notification procedures, communication protocols, conditions for reduction or cessation of monitoring, and reporting requirements.

9.2.2 Best Management Practices

In the event that cultural materials are encountered during Project related ground-disturbing activities, all work should be halted in the vicinity of the discovery until a qualified archaeologist can visit the site of discovery and assess the significance of the archaeological resource. In addition, Health and Safety Code 7050.5, CEQA 15064.5(e), and Public Resources Code 5097.98 mandate the process to be followed in the unlikely event of an accidental discovery of any human remains in a location other than a dedicated cemetery. Finally, should additional actions be proposed outside the currently defined Project area that have the potential for additional subsurface disturbance, further cultural resource management may be required.

10 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this archaeological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date: 10/28/2022

Signed: 

Printed Name: Matt Tennyson

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Appendix A. Personnel Qualifications

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Confidential Appendix B. Records Search Results

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Confidential Appendix C. Tribal Outreach Results

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Confidential Appendix D. Survey Results Maps

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**Confidential Appendix E.
California Department of Parks and
Recreation 523 Series Forms**

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Appendix F. Level of Significance Checklist

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