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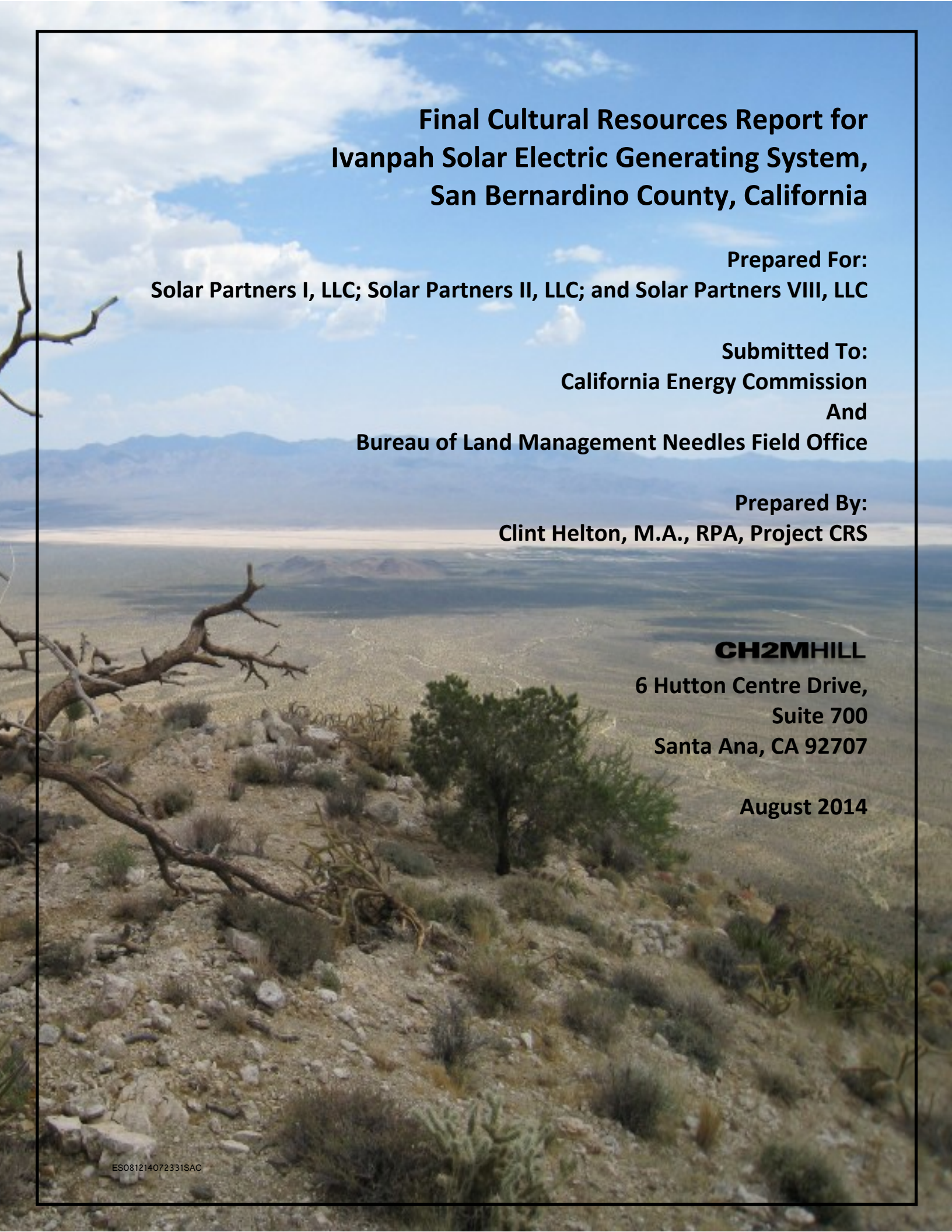

Final Cultural Resources Report for Ivanpah Solar Electric Generating System, San Bernardino County, California

Prepared For:
Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC

Submitted To:
California Energy Commission
And
Bureau of Land Management Needles Field Office

Prepared By:
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SECTION 1

Introduction

This final construction compliance report has been prepared in support of federal, state, and local licensing and permitting for the Ivanpah Solar Electric Generating System (ISEGS) Project in San Bernardino County, California (Figure 1). Specifically, this report is being submitted to satisfy California Energy Commission (CEC) Condition of Certification CUL-4.

Solar Partners I, LLC; Solar Partners II, LLC; and Solar Partners VIII, LLC (Solar Partners) have constructed a solar energy project in southern California's Mojave Desert, near the Nevada border. The project is located on a site west of Ivanpah Dry Lake, on land managed by the U.S. Bureau of Land Management (BLM). The project was constructed in three phases: one nominal 120-megawatt (MW) phase and two nominal 125-MW phases. The total area of the site boundary (the three plant sites and common areas) is approximately 5.8 square miles. Ivanpah 1, the 120-MW site, is approximately 914 acres or 1.4 square miles in size. Ivanpah 2 and 3, the 125-MW sites, are approximately 1,097 acres (1.7 square miles) and 1,227 acres (1.9 square miles) in size, respectively. Additionally, a substation was constructed between Ivanpah 1 and 2, along with new paved roads to access each site. The project ties into the existing Kern River Gas Transmission Line about 0.5 mile north and into the Southern California Edison 115-kilovolt (kV) line that crosses between the Ivanpah 1 and 2 sites. Most of this area was surveyed for cultural resources in 2007 (Fergusson, 2007). Located between Ivanpah 1 and 2 is the Construction Logistics Area that was used for construction parking, equipment laydown, heliostat fabrication, and other facilities, such as the administration/warehouse building. The Construction Logistics Area was initially planned to be about 377 acres in size. A detailed description of the project features can be found in the *Ivanpah Solar Electric Generating System Commission Decision* (CEC, 2010).

Cultural resources investigations were conducted in support of an Application for Certification (AFC) for submittal to the CEC. The AFC has been determined to be the functional equivalent to a California Environmental Quality Act (CEQA) process, but requires a more rigorous review of the potential impacts. Since the initial filing and survey, several project components have been reconfigured or moved, necessitating additional pedestrian inventory surveys as per Appendix B of the CEC's Siting Regulations (Title 20 California Code of Regulations).

Conditions of Certification stipulated by the CEC required preparation of this final Cultural Resources Report (CRR). CH2M HILL conducted the cultural resources activities for the project, including the preparation of this CRR. CH2M HILL performed the monitoring functions in accordance with directions contained in the Conditions of Certification. Compliance with those conditions has ensured that construction of the ISEGS did not create significant direct, indirect, or cumulative adverse impacts to cultural resources.

Cultural resources monitoring for the ISEGS was initiated on October 8, 2010, and continued at varying levels of intensity until January 30, 2013. Nine new discoveries were made during construction of ISEGS, all of which were isolated finds. The majority of the items observed and collected during construction were formal tools, specifically spear and projectile points. None of these resources is eligible for listing on the California Register of Historical Resources (CRHR) or National Register of Historic Places (NRHP) under any criteria. Copies of this report and the completed site forms will be filed with the California Historic Resources Information System (CHRIS). The collected artifacts will be curated at the San Bernardino County Museum, under the collection number SBCM-6346.

LEGEND

- Project Boundary
- State Boundaries
- County Boundaries

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Figure 1
Vicinity Map
Ivanpah Solar Electric Generating System

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SECTION 2

Project Setting

Rigorous descriptions of the project setting and previous work has been prepared and submitted in multiple documents (see CH2M HILL, 2007; BLM, 2010). The environmental setting and previous work sections of this report are summarized and largely excerpted from these previous reports.

2.1 Regional Setting

The project area is in the Ivanpah Valley of the eastern Mojave Desert in San Bernardino County, California; approximately 49 miles south-southwest of Las Vegas, Nevada. The eastern Mojave Desert is a part of the Basin and Range physiographic province (Fenneman, 1931), a broad region of almost parallel, block-faulted mountain ranges that trend approximately north to south and are characteristically separated by internally draining, debris-filled structural basins. The erosion of the largely Cenozoic era (beginning 65 million years ago and continuing to the present) ranges continues to contribute sediment to the poorly sorted gravel aprons or bajadas that predominate along the range flanks. The bajadas form most valley margins as they slope gradually down to the basin bottoms where seasonal lakes or playas often form. Low fault scarps and alluvial fans at the mouths of canyons periodically break the smooth, low-angle sweep of the bajadas (Eaton 1982; Thompson and Burke 1974). Local elevations in this part of the Mojave Desert range from approximately 1,700 to 2,600 feet above sea level on the valley bottoms to 4,900 to 7,900 feet above sea level along mountain range ridges. A bi-seasonal precipitation pattern in the eastern Mojave Desert delivers an average of six inches of annual rainfall from November through April and from July through September, with cool season precipitation being more significant (Hereford et al., 2001). The largely alluvial parent material of the region's bajadas and valley bottoms, and the desert climate generally, support more weakly developed soil orders (Entisols and Aridisols) (NRCS, 2007) where a Mojave creosote bush scrub vegetation type predominates (CH2M HILL, 2007).

The site of the ISEGS project is on the middle portion of a bajada above and to the west of Ivanpah Dry Lake, a large playa that forms the bottom of Ivanpah Valley. Uses of the project area have historically been rather marginal and are under the jurisdiction of the Needles Field Office in the BLM's California Desert District. A sparse veneer of stone tools and stone chipping debris evidence a transitory Native American use of the project area and vicinity in the period prior to complete Euroamerican subjugation. The project area also appears to have been subject to sporadic prospecting for mineral resources over the last approximately 160 years. Sporadic mineral prospecting in and near the project area continues today. The eroded mountain remnants that jut above the relatively smooth, sloping surface of the project area—landforms known as inselbergs—show evidence of exploratory activity in the form of abandoned and active prospect pits. The project site's concurrent historical use has been for low-intensity livestock grazing and transmission line right-of-way. The property continues its traditional grazing use as part of the BLM Clark Mountain Allotment Grazing Lease (Clark Mountain Allotment) (CH2M HILL, 2007); the transmission lines run through the site and it is located adjacent to the Primm Valley Golf Club's Desert Course.

2.2 Environmental Setting

The project area is a roughly 4,065-acre expanse of what is today an arid bajada. The environment of the bajada has changed through time causing concomitant shifts in the mosaic of natural resources available on it and adjacent landforms. Human use of the project area over the past several thousand years may partly reflect local changes in the natural resource base. To more reliably assess the likelihood that archaeological deposits representing such use may be present, it is important to consider the historical character of local climate change, or the paleoclimate, and the effects of the paleoclimate on the physical development of the bajada and its ecology.

2.3 Geology and Geomorphology

The ISEGS project area lies on the western flank of the Ivanpah Valley in the eastern Mojave Desert. The Ivanpah Valley is an elongate, internally draining, structural basin (Park et al., 2003), a bolson, which trends approximately north to south. It is roughly 44 miles in length, typically averages 15 miles in width, and ranges in elevation from 2,608 feet above sea level on the valley floor to between 5,883 and 7,897 feet above sea level along the surrounding mountain ridges. The Ivanpah Mountains, the Clark Mountain Range, and the Spring Mountains bound the valley to the southwest, west, and northwest, respectively. The Lucy Gray Mountains, McCollough Range, and the New York Mountains bound the valley to the northeast, east, and southeast, respectively. The Clark Mountain Range and the Spring Mountains form an arc of Mesozoic to Paleozoic marine and terrestrial sedimentary rocks around a core of earlier Precambrian metamorphic rocks, with Tertiary volcanic rocks infrequently intruding into the sedimentary formations of the Spring Mountains. Along the eastern margin of the valley, the Lucy Gray Mountains, the McCollough Range, and the northern portion of the New York Mountains include Precambrian intrusive igneous and metamorphic rocks and Tertiary volcanic rocks. The balance of the New York Mountains and the Ivanpah Mountains are almost entirely Mesozoic granitic rocks (Jennings, 1961; House et al., 2006; Ramelli et al., 2006a and 2006b). This diverse group of rocks is the source of the clastic sediments that make up the Quaternary landforms across the valley and form the substrate in which local soil types develop.

The discussion of the geomorphology of the ISEGS project area considers how and when the underlying bajada may have developed, and helps provide the physical contexts to assess whether physical remains from the past human use of former land surfaces on the bajada may be present as archaeological deposits.

The Ivanpah Valley contains examples of most of the major landforms that are characteristic of Basin and Range bolsons. Alluvial fans, fan remnants, and bajadas front the mountain ranges that ring the valley. Below the coarse alluvial fan and remnant fan deposits, the broad bajadas sweep gradually down onto Ivanpah Dry Lake, the playa that forms the bottom of the valley floor. Numerous intermittent stream channels flow out of the mountains over more recent alluvial fans and past older fan remnants to braid across bajada surfaces and terminate on the playa. The fine sediments that these stream channels transport are the source of playa fill and the dune sand along the playa margins.

The project area is on the middle portion of a bajada that drapes the eastern base of the Clark Mountain Range. The project area ranges from approximately 180 feet to 835 feet above the floor of the playa. Gravity and water variously act to transport and deposit the weathered bedrock sediments that make up the broad bajada of the ISEGS project area. The sediments are typically larger and more poorly sorted upslope toward the mountains and grade to finer, better sorted particles downslope where the bajada deposits ultimately interfinger with the lacustrine sediments of the playa and other wind-blown or eolian deposits, and water-transported or alluvial deposits related to the playa's hydrological cycles.

The present surface of the project area bajada is a mosaic of interconnected or anastomosing, intermittent stream channels of mostly coarse to very coarse sands, incipient desert pavements of predominately very angular gravels and variable overflow and sheetwash deposits. One large and one small inselberg break the surface of the bajada adjacent to the northern portion of the project area and represent relatively infrequent examples of such landforms in Ivanpah Valley.

The ISEGS project area bajada is a dynamic landform the development of which has undoubtedly been subject to alternating cycles of deposition and erosion that occur in response to regional fluctuations in climate. The presence on the surface of the project area, in overflow and sheetwash deposits and in incipient desert pavements, of mixtures of very angular gravels with relatively fresh faces or new cleavage planes and rounded, sand-blasted gravels with well-developed rock varnish indicate a relatively mobile bajada surface in the recent past where former desert pavements are being eroded as new ones are being formed. A firm understanding of whether the net result of the dynamic processes at work on the surface of the bajada is or has been the thickening of bajada deposits, or the erosion of them, is important to the

interpretation of the history of the bajada's development, its potential as a resource base for human use, and its potential to preserve archaeological deposits related to any such use.

2.4 Historical Geomorphology

The results of a recent geoarchaeology study of the ISEGS project area indicates that the present surface of the underlying bajada is a patchwork of actively eroding surfaces amid what have become slightly elevated remnants of older bajada surfaces of predominantly middle-to-late Holocene age (CH2M HILL, 2008). An analysis in that study of the beach zones beneath the vicinity of the project area along the edge of Ivanpah Dry Lake suggests that the character of sediment deposition on the bajada was progradational after approximately 6700 B.C. Deposition of sediments along the base of the bajada buried the beach zone there that was formed during the last high stand of Ivanpah Dry Lake during the early Holocene. The depositional regime on the bajada changed to one of net erosion after approximately 2000 B.C., most likely in response to the general increase in effective moisture in the late Holocene that appears to have led to a concomitant increase in vegetation cover and a decrease in the available sediment load.

The morphology of the present surface of the bajada is the result of erosion over the last 4,000 years. A complex network of anastomosing, intermittent stream channels traverse the bajada among remnant patches of older bajada surfaces that now rise several feet above the eroding surface of the broader landform. The remnant surfaces cover approximately 472 acres or 12 percent of the approximately 4,065-acre project area. The remnant older bajada surfaces appear darker in contrast and are stonier relative to adjacent eroded surfaces. Desert pavements or incipient desert pavements form many of the remnant surfaces, while a few are more appropriately considered as stony debris flow remnants. Two of the darker (older) remnant surfaces observed in the recent study appear, on the basis of comparison to pavements in the Mojave Sink approximately 35 miles to the west, to be no older than early Holocene in age.

2.5 Prehistoric Setting

The prehistory of the eastern Mojave Desert is the narrative of how human populations have adapted to marked fluctuations in the local environment over the course of at least the last 12,000 years. The archaeological remains of the region's prehistory are relatively scarce. Sparse scatters of stone tools and chipped stone tool manufacturing debris, and isolated artifacts, resources that typically yield information of marginal value, account for 40 to 60 percent of the archaeological remains found in the Mojave and Colorado deserts. A relative paucity of intact buried archaeological deposits contributes further to the dearth of information on the prehistory of the region (Lyneis and Macko, 1986). The availability of water and the location of high-value resource patches in otherwise unproductive habitats appear to influence the distribution of the archaeological sites that are on the desert landscape (Lyneis and Macko, 1986; Sutton et al., 2007). The broad trajectory of cultural development in the Mojave Desert appears to be a steady decline in residential mobility as local populations come to occupy increasingly larger valley or basin bottom base camps, in a few preferred locations, over longer periods of time, rather than working out of temporary camps in particularly productive environmental zones (Bamforth, 1990).

Over the past seven decades, Mojave Desert archaeologists have developed and refined a broad sequence of approximately six artifact groups or assemblages, each with distinctive types of stone projectiles, that represent the material record of the peoples who once lived in the ISEGS project area (Bamforth, 1990; Campbell, 1936; Lyneis, 1982; Rogers, 1939; Sutton et al., 2007; Warren, 1984; Warren and Crabtree, 1986). Choosing a cultural chronology more applicable to the project area than that used in the AFC (CH2M HILL, 2007) and acknowledging recent proposed refinements to the chosen chronology (Sutton et al., 2007), the discussion here of the region's prehistory will rely primarily on Warren's 1984 chronology and Warren and Crabtree's 1986 chronology. Following Warren and Crabtree, the periods of the chronology below represent

units of time during which particular artifact assemblages appear to prevail rather than discrete, homogeneous past cultures.

2.5.1 Terminal Pleistocene Period (Prior to 10,000 B.C.)

The archaeological record of the Terminal Pleistocene Period in the Mojave Desert is particularly sparse. The most consistent evidence for human activity during this period are fragments of the characteristic fluted, concave-based, lanceolate spear or projectile point of the Clovis archaeological culture. The Clovis culture is a pan-Western Hemisphere archaeological phenomenon that manifests in diverse material patterns over North and South America. In the Mojave Desert, material culture assemblages that include Clovis projectile point fragments are typically sparse surface deposits (Lyneis and Macko, 1986). The evidence from such deposits suggests only that human groups during this time were probably small in number, were highly mobile, and lived in small, temporary camps near what were then permanent water sources (Sutton et al., 2007). It is unclear whether the Mojave Desert Clovis assemblages demonstrate a cultural continuity with the material remains of subsequent periods (Warren and Crabtree, 1986).

2.5.2 Lake Mojave Period (10,000 to 5000 B.C.)

Lake Mojave Period artifact assemblages appear to represent a cultural phenomenon that is antecedent to subsequent cultural developments in the Mojave Desert (Warren and Crabtree, 1986). Portions of archaeological sites or components that date to the Lake Mojave Period are typically sparse and vary little in assemblage composition (Bamforth, 1990), although components that include extensive accumulations of residential debris have more recently been found (Sutton et al., 2007). Lake Mojave components are most often found in the vicinity of high terraces above or on relict shorelines of what are now playas and along relict stream channels (Bamforth, 1990; Lyneis and Macko, 1986).

Lake Mojave Period assemblages include a relatively narrow range of stone tools and also represent a narrow range of site types. The index artifacts for the period are the local variants of the Great Basin stemmed series projectile point types, Lake Mojave and Silver Lake points. The balance of period assemblages may include bifaces, steep- edged unifaces, “small beaked gravers,” “narrow concave scrapers,” crescents, and occasional cobble-core tools and ground stone implements (Sutton et al., 2007; Warren, 1984). The assemblages primarily appear to represent temporary small camps and work stations. Infrequent accumulations of residential debris do indicate, however, that camps with longer use periods are also present.

The archaeological record of the Lake Mojave Period indicates that human populations during the Early Holocene were small, mobile groups practicing a hunting-and-foraging economy whereby groups shifted residency across the landscape among the most productive environmental zones as the resources in those zones became depleted over time (Bamforth, 1990; Lyneis and Macko, 1986).

2.5.3 Pinto Period (5000 to 2000 B.C.)

The evidence of human activity found in Pinto Period archaeological sites indicates a behavioral continuity with Lake Mojave Period developments (Warren, 1984). The Pinto Period witnesses the final desiccation of the Pleistocene pluvial lakes in the Mojave Desert and the adaptive transformation of local populations to the extreme aridity of the mid-Holocene Altithermal (see Antevs, 1948). It is unclear whether the Pinto Period directly follows the Lake Mojave Period, or may represent a resumption of the desert’s use after a hiatus during the worst of the mid-Holocene droughts (Warren and Crabtree, 1986). Pinto Period components are typically surface deposits that are small in area and do not include midden deposits, constituent residential debris of ash, charcoal, and food and other organic residues, although larger components with broader ranges of artifacts and substantial midden deposits have more recently been found (Sutton et al., 2007; Warren, 1984). Pinto Period components are generally found on the landscape in the same places as deposits of the Lake Mojave Period (Bamforth, 1990; Lyneis and Macko, 1986). The

suggestion has been made that the components may actually overlap in time (Bamforth, 1990; Sutton et al., 2007).

The most important distinction between the artifact assemblages of the Pinto Period and those of the preceding Lake Mojave Period appears to be the relative abundance of ground stone implements or milling tools. More recent research has found milling tools to occur in moderate abundance in most Pinto Period deposits and, occasionally, in great frequency (Sutton et al., 2007). The characteristic Pinto Period assemblage includes large and small leaf-shaped projectile points and knives, domed and elongated keeled scrapers, several forms of well-made flake scrapers, flat millingstones, and manos. Drills, engraving tools, and Olivella spp. shell beads also occur (Sutton et al., 2007; Warren, 1984; Warren and Crabtree, 1986). The index artifact for the period is the stemmed, indented-base Pinto series projectile point, the Mojave Desert variety of which is markedly crude in form and manufacture (Warren, 1984). A broad continuity in the chipped stone technology evident in both the Lake Mojave and Pinto Periods has been noted. Populations during these periods appear to make extensive use of toolstones other than cryptocrystalline silica or obsidian, and they also make regular use of unifacial and bifacial core tool forms (Sutton et al., 2007).

More recent research indicates that Pinto Period assemblages may reflect the emergence of a two-tier settlement pattern. The small temporary or seasonal camps that appear to have been the primary focus of Lake Mojave Period activity may have become more task-specific camps that were subordinate to more permanent residential base camps. The increase during the Pinto Period in the relative frequency of milling tools suggests a corresponding increase in the reliance of local populations on plant resources (Sutton et al., 2007).

2.5.4 Gypsum Period (2000 B.C. to A.D. 500)

Gypsum Period artifact assemblages, though scarce relative to earlier and later periods, appear to evidence a shift in the economy of local populations toward a much greater dependence on plant resources (Bamforth, 1990; Warren, 1984). Period components are ephemeral in character, relatively more scarce in the southern and eastern portion of the Mojave Desert, smaller yet more numerous than components of the preceding periods, and found in more diverse locations on the landscape (Sutton et al., 2007).

Gypsum Period assemblages encompass a relatively broad array of artifact types. The index artifacts for the period include any combination of Gypsum (Gypsum Cave), Humboldt (Humboldt Concave Base), or Elko (Elko Eared, Elko Corner-notched) series projectile points (Sutton et al., 2007; Warren, 1984; Warren and Crabtree, 1986). The balance of period assemblages may include leaf-shaped projectile points; rectangular-based knives; flake scrapers; T-shaped drills; occasional large scraper-planes; choppers; hammerstones; manos and millingstones; mortars and pestles; shaft smoothers incised slate and sandstone tablets and pendants; fragments of drilled slate tubes; Haliotis spp. Rings; central California Middle Horizon bead and ornament types; Olivella spp. shell beads; and bone awls (Warren, 1984). The greater presence of quartz crystals, paint, split-twig figurines, and rock art also indicates the elaboration of ritual activity during this period (Warren and Crabtree, 1986). The influence of the Anasazi archaeological culture of the Southwest is apparent in the eastern Mojave Desert toward the end of the Gypsum Period with the introduction of Anasazi ceramic types to period assemblages, and evidence of the replacement of the atlatl with the bow and arrow, as the larger Gypsum, Humboldt, and Elko series dart points give way to smaller Eastgate and Rose Spring arrow point types in the subsequent Saratoga Springs Period (Warren, 1984).

The relative scarcity of Gypsum Period data complicates discussions of period settlement patterns in the Mojave Desert. Available data indicates that the focus of Gypsum Period components was lowland concentrations of plant resources along streams and in the lake basins (Bamforth, 1990; Sutton et al., 2007). One such resource may have been mesquite. The introduction of the mortar and pestle during this period and the use of these tools in the historic period to process mesquite pods have been taken to indicate that mesquite was first used in the Gypsum Period (Warren, 1984). Populations appear to have spent a substantial part of each year in residential base camps while dispatching task groups out to hunt (Bamforth,

1990). The presence of shell ornaments in the assemblages of the period also indicates the establishment of relatively routine trade with the southern California coast (Warren, 1984).

2.5.5 Saratoga Springs Period (A.D. 500 to 1200)

The artifact assemblages of the Sarasota Springs Period in the eastern Mojave Desert reflect the mixture of cultures that appears to have influenced the region.

Saratoga Springs Period assemblages encompass a broad, diverse array of artifact types, many of which appear to come from outside the region or reflect outside influences. The index artifacts for the period include Eastgate and Rose Spring projectile points. The core of the period assemblage includes millingstones and manos, mortars and pestles, incised stones, and slate pendants (Warren, 1984). Other characteristic artifact types of the period include small triangular knives, scrapers, drills, hammerstones, choppers, pendants of green schist, and Pacific Coast shell ornaments, including Olivella Saucer beads, Olivella Barrel beads, and limpet rings (Warren, 1984). Anasazi grayware ceramics of the Basketmaker III through early Pueblo Periods (Pecos Classification, see Cordell, 1984) are a notable element of the Saratoga Springs Period assemblage as well.

The archaeological data for the Saratoga Springs Period appear to indicate that local populations were developing broader spheres of interaction with outside groups, perhaps even allowing settlements of outsiders, in the context of a general continuity in local settlement patterns. The basic settlement pattern for the period appears not to change markedly from the Gypsum Period through to the Protohistoric Period (see below). The size of residential base camps and seasonal population dispersions to acquire more remote resources may both have been in slow decline however. The overexploitation of large mammals, due, in part, to the introduction of the bow and arrow during this period and to a deteriorating climate, may have led to a shift in hunting emphasis to small animals and reinforced the primary dependence of local populations on plant seed resources such as mesquite (Bamforth, 1990).

The Anasazi influence, presumably of the Virgin Branch (see Fowler and Madsen, 1986), was marked in the eastern Mojave Desert during this period from at least A.D. 700 through A.D. 1150 (Warren, 1984). The distribution of Anasazi grayware ceramics, the key archaeological index of Anasazi influence, reaches from the lower Virgin River in southern Nevada into California as far west as the Cronise Basin in San Bernardino County. The primary focus of Anasazi influence in the vicinity of the ISEGS project area appears to have been the turquoise deposits in the area around Halloran Springs, roughly 30 miles southwest of the project area. The sequence of ceramic types found at the turquoise mines in the area indicate that the period of Anasazi influence there was from approximately A.D. 700 to 900, during the Basketmaker III and Pueblo I Periods (Warren, 1984). It remains unclear whether Anasazi peoples were actually in residence in the area (Warren, 1984) practicing the Virgin Branch horticultural lifeway, in residence living on stores of provisions, or not in residence and managing the extraction of turquoise through proxy labor. The Anasazi influence over the eastern Mojave Desert ultimately terminates around A.D. 1150 (Warren, 1984).

2.5.6 Protohistoric Period (A.D. 1200 to present)

The speakers of Numic languages appear to displace the local populations of the eastern Mojave Desert at the outset of the Protohistoric Period, and to decisively eradicate Anasazi influence in the region (Warren, 1984).

The Protohistoric assemblage has been said to relate directly to the historic Paiute (Warren, 1984). The characteristic index artifacts for assemblages of the more northerly areas of the eastern Mojave Desert are Desert Side-notched projectile points and coarse, brownware ceramic types. The overall eastern Mojave assemblage strongly resembles assemblages across the northern Mojave Desert to Owens Valley and may derive from that region. Assemblages from the more southerly areas of the eastern Mojave Desert include Cottonwood Triangular projectile points, in addition to Desert Side-notched points, and the ceramic assemblage includes types representative of the Hakataya archaeological culture, a cultural unit of the

Lower Colorado River and the Colorado Desert. Among the Hakataya ceramics in the Protohistoric Period assemblages of the eastern Mojave Desert are brownwares, buffwares, and red-on-buff wares (Warren, 1984; Warren and Crabtree, 1986).

Despite the apparent shifts in the local populations in the eastern Mojave Desert and the ebb and flow of outside influences during the Sarasota Springs and Protohistoric Periods, the basic economic milieu and the settlement patterns of the local populations continue, in the Protohistoric Period, to reflect the trends in desert adaptation that had been developing in the Mojave Desert for millennia. Among the final elaborations to the local economy of the populations in the Mojave Desert may have been the addition, during the late Saratoga Springs Period and into the Protohistoric Period, of small gardens in preferred areas, the produce from which may have supplemented local diets in a minor way (Lyneis and Macko, 1986).

The influence of the Anasazi in the eastern Mojave Desert is supplanted by Hakataya influence from the Lower Colorado River and the Colorado Desert. Toward the end of the Saratoga Springs Period or the beginning of the Protohistoric Period around A.D. 1200, there is evidence of Hakataya influence or presence at the Halloran Springs turquoise mines lasting roughly a century. The Paiute have used the mines infrequently subsequent to the withdrawal of the Hakataya in about the fourteenth century (Warren, 1984).

SECTION 3

Ethnographic Setting

The project area of analysis appears, on the basis of the available ethnographic literature, to fall in the ancestral territories of three major Native American groups: the Southern Paiute (Las Vegas Paiute and Pahrump Paiute), the Chemehuevi, and the Mojave. The Las Vegas Paiute, the Chemehuevi, and the Mojave made use of overlapping portions of the eastern Mojave Desert. The portions of the region that each group used and the ways that each group made use of those portions varied through time (Lowell et al., 1982). Brief discussions of the ethnography and the history of the Numic-speaking Southern Paiute and of the Mojave provide a transition for the cultural history of the region from late prehistory into the period of sustained European and Euroamerican contact and subjugation, and provides one context for the recognition and interpretation of ethnographic resources that may be in the project area of analysis.

3.1 Southern Paiute and Chemehuevi

The Southern Paiute peoples and the Chemehuevi, a closely related people, belong to the Southern Numic branch of the Uto-Aztecan language family. The territory of the Las Vegas Paiutes and the Pahrump Paiutes during the nineteenth century included an area from roughly Death Valley east to the Colorado River and from just north of present-day Las Vegas south to just north of Needles, California. Chemehuevi territory during that period abuts the Las Vegas Paiute and Pahrump Paiute territory on the north and runs south to approximately Blythe, California, to the west of the Colorado River (Kelly and Fowler, 1986). The nineteenth-century territories of the Southern Paiute and Chemehuevi groups reflect the adaptation of each to their unique physical and political environments subsequent to the apparent entry of Numic-speakers into the region at approximately A.D. 1200 (see Protohistoric Period subsection above).

The economy of the Southern Paiute in general was largely one of subsistence. The particular variety of plant and animal resources used in the territory of each Southern Paiute group was dependent upon the mosaic of vegetation types found there. Major plant resources for the Las Vegas Paiute, the Pahrump Paiute, and the Chemehuevi included piñon nuts (*Pinus monophylla*), mesquite pods (*Prosopis juliflora*), and agave (*Agave utahensis*). A variety of seed resources were a lesser, although important food source (Kelly and Fowler, 1986).

The chief source of protein for Southern Paiute groups was small game. Such game included rabbits, wood rats, mice, gophers, squirrels, chipmunks, and birds. Lizards, snakes, chuckwalla, and tortoise were also eaten, as were insect resources such as locusts, ant larvae, and caterpillars. Large game resources such as antelope and mountain sheep were supplementary protein sources.

Southern Paiute foraging and collecting schemes were supplemented in the late Protohistoric and early historic periods with floodplain and, apparently, irrigation agriculture. Typical cultigens, variously introduced from the North American Southwest, Mexico, and the lower Colorado River, included maize, squash, pumpkins, gourds, and, less frequently, beans. Other cultigens appear to be more local domesticates that came from the Mojave, and introduced European cultigens ultimately became more significant crop resources (Kelly and Fowler, 1986).

The sociopolitical organization of the Southern Paiute groups did not include organs of central political control. The boundary for each group appears to have been relatively fluid and permeable. Groups were essentially clusters of individual households that variously coalesced and dispersed during the year to facilitate different economic pursuits. Favored residence locations adjacent to springs or agricultural plots were held as private property and subject to inheritance. Large household clusters often had a headman, whose authority was more advisory than authoritative (Kelly and Fowler, 1986).

3.2 Mojave

The Mojave belong to the River branch of the Yuman language family (Kendall, 1983). The core ancestral territory of the Mojave, possibly established as early as A.D. 1150, appears to have been what is now known as the Mohave Valley along the lower Colorado River. By the mid-nineteenth century, Mojave territory expanded to run along the lower Colorado River from roughly 25 miles north of Bullhead City, Arizona, south to roughly 5 miles north of Blythe, California (Stewart, 1983).

The primary focus of the Mojave economy was agriculture. The group farmed the floodplain of the Colorado River relying on the annual overflow deposition of silt and organic matter to rejuvenate soil fertility. The principal crop was maize with Tepary beans, pumpkins, and melons being secondary cultigens (Stewart, 1983).

The Mojave supplemented their agricultural pursuits with the foraging and collecting of wild plant resources, with fishing along the Colorado River, and, to a lesser degree, with hunting. Commonly used plant resources included a variety of seed plants, cactus fruit and other desert plants from the mesas adjacent to the river, and the pods of both mesquite (*Prosopis juliflora*) and screwbean (*Prosopis pubescens*) (Stewart, 1983).

Fish was the primary source of meat for the Mojave. Fishing was typically done with dip nets, seines or drag nets, traps or weirs, or large, canoe-shaped basketry scoops with long handles along the Colorado River, or in muddy side sloughs or ponds (Stewart, 1983).

Hunting was of relatively minor significance to the economy of the Mojave and was, as a consequence, less well developed as a cultural skill than among other adjacent groups out in the desert (Stewart, 1983).

The Mojave may be thought of as a tribe (see Service, 1962). They appear to have and to continue to regard themselves as one people. The tribe appears to be divided into three bands or more local groups, the northern, central, and southern divisions. Historically, each band was, in turn, further divided into settlements that were sprawling clusters of residences on low floodplain knolls adjacent to arable land. The nucleus of each settlement was an extended family. Each settlement appears to have had a group leader, and each band appears to have had one or several subchiefs. The tribe as a whole had a head chief, but the longevity of this position of status, prior to the arrival of the Europeans, is uncertain. Authority among the Mojave was derived from the ongoing consensus of subordinate tribal members. There was also only a minimal or incipient development of tribal political institutions (Stewart, 1983).

SECTION 4

Historic Setting

4.1 Roads

Much of the important history of the Mojave Desert took place beyond the ISEGS project area. The historic period of the region begins in 1776 with the travels of Francisco Garces between the Colorado River and the Mission system of coastal California. He became the first European to cross the Mojave Desert. His route followed the Native American trails (Mojave Trail) between the Needles area on the Colorado River, across to the Mojave River, and then through the Cajon Pass.

During the time of Mexican sovereignty in the area, in 1826 and again in 1827, Jedediah Strong Smith crossed the Mojave Desert via the Mojave Trail, both times traveling from east to west only. Smith was followed by early travelers to the region such as Ewing Young in 1829. Kit Carson was a notable member of Young's party. The Antonio Armijo party of 1829–30 was the first to complete a trip between Santa Fe and Los Angeles and the first known to have traveled a different route across the Mojave Desert. This route, a more northerly route, connected Las Vegas, Resting Springs, the Amargosa River, Salt Creek, and Bitter Springs with the Mojave Road near present-day Daggett. John C. Fremont traveled this route in 1844. While it is a matter of debate whether or not the Amargosa River Route was the trail of the Spanish caravans, known as the Old Spanish Trail, it became the preferred route of travel between Salt Lake City and San Bernardino, connecting two distant Mormon communities following the Mexican-American War in 1846.

Following the discovery of gold in California in 1848 and California statehood in 1850, increased traffic occurred in the Mojave Desert, much of it along the Old Spanish Trail or Mormon Road. Alterations to the Old Spanish Trail occurred after the discovery of the Kingston Cut-off in 1855 as well as other "short-cuts." These two routes, the Mojave Road and the Old Spanish Trail or Mormon Road, were the primary nineteenth-century transportation routes through the Mojave Desert prior to the construction of railroads in the region (Warren et al., 1980; Warren and Roske, 1981).

4.2 Mining

In addition to transportation routes, another major historic theme in the Mojave Desert during the American period (post-1846) was mining. A party of Mormons, led by Jefferson Hunt, discovered gold in the Salt Creek area, approximately 44 miles west of the ISEGS project area, in December of 1849. Sporadic attempts at mining in the Salt Creek area, as well as in other areas of the Mojave Desert and the San Bernardino Mountains, were hampered by ongoing conflicts with local Native American groups, who resisted the invasion of their respective territories.

Killings of miners resulted in a series of American military expeditions into the Mojave Desert around 1860 and led to the establishment of a number of military posts to the south of the project area (Fort Cady, Hancock's Redoubt at Soda Springs, Rock Springs, and Fort Paiute). In addition, military posts were located in the San Bernardino Mountains in the 1850s at Cajon, Jurupa, and Rancho del Chino (Beck and Haase, 1974).

In the 1860s, prospectors fanned out over the Mojave Desert looking for another Sutter's Mill or Comstock Lode, resulting in the discovery of ore in the Clark Mountain Range, and in the Providence, New York, Whipple, Turtle, and Sacramento mountains, as well as important silver deposits near Tecopa Pass. Most of these discoveries were made within two days' travel of major transportation routes. Between 1870 and World War I, mining activity continued and gold mining surpassed silver mining in the 1890s.

Precious metals were not the only commodity that was mined near the turn of the twentieth century. Large deposits of borates were discovered in the Calico area (Borate) and in and around Death Valley. Nitre was

mined 15 to 20 miles north of the ISEGS project area near the turn of the twentieth century, as were gypsum and talc (Vredenburgh et al., 1981).

4.3 Railroads

By the beginning of the twentieth century, mining interests in the Amargosa Basin saw a need to provide better transportation for minerals and ore to the markets. Rail transportation along the Old Government Road (Mojave Road) had been open since 1883 with the completion of the Atlantic and Pacific Line (Santa Fe Railroad). By 1905, a second rail line bisected the Mojave Desert with the construction of the San Pedro, Los Angeles, and Salt Lake Line (Union Pacific). William T. Coleman of San Francisco had developed the Harmony Borax Works using 20-mule teams to haul the deposits across the Mojave to the town of Mojave on the Southern Pacific Railroad.

In 1888, Coleman's borax properties, the Lila C. and the mines at Borate (Calico), passed to Francis M. "Borax" Smith who had found borates at Teel's Marsh in Nevada. In 1890, Smith combined all three properties to form the Pacific Coast Borax Company. Exhausting the supply at Teel's March, Smith moved operations to Calico. By 1900 the rich deposits at Calico began to give out, and Smith turned his attention to his property near Death Valley.

After a failed attempt in April 1904 to move his ore from the Lila C. mine near Death Valley to the California Eastern Railroad at Ivanpah, 100 miles to the south, via a rock-base wagon road, Smith conceived of a new railroad bisecting the Mojave Desert north to south. On July 19, 1904, he incorporated the Tonapah and Tidewater (T&T) Railroad Company. Surveys were conducted for several alternate routes, and contracts were arranged. Following conversation with Montana Senator William A. Clark in Nevada, a route was chosen between Las Vegas and the Lila C. The construction of the railroad started in Las Vegas in the spring of 1905. By August it became clear that Senator Clark was building his own railroad to the Tonapah-Goldfield area to provide rail transportation for the newly found gold and silver mines in that area.

After talks with the Santa Fe Railroad, Smith altered his route, and by the latter part of 1905 a tent city had been established at Ludlow to begin the new railroad that was planned to extend 167 miles north to the goldfields, with a branch line cutting over to the Lila C. Smith envisioned a railroad from Tonapah, Nevada, to the tidewater at San Diego, hence the name. On November 19, 1905, the first tracks were laid on the T&T's loop out of Ludlow, and by May of 1906 the rail line extended for 75 miles to just beyond Dumont. Engineering problems slowed construction to Tecopa (Inyo County) due to the 12-mile Amargosa Canyon segment, but a year later trains were operating all the way to Tecopa. In June 1907, the rail line extended to Zabriskie, where wagon-hauled ore from the Lila C. was loaded for the 91-mile trip to Ludlow. Eighteen additional miles were completed to Evelyn by mid-July of that year. On August 16, 1907, the 7-mile branch line from the Lila C. connected with the T&T at Death Valley Junction. Additional construction extended the T&T to Gold Center, Nevada, the end of the line, on October 30, 1907. Smith made arrangements with the recently completed Bullfrog Goldfield Railroad to connect to the T&T and to use the Bullfrog track from Gold Center, north to Beatty, and west to Bullfrog and Rhyolite.

A spur line was constructed to China Ranch to facilitate gypsum and talc shipping in 1915 in the Willow Wash or China Ranch Wash. The T&T railroad was abandoned in 1940 when the rails were removed to support the war effort. Many of the ties were taken to Barstow and used in the construction of the El Rancho Motel (Myrick, 1992). An unconfirmed report by Pat Mitchell (1994, personal communication), grazing allottee at Horse Thief Springs, indicates that the railroad tie-constructed cabin or house at Horse Thief Springs was also built of T&T railroad ties.

4.4 Hydroelectric Power Generation and Electric Power Transmission

Since 1936, the eastern Mojave Desert has been the major corridor for the transmission of hydroelectric power from Hoover Dam, roughly 51 miles to the northeast of the project site, to Los Angeles, approximately 244 miles to the southwest. Hoover Dam and the electric transmission system that distributes the hydroelectric power that it produces underwrote much of the economic development of the West in the twentieth century and were particularly critical to the economic development of southern California during that period (Solar Partners I et al., 2008).

4.4.1 Hoover Dam

Congress authorized the construction of Hoover Dam through the passage of the Boulder Canyon Project Act of 1928. The act was a response to both an increase in the regional demand for electric power and a desire to affect better flood control along the Colorado River. Construction of the dam began in 1931, and the dam structure itself was completed in 1935. The construction of the hydroelectric powerhouse and the installation of the first turbines took another year. The powerhouse went into operation in 1936. The installation of the balance of the turbines in the facility was completed in 1939. The original output of the powerhouse in 1939 was 700 MW, making it the largest hydroelectric facility in the world at that time (Solar Partners I et al., 2008).

4.4.2 Hoover Dam Transmission System

Transmission systems were needed to power the construction of Hoover Dam and to distribute the hydroelectricity that it would ultimately generate. The design of the Boulder Canyon Project Act was for the federal government to build the dam and the powerhouse and to supply the turbines. Power contractors were then to lease the turbines from the government, pay the government for the use of the pooled water, and themselves supply the electric transmission lines for the distribution of the generated electricity. The government, however, first had to supply a transmission line to power the construction of the dam. Southern Sierras Power Company, subsequently the California Electric Power Company, won the contract to build that initial transmission line and did so in 1930 and 1931. A second contractor, the Interstate Telegraph Company, built a telephone line in 1931 that was necessary to the operation of the Southern Sierras Power Company transmission line. The California Electric Power Company reversed the direction of the transmission line in 1937 to begin delivery of electricity from Hoover Dam to the city of San Bernardino (Solar Partners I et al., 2008).

SECTION 6

Summary of Previous Work

5.1 Literature and Records Search

CH2M HILL, Solar Partners' cultural resources consultant, requested a records search from the San Bernardino County Archaeological Information Center (AIC) on June 21, 2007 (CH2M HILL, 2007). The record search was limited to the area within a 1-mile radius around the ISEGS project site and 0.25 miles to each side of the linear infrastructure proposed for the project. The search returned information on the known inventory of prehistoric and historical archaeological resources, built-environment resources, cultural landscapes, traditional cultural resources, and the heritage resources for which designations of significance already exist, that fell within the defined search area. The search also provided information on the technical reports for the previous archaeological surveys that had taken place wholly or partly within 0.25 mile of the area subject to archaeological survey for the ISEGS analysis, and for the archaeological excavations and built-environment surveys that had taken place in the records search area. The CHRIS records search also accessed the Survey of Surveys: A Summary of California's Historical and Architectural Resource Surveys (1986), the Five Views: An Ethnic Sites Survey for California (1988), the listed California Historical Landmarks and California Points of Historical Interest, and the California Office of Historic Preservation's Determinations of Eligibility and Directory of Historic Properties.

The AIC record search found that 21 investigations, 20 pedestrian surveys, and one ethnographic study, had been wholly or partially conducted in the record search area between 1978 and 1995 (Table 5-1).

TABLE 5-1
Previous Cultural Resources Investigations in the Records Search Area

Type of Investigation	Number of Investigations	Dates of Investigations	CHRIS Document Nos.
Linear pedestrian electric transmission line surveys	8	Late 1970s to mid-1990s	1060614, 1060763, 1060764, 1060874, 1061280, 1061479, 1062170, 1063668
Areal pedestrian survey to inventory California desert area archaeological site types	1	Late 1970s	1062218
Linear and areal pedestrian surveys for the ISEGS project	2	Early 1980s	1061156, 1061219
Ethnographic Study for the ISEGS project	1	Early 1980s	1061220
Linear pedestrian motorcycle race course survey	1	Early 1980s	1061381
Linear and areal pedestrian surveys for drilling areas and associated access roads	2	Mid-1980s	1061599, 1061605
Areal pedestrian parcel surveys	2	Mid-1980s	1061602, 1061612
Linear pedestrian fiber optic cable surveys	2	Late 1980s	1061613, 1061734
Linear pedestrian natural gas pipeline surveys	2	Late 1980s to early 1990s	1062211, 1062571

The total survey coverage in the project area that is the result of these previous investigations is roughly 242 acres, or 6 percent.

While eight cultural resources are known for the record search area (Table 5-2), only one is located in the project area of analysis, the Hoover Dam-to-San Bernardino Transmission Line (CA-SBR-10315H), originally built as a 132-kV line and presently operating as a 115-kV line.

TABLE 5-2
Previously Recorded Cultural Resources in the Records Search Area

Resource Designation No.	Description
CA-SBR-816, 2341	Rock shelter
CA-SBR-2342	Rock shelter
CA-SBR-6956	Rock shelters and milling features
CA-SBR-7347H	Dirt road, two-track with low side berms
CA-SBR-7689H	Arrowhead Trail Highway (State Route 31)
CA-SBR-7694H	Boulder Transmission Lines 1, 2, and 3
CA-SBR-10315H	Original 132-kV transmission line from the City of San Bernardino to the Hoover Dam, now known as the Eldorado-Baker-Coolwater-Dunn Siding-Mountain Pass 115-kV transmission line
CA-SBR-10803H	Stock-loading facility with ancillary improvements

5.2 Native American Consultation

BLM consulted with the Native American groups that may have an interest in the project area and is conducting the ongoing Native American consultation for the ISEGS project. The results of that consultation, to date, are described here.

5.2.1 Methods

CH2M HILL, Solar Partners' consultant, contacted the California Native American Heritage Commission (NAHC) on June 27, 2007, to request that the NAHC search its Sacred Lands File to determine whether any reported Native American cultural resources occur in the project area of analysis, and to request that the NAHC provide a list of Native American contacts that may have knowledge of cultural resources in that area. On June 29, 2007, CH2M HILL, on the basis of the response from the NAHC, sent out letters to initiate correspondence with the Native American groups that the NAHC thought may have an interest in the project area (CH2M HILL, 2007).

BLM Needles Field Office staff sent out letters initiating consultation with potentially affected tribes on October 4, 2007. On December 6, 2007, BLM submitted additional letters to the balance of the groups that the NAHC thought may have an interest in the project area. The purpose of the BLM letters was to initiate formal federal contact with Native American groups about the proposed ISEGS project and to initiate government-to-government consultation with those groups that are federally recognized. BLM Needles Field Office staff sent out a subsequent letter on March 5, 2009, to the recipients of its initial letter to inform them of the discovery of ISEGS-01, an archaeological site to the east of the project site. The purpose of the letter was to solicit input on and concerns about the new archaeological site, request information on any cultural or religious values that might be affected by the project, and to inform them that the results of additional archaeological survey on the hills that flank the project site would be made available to them on request. On December 16, 2009, BLM submitted the Draft Environmental Impact Statement (EIS) to all of the Tribes. On April 16, 2010, BLM submitted the Supplemental Draft EIS to potentially affected Tribes.

5.2.2 Results

The June 29, 2007, response of the NAHC to the above request stated that the Sacred Lands File did not indicate any Native American cultural resources in the immediate project area and provided a list of Native American contacts (Table 5-3). CH2M HILL mailed and emailed letters to each of the contacts on the June 29 list asking them to contact the consultant if they had any knowledge of traditional cultural properties or areas of traditional cultural value in the project area, or if they had any concerns about the proposed ISEGS project. As of August 13, 2007, the month of the filing of the AFC for the proposed project, CH2M HILL had received no responses to the letters sent out on June 29 (CH2M HILL, 2007). As of August 8, 2014, no responses have been received.

BLM Needles Field Office staff has had little response from any of the Native American Tribes to any correspondence (Table 5-4).

TABLE 5-3
NAHC Native American Contact List

Native American Group	Location of Group Contact	Federal Recognition
Cahuilla Band of Mission Indians of the Cahuilla Reservation	Community of Anza, Riverside County	Yes
Ramona Band of Cahuilla Mission Indians of California	Community of Anza, Riverside County	Yes
San Manuel Band of Serrano Mission Indians of the San Manuel Reservation	City of Highland, San Bernardino County	Yes
Chemehuevi Indian Tribe of the Chemehuevi Reservation	Chemehuevi Valley, San Bernardino County	Yes
AhaMaKav Cultural Society, Fort Mojave Indian Tribe	Mohave Valley, Mohave County, Arizona	n/a
Morongo Band of Cahuilla Mission Indians of the Morongo Reservation	City of Banning, Riverside County	Yes
Fort Mojave Indian Tribe of Arizona, California, and Nevada	City of Needles, San Bernardino County	Yes
Serrano Nation of Indians	City of Highland, San Bernardino County	No
San Fernando Band of Mission Indians	Community of Newhall, Los Angeles County	No

TABLE 5-4
BLM Needles Field Office List of Additional Native American Contacts

Native American Group	Location of Group Contact	Federal Recognition
Colorado River Indian Tribes of the Colorado River Indian Reservation	City of Parker, La Paz County, Arizona	Yes
Las Vegas Tribe of Paiute Indians of the Las Vegas Indian Colony	City of Las Vegas, Clark County, Nevada	Yes
Pahrump Paiute Tribe	Town of Pahrump, Nye County, Nevada	No

5.3 Consultation with Others

CH2M HILL made telephone calls to the San Bernardino Historical and Pioneer Society in San Bernardino on June 27, 2007, in an attempt to reach Steve Shaw, President, and to the Nevada State Museum and Historical Society in Las Vegas on June 28, 2007, in an attempt to reach David Millman, Curator of Collections (History).

Voicemails were left for both. As of August 13, 2007, the month of the filing of the AFC for the proposed project, CH2M HILL had received no responses (CH2M HILL, 2007). As of Aug 8, 2014, no responses have been received.

5.4 Cultural Resources Inventory Fieldwork

The field efforts to identify cultural resources in the proposed project area of analysis included a geoarchaeology study, two intensive surveys, and two reconnaissance surveys (Table 5-5). Additionally, CEC staff conducted a pedestrian reconnaissance survey of project area inselbergs. Three new cultural resources were found in the project area of analysis, not including the discovery of six isolate resources, and one previously known cultural resource was re-recorded (Table 5-6).

TABLE 5-5
Cultural Resources Inventory Investigations for the Present Analysis

Investigation Type	Results	Report Reference
Geoarchaeology Study	Conclusion that surface and subsurface potential for archaeological remains is negligible	CH2M HILL, 2008
Primary Intensive Pedestrian Cultural Resources Survey	Relocated one built-environment resource; found two new built-environment resources and six isolated artifacts	Fergusson, 2007
Supplemental Intensive Pedestrian Cultural Resources Survey	No cultural resources found	Fergusson, 2007
May 23, 2008 Pedestrian Reconnaissance Survey of Project Area Inselbergs	One archaeological resource found	Energy Commission staff field notes
September, 2008 Helicopter and Pedestrian Reconnaissance Survey	No Native American traditional use areas found	Helton et al., 2008; Lawson, et al., 2008
August, 2009 Cultural Resources Reconnaissance Survey for Ivanpah I-15 Alternative	Relocated three historic period resources and identified four historic period resources	McDougall and Horne, 2009

TABLE 5-6
Present Inventory of Cultural Resources in the Project Area of Analysis

Cultural Resource Type (Year of Initial Recordation)	Description	Location	Siting Case Report Reference
Historic Built-Environment Resources			
CA-SBR-7689/H (1993)	Arrowhead Highway	Sec. 12, T16N, R14E, I-15 Alternative	McDougall and Horne, 2009
CA-SBR-10315H (1988)	Hoover Dam-to-San Bernardino transmission line, now known as the Eldorado-Baker-Coolwater-Dunn Siding-Mountain Pass 115 kV transmission line	Sec. 3, T16 N, R14E, Between Ivanpah 1 and Ivanpah 2	Fergusson, 2007
CA-SBR-10803H (2005)	Remains of Stateline well and corral/stock loading facility	Sec 11 and 12, T16N, R14E, I-15 Alternative	McDougall and Horne, 2009
CA-SBR-10806H (2005)	Segment of the Ivanpah-Providence Road	Sec. 14, T16N, R14E, I-15 Alternative	McDougall and Horne, 2009
CA-SBR-12574H (2007)	Dismantled telephone line and dirt road, two-track	Sec. 3 and 4, T16N. R14E. Through NW quadrant of Ivanpah 1	Fergusson, 2007

TABLE 5-6
Present Inventory of Cultural Resources in the Project Area of Analysis

Cultural Resource Type (Year of Initial Recordation)	Description	Location	Siting Case Report Reference
CA-SBR-12575H (2007)	Dirt road, faint two-track	Sec. 3, T16N, R14E, Through NW quadrant of Ivanpah 1.	Fergusson, 2007
36-020713 (2009)	An adit of unknown age with low-lying tailing piles and a bladed loop road	Sec. 27, T16N, R14E, I-15 Alternative	
36-020714 (2009)	Mining prospect of unknown age with low-lying tailing piles and a small, low rock cairn	Sec. 27, T16N, R14E, I-15 Alternative	
36-020715 (2009)	A dismantled rock cairn (mining claim marker) 210 ft from the adit noted above with no debris associated	Sec. 27, T16N, R14E, I-15 Alternative	McDougall and Horne, 2009
36-020716	Segment of a dirt road that appears to correspond to the Road to Bullion Mine	Sec. 27, T16N, R14E, I-15 Alternative	McDougall and Horne, 2009
Archaeological Resources			
ISEGS-01 (2008)	Complex of dry-stacked masonry features that include apparent terraces, niches, a bench, and a rock platform	Sec. 34, T17N, R14E, E of Ivanpah 2	Helton et al., 2008; Lawson et al., 2008
Ethnographic Resources			
None			

5.4.1 Geoarchaeology Study

BLM made a request to Solar Partners (Data Request No. 40) to provide information that would facilitate the assessment of the potential for the project to encounter buried archaeological deposits during the construction, operation, maintenance, closure, and decommissioning of the project. Solar Partners arranged for a geoarchaeology study that, on the basis of background research, spatial analysis, and primary field research, provides a thorough discussion of the historical geomorphology of the project area and an assessment of the likely presence of buried archaeological deposits there.

Data for the recent study of the geoarchaeology of the ISEGS project area (CH2M HILL, 2008) comes from the use of remote sensing techniques and field observation. The study began with an analysis of satellite imagery of the northern end of Ivanpah Dry Lake to try and discern aspects of the depositional history of the bajada that underlies the project area, as a whole. A high-resolution aerial photograph of the project area was then used to analyze the surface morphology of the bajada and to delimit, on the basis of visual albedo, the darker (older) surface areas of the bajada that would not have been subject to more recent erosion. The resultant surface areas were then scored separately for albedo and apparent surface roughness, both being age-dependent attributes. A sample of the remotely delimited surface areas (N = 28) and two younger surface areas were field-inspected to evaluate the accuracy of the remote analysis and to more closely observe the sample surfaces for prehistoric archaeological remains.

The geoarchaeology study (CH2M HILL, 2008) concluded that the surface and subsurface prehistoric archaeological potential of the ISEGS project area, which is on the middle reaches of the Clark Mountain bajada, is negligible. The field inspection of a sample of 28 of the remnant patches of the older bajada surface did not locate any archaeological remains. If buried prehistoric archaeological deposits were a component of the sedimentary matrix of the Clark Mountain bajada, then artifacts would be anticipated to be constituents of the surfaces of the remnant patches. They are not. The surfaces of the remnant patches

are clad in what is referred to as desert pavements, accretionary deposits that form over a long period of time where a single layer of clasts is borne upward on a continually accreting layer of wind-blown or eolian silt. A subset of the artifacts that would be present on a hypothetical former surface of the bajada would become incorporated into a desert pavement that slowly developed over that former surface, leaving the balance of the artifacts on the former surface beneath the forming desert pavement.

The absence of artifacts on or in the desert pavements of the remnant patches in the present investigation provides objective evidence that buried prehistoric archaeological deposits may be largely absent on the bajada. Further evidence that would appear to support this conclusion is that only three isolate prehistoric artifacts were found as the result of the pedestrian surveys of the entire project area (see Section 5.4.2, Intensive Pedestrian Surveys, below). If buried prehistoric archaeological deposits were present in the project area, then, presumably, the artifacts and the sedimentary matrix from such deposits would be eroding out in places and open to observation on the surface of the bajada, what is now known to be an erosional landform. This does not occur.

One ancillary application of the results of the geoarchaeology study is the observation that even portions of the surface of the bajada that are more recent in age than the above remnant patches may have been stable for a while. A subfossil piñon log (*Pinus monophylla*) was found on a more recent bajada surface among recently active ephemeral streams. The log is thought to be anywhere from 1,100 to 3,400 years old and may date the surface on which it was found to that approximate age. This information and the recent inadvertent discovery of an intact historical archaeological site (Temporary field no. ISEGS-02) approximately 1,700 feet to the east of Ivanpah 2 (see Section 5.4.3, Traditional Cultural Property Reconnaissance Surveys, below) demonstrates that, although the bajada is subject to a geomorphic regime of net erosion, the landform provides enough stable surface patches to preserve a representative sample of the historical archaeological deposits that would reflect historical activity on the bajada.

5.4.2 Intensive Pedestrian Surveys

Primary Intensive Pedestrian Cultural Resources Survey

Solar Partners undertook an intensive pedestrian cultural resources survey of the originally proposed project area. The purpose of the survey was to provide information on the location and the character of the cultural resources that may lie on the surface of the project area. The results contribute to the compilation of the cultural resources inventory of the project area.

CH2M HILL conducted the survey of the project area from April 25 through May 22, 2007, adjusting the survey methods while the survey was in progress. The survey of the majority of Ivanpah 1 was done using transects that were 15 meters apart. On the basis of the field perception that the potential for encountering cultural resources was low due to disturbance from active, braided, ephemeral drainages, BLM agreed to a request from CH2M HILL to widen the transect interval to 30 meters with the condition that survey areas that had desert pavements or rock outcrops with desert varnish would be examined more intensively.

Ivanpah 2 and Ivanpah 3, and the balance of the project area were surveyed under the latter protocol. When cultural resources were found during the survey, the field archaeologists would delimit the surface extent of each resource, plot the resource on a United States Geological Survey (USGS) 7.5-minute topographic quadrangle series map, and acquire global positioning system (GPS) data for the resource using a Trimble Geo XH mapping-grade unit. Additional field recordation efforts for archaeological sites were to photograph artifacts and site features, and to count and classify artifacts, where reasonable. No artifacts were collected during the survey. The archaeologists reported the ground visibility in the project area to have been approximately 90 percent, or excellent.

CH2M HILL found two new cultural resources in the ISEGS project area (CA-SBR-12574H and CA-SBR-12575H) and six cultural resources isolates in primary depositional contexts. The isolate resources include a horseshoe, two mining prospects, an obsidian flake, an obsidian nodule, and a chert biface. It is of note that the lithic artifacts are of stone types for which there are no sources in Ivanpah Valley or the mountain

ranges that form its margins. Historic tin cans, most apparently dating to the late 1800s, were also found in the stream beds and on the banks of nearly every major ephemeral stream in the project area. These artifacts were not recorded as isolate resources, because they were interpreted, in the field, as being the result of secondary re-deposition from upstream mining-related sites in the Clark Mountain Range.

Supplemental Intensive Pedestrian Cultural Resources Survey

Subsequent to August 31, 2007, a number of project components were altered, which resulted in the expansion of the project site. CH2M HILL, Solar Partners' consultant, conducted additional intensive pedestrian survey on 371.45 acres to take into account portions of the expanded project site that had not been subject to prior survey.

Two CH2M HILL field archaeologists conducted the survey of 371.45 acres from April 29 through May 1, 2008, approximately six person-days, walking transects 15 meters apart. The archaeologists used USGS 7.5-minute topographic quadrangle series maps, aerial photographs, and Trimble hand-held GPS units to navigate to survey areas and to help record their observations. The visibility of the ground surface in the survey areas was reported to have been excellent, at approximately 90 percent.

The archaeologists report the complete absence of prehistoric or historic cultural resources in the areas surveyed. They described the surface of the surveyed areas as exhibiting no evidence of modern development. Widespread evidence of bajada flooding events and sheetwash deposition was also noted.

5.4.3 Traditional Cultural Property Reconnaissance Surveys

BLM asked Solar Partners to provide information that would facilitate the assessment of the potential for the built project to affect Native American traditional use areas that may be in sight of the project area. The request sought discussions of both known ethnographic resources and the potential for ethnographic resources that may not yet be known. To fulfill the request, Solar Partners would have had to more actively research extant ethnographic sources and expand the project area of analysis beyond the minimum requirements in the CEC's siting regulations to include what were then unsurveyed lands surrounding the project site. Solar Partners' response to the data request was that the archaeological survey report already documented requests that had made of others for information on known Native American traditional use areas. BLM conducted four transects across the originally proposed footprint and confirmed the paucity of cultural remains. CEC archaeologists chose to conduct a pedestrian reconnaissance of a portion of the inselbergs in the vicinity of the project site to help develop a reasonable scope for a more specific request to Solar Partners to conduct an ethnographic field survey for the present analysis. The purpose of the reconnaissance was to acquire a sense of how likely ethnographic resources were to be present on the inselbergs adjacent to the project area, and to acquire a sense of the topography of the Clark Mountain Range foothills, beyond the inselbergs, and the potential for the project to affect any ethnographic resources that may be present there.

On May 23, 2008, CEC staff Michael McGuirt and Misa Milliron, CEC consultant Susan Sanders, and BLM staff Colin Grant conducted a biological and cultural resources reconnaissance survey of the Paleozoic marine limestone inselberg just to the west of the Ivanpah 3 project area boundary. Later in the day, during a brief respite in a rolling series of thunderstorms, the same group, minus Colin Grant, conducted further reconnaissance of the southern portion of the Precambrian metamorphic inselberg complex just to the east of the Ivanpah 3 project area boundary.

The reconnaissance entailed a brisk walk-over of the two areas. The group first drove to the northern end of the limestone inselberg and hiked along its single crest to its southern terminus. The smaller group then later hiked out from near the intersection of the Hoover Dam-to-San Bernardino 115-kV Transmission Line (CA-SBR-10315H) and Colosseum Road approximately 0.7 mile to the low hill that is the most southerly extent of the metamorphic inselberg complex. The latter group hiked the crest of the low hill from south to north and then hiked up to the summit of the most southerly crest of the primary inselberg of the complex, before returning to Colosseum Road. Navigation for the reconnaissance was done using a computer-

generated TOPO! topographic map and a hand-held Suunto compass. Field notes and digital images made with a Nikon CoolPix P3 camera variably recorded the observations made on the reconnaissance. Ground surface visibility on both the limestone inselberg and the metamorphic inselberg complex was excellent as they are bedrock formations. Visibility ranged from 90 to 100 percent.

CEC staff found two new archaeological sites as a result of the brief reconnaissance (Temporary field nos. ISEGS-01 and ISEGS-02), both located outside of the proposed project. Archaeological site ISEGS-02 was found on the way from Colosseum Road to the metamorphic inselberg complex, and, although it falls outside the project area of analysis, a brief description and interpretation of it is given here, because the presence of the site has a bearing on the potential frequency of historical archaeological sites across the middle reaches of the Clark Mountain bajada and on the differential stability of portions of the bajada surface.

ISEGS-01

Archaeological site ISEGS-01 was found as a result of the May 23, 2008, CEC's pedestrian reconnaissance survey of the inselbergs in the project area of analysis. BLM asked at the June 23, 2008, Data Response and Issues Resolution Workshop in Primm, Nevada, that Solar Partners more formally evaluate ISEGS-01. Solar Partners agreed to that request at the July 2, 2008, continuance of the workshop in Sacramento, and asked, in turn, that CEC and BLM staff provide a protocol for the evaluation. CEC and BLM staff jointly developed that protocol, and BLM provided the "Protocol for the Documentation and Evaluation of Archaeological Site ISEGS-01" (ISEGS-01 Evaluation Protocol) on or about July 21, 2008 (CEC, 2008). Solar Partners produced a preliminary summary of the results of the field efforts for both the ISEGS-01 Evaluation Protocol and the Reconnaissance Survey Protocol in a confidential technical memorandum dated September 17, 2008 (Helton et al., 2008), which references a forthcoming, more detailed report. The later report (Lawson et al., 2008), a second confidential technical memorandum dated December 5, 2008, provided the final results of both protocols.

CH2M HILL implemented the ISEGS-01 Evaluation Protocol, substantively augmenting the "Background Literature Review" in the protocol. The purpose of the protocol was to more formally assess and evaluate the origin and the historical significance of ISEGS-01 in an attempt to acquire the minimum amount of data necessary to determine whether the subject site is a Native American traditional use area eligible for inclusion in either the CRHR or the NRHP, and, if so, whether the degradation of the integrity of the site from the construction and operation of the proposed project would be either a substantial adverse change in the significance of a historical resource under CEQA, or an adverse effect under the National Historic Preservation Act. CEC and BLM staff state in the protocol that the CEC and BLM would consider the results of the work done under this protocol sufficient to conclude the archaeological effort to determine whether ISEGS-01 is a Native American traditional use area.

The ISEGS-01 Evaluation Protocol requested that Solar Partners conduct a program of background research and field investigation. The background research portion of the program, as originally proposed, had two parts. One part was a review of the extant ethnographic literature on the Southern Paiute, the Chemehuevi, and the Mojave to discern whether site types comparable to ISEGS-01 are known for any of these groups. The Southern Paiute, the Chemehuevi, and the Mojave each identify a relationship between the project area of analysis and the ancestral territories of their respective groups. Solar Partners chose to refine the ethnographic literature review to look at the archaeology and the known ethnographic construction and use of rock art, and rock feature sites such as rock alignments, rock rings, and rock cairns, and to look at known construction methods of ethnographic architecture and features. The second part of the background research in the protocol requested that Solar Partners contact cultural resource managers, cultural resource management consultants, and archaeological scholars of the Great Basin and of the Southwest to inquire whether ISEGS-01 represents a familiar site type and to solicit professional opinions as to its origin and use. Solar Partners ultimately chose to augment the background research with additional archival research into the archaeological site types that have been found in mountain ranges near the project area, and into early

and more recent historical accounts of exploration, travel, and economic activity in and around the project area of analysis; the purpose of both efforts was to try and locate cultural resources similar to ISEGS-01 to facilitate its interpretation. Solar Partners conducted the background research under the protocol during September and October 2008.

The "Laboratory Investigations" portion of the ISEGS-01 Evaluation Protocol requests that Solar Partners conduct a phased investigation of the site. The phases of the investigation were to include:

1. A close field examination of the site and the site vicinity, including visual inspection for artifacts, cultural manuports, and ecofacts,
2. Appropriate geophysical inspections of site features and the site vicinity to ascertain the presence of ferrous metal objects or other subsurface anomalies,
3. An examination of the rock features on the site to ascertain the material composition of the features, feature construction methods apparent in the placement patterns of individual feature rocks, and the apparent relative age of the features as may be discerned by the differential development of patination and varnish, or of organism growth on feature rocks, and,
4. If the results of the above examinations and inspections proved to be inconclusive, test excavations of individual archaeological features on the site to ascertain the presence or absence of cultural residues.

The protocol also lays out a specific suite of excavation and sampling techniques that were to be used in the event that test excavation was determined to be warranted.

The archaeologists for Solar Partners' implemented the field investigation portion of the protocol at ISEGS-01 on September 2 and 4, 2008. The close field inspection of the site and the site vicinity was apparently a tight visual scour of those areas and included the use of reflected sunlight to examine a group of constructed rock niches on the site. The geophysical inspection of the site was conducted with a Fisher Model M-96 metal detector. The entire site and all of the site features were swept with the detector, as was the level ground around the site. Solar Partners chose to make relative age determinations the focus of the examination of the rock features on the site. The examination took into account three different potential indices of the relative age of the site: the origin and apparent age of the quartzite rock that composes part of one terrace pavement, the degree of weathering of the constituent rocks in the rock features of the site, and the development of desert pavements on site rock terraces. To execute the examination of the features, close observations and notes were made of the color, shape, orientation, and relative distribution of the rocks that make up the features and of the rocks that form pavements on the site terraces.

The results of the implementation of the ISEGS-01 Evaluation Protocol were inconclusive. The background research on and the field investigation of the site are unable to reliably associate it with any particular time period, or any particular archaeological, ethnographic, or historic culture. The origin of the site, the character of its use, and its age, from an archaeological perspective, are enigmatic.

Background Research and an Interpretative Context for ISEGS-01

The background research for ISEGS-01, though relatively comprehensive, was largely unproductive. Additional archival research into the archaeological site types that have been found in mountain ranges near the project area and into early and more recent historical accounts of exploration, travel, and economic activity in and around the project area of analysis did not reveal or suggest any cultural resources that closely resemble ISEGS-01. Examinations of records for prehistoric and historic archaeological sites in the Spring and Lucy Gray mountain ranges and the State Line Hills in Nevada, and the Clark, Ivanpah, and Mescal mountain ranges in California, in a 15- to 20-mile radius around the project area found a total of 14 archaeological sites with constructed rock features. Seven of the 14 sites are unambiguously historic, one is unambiguously prehistoric, and the age of the other 6 is indeterminate. The historical archaeological sites include two mining sites with adits, a shaft, prospect pits, tailings, rock cairns, and historic refuse, two apparent ruins of dry-stacked masonry structures, two sites with a circular rock feature, two rock alignments

of different forms and historic refuse, and one rock cairn with historic refuse. The prehistoric site has two rock alignments, a circular rock feature, a cleared area, a small dugout, a rock pile, and chipped and ground stone tools. The archaeological sites of indeterminate age include four sites with a circular rock feature, two rock alignments, a rock-lined dirt mound, and a small concentration of basalt cobbles, one apparent ruin of a dry-stacked masonry structure, and a "C"-shaped dry-stacked rock feature measuring 75 to 125 centimeters in height with a small (~1 m) square vestibule adjacent to it.

The review of both early and more recent historical accounts of exploration, travel, and economic activity in and around the project area of analysis reaffirms the broader outlines of the historical context of the project area, but does not provide more focused insight into the possible origin, function, or age of ISEGS-01.

Consultation with public sector cultural resource managers, cultural resource management consultants, and archaeological scholars also did not help interpret ISEGS-01. A number of those consulted thought that the absence of obvious eolian deposits on the site and the apparent lack of embeddedness in the archaeological features of the site indicate a more recent timeframe for the construction of the site. Professional opinion on the character of the site spans a diverse range. Some see a connection to Native American shamanism in the panoramic view that the site commands and in the relatively abundant presence of quartzite on the site. Others thought that the site features may be related to historical land surveying efforts in the region. A further opinion is that the site features may be the result of recent or historical boredom. The thought is that historical or recent miners, prospectors, or those accompanying them, or military personnel on training missions may have constructed the features for lack of anything else to do.

Neither the review of the archaeological and ethnographic literature relating to rock art and rock feature sites nor the review of Southern Paiute, Chemehuevi, or Mojave architecture and construction methods found any information that could reliably be used to interpret the individual features of ISEGS-01, or the site as a whole.

Field Investigation of ISEGS-01

The initial step in the field investigation of ISEGS-01 was the close field inspection of the site. The site was found to include five dry-stacked rock features and feature complexes (Features A–E) arranged on either side of the crest of the tiny inselberg directly south of the larger eastern portion of the Precambrian metamorphic inselberg complex, which is east of the Ivanpah 3 project site boundary. The feature complexes include an eastern and western set of rock-faced terraces. The eastern terrace complex (Feature B) abuts a bedrock outcrop along the crest of its host inselberg and includes what appear to be a constructed rock bench and three constructed stone niches. There is a rock upright incorporated into the face of one of the terraces in the complex, and part of the surface of the fill of the terrace immediately beneath the upright is a jumbled pavement of angular quartzite cobbles.

The archaeologists for Solar Partners found, in consideration of the total complement of the field examinations of ISEGS-01, that the construction of the site most likely dates to somewhere from the very late or terminal prehistoric period to the early historic period, and were unable to establish the cultural identity of the people who built the site. The character of the partial quartzite pavement on feature B, the degree of $CaCO_3$ rind removal and the relative loss of red staining on constituent rocks of the rock features on the site, and the incipient character of desert pavement development on those features are the evidentiary basis for the interpretation of the age of the site. The absence of metallic or other artifacts or cultural residues that are clearly associated with the construction or use of the site, and construction techniques and architectural forms that are presently indistinct make it difficult to attribute the site to any particular group of people.

ISEGS-02

ISEGS-02 is a historic trash scatter or refuse deposit that appears to date roughly to the 1890s to 1910s. The site appears to be a discrete, primary deposit, measuring approximately 15 to 20 feet in diameter. It was found on a bajada surface slightly higher than the ephemeral stream channels nearby that flank it, on a

bajada interfluve. The frequency of the artifacts in the deposit is moderate, and the deposit artifact assemblage includes one whole, embossed, manganese-decolorized, beverage bottle; two whole, colorless, wide-mouthed pickle jars with "Heinz" embossments; and many apparent food and evaporated milk tins. The food tins are hole-in-cap cans with apparent lock or folded-edge side seams, flush, stamped can ends, roughly 1 to 1½ inches in diameter, hand-soldered caps, and hand-soldered cap vents. The evaporated milk tins have flush, stamped can ends and hand-soldered, matchstick filler closures. The deposit, as a whole, appears to represent a single episode or cycle of activity, as multiple points of discard were not apparent. Given the distance of the deposit from any known or apparent roads or trails, or from any known or apparent loci of habitation, and given the apparent age of the deposit, it most likely represents the locus of a temporary campsite.

5.4.4 September 2008 Helicopter and Pedestrian Reconnaissance Survey

BLM reinitiated discussions with Solar Partners at the June 23, 2008, Data Response and Issues Resolution Workshop in Primm, Nevada, and at the July 2, 2008, continuance of that workshop in Sacramento. BLM sought to encourage Solar Partners to provide information on the potential presence of Native American traditional use areas beyond the project site that would be subject to the direct impact of the stark visual intrusion that the project would impose on any such resources. To demonstrate the potential presence of Native American traditional use areas in sight of the proposed project, BLM shared the preliminary results of the May 23, 2008, pedestrian reconnaissance survey of the inselbergs adjacent to the project area as evidence that such use areas may be present. BLM asked at the June 23 workshop that Solar Partners more formally evaluate the archaeological site that was found as a result of that reconnaissance (ISEGS-01) and that Solar Partners conduct a pedestrian reconnaissance of the inselbergs adjacent to the project site and along the ridgelines of the toe of approximately 11 of the Clark Mountain Range foothills that overlook the project site. Solar Partners agreed to the requests at the July 2 continuance of the workshop and asked, in turn, that BLM staff provide protocols for both the evaluation of ISEGS-01 and the reconnaissance survey. BLM staff developed them, incorporating a subsequent request by Solar Partners to integrate the use of a helicopter in the reconnaissance survey. BLM provided the "Protocol for Reconnaissance Survey for Native American Traditional Use Areas" and the "Protocol for the Documentation and Evaluation of Archaeological Site ISEGS-01" on or about July 21, 2008 (CEC, 2008). Solar Partners produced a preliminary summary of the results of the field efforts for the protocols in a confidential technical memorandum of September 17, 2008 (Helton et al., 2008), which references a forthcoming, more detailed report. The later report (Lawson et al., 2008), a second confidential technical memorandum of December 5, 2008, provides the final results of both the reconnaissance survey and the evaluation of ISEGS-01.

Solar Partners' consultant, CH2M HILL, implemented the "Protocol for Reconnaissance Survey for Native American Traditional Use Areas" (Reconnaissance Survey Protocol), making modest adjustments to the "Field Investigation Methods" in the protocol. The purpose of the reconnaissance was to facilitate the rapid field documentation of potential Native American traditional use areas in the portion of the project area of analysis where the proposed project would create direct visual impacts for such resources. The primary focus of the reconnaissance was the identification of archaeological sites, and natural landscape loci where cultural modification is apparent, that may be prehistoric or historic Native American traditional use areas.

The original Reconnaissance Survey Protocol requested that Solar Partners conduct a helicopter reconnaissance of the crest of each ridgeline in circled areas on a hardcopy map that CEC and BLM staff gave to Solar Partners at the June 23 workshop. The cited map delimited a total of 12 circular reconnaissance survey areas (Areas 1–10, Limestone Ridge, and Metamorphic Hill) in an arc from southwest of the project site clockwise to north of the project site, across the toe of the Clark Mountain Range foothills. The protocol requested that a helicopter skid-to-ground height of approximately 25 feet be maintained while conducting the reconnaissance and that Solar Partners assess the viability of the use of a helicopter for the reconnaissance of Native American traditional use areas by conducting an initial flyover of ISEGS-01. If ISEGS-01 was not clearly visible from a 25-foot height, then the use of the helicopter would be abandoned

and the survey of the ridgelines in the reconnaissance survey areas would be conducted on foot. If ISEGS-01 was clearly visible from 25 feet, then Solar Partners was to use the helicopter to survey the subject ridgelines and follow up the helicopter survey with pedestrian surveys of sample areas on several of the ridgelines in the reconnaissance survey areas to verify the accuracy of the results of the helicopter survey. Solar Partners chose instead to conduct pedestrian surveys of the Limestone Ridge, the Paleozoic marine limestone inselberg just to the west of the Ivanpah 3 project site boundary, and the Metamorphic Hill, the Precambrian metamorphic inselberg complex just to the east of the Ivanpah 3 project site boundary, and to conduct a helicopter reconnaissance of a sample of the ridgelines in Areas 1 through 10. In late August 2008, Solar Partners, citing the length and the steep grade of many of the ridgelines in Areas 1 through 10, submitted revised maps of those survey areas that delimited 22 reconnaissance targets. The reconnaissance targets are a sample of the flatter ridges and of the topographic highs within each survey area that possess unobstructed views of the surrounding terrain.

Solar Partners requested that BLM staff agree to restrict the helicopter survey to the 22 reconnaissance targets. BLM staff agreed to this revision to the original Reconnaissance Survey Protocol. Subsequent to BLM staff approval of the revision to the protocol, Solar Partners added a further reconnaissance survey area, Area 11, to the north-northeast of the project site and 5 new reconnaissance targets, for a total of 27 reconnaissance targets.

The Reconnaissance Survey Protocol also includes methods for the recordation of archaeological deposits found as a result of the survey, “Field Recordation of Archaeological Remains.” Solar Partners was to complete California Department of Parks and Recreation (DPR) 523A and 523J forms for each archaeological site, and each locus of cultural modification to the natural landscape, found that may be a prehistoric or historic Native American traditional use area, record field notes that document descriptions of and GPS coordinates for archaeological sites and loci of natural landscape modification that Solar Partners does not believe are Native American traditional use areas, and record field notes that document descriptions of isolate artifacts and diffuse artifact scatters that collectively make up the low-frequency background of the local archaeological record. The purpose of the documentation of archaeological remains and modified landscape loci that are not thought to be of Native American origin is to document the authenticity and accuracy of the results of the reconnaissance, and to provide an empirical archaeological context for the interpretation of the results, whether positive or negative.

CH2M HILL archaeologists conducted the pedestrian reconnaissance survey of the Limestone Ridge and the Metamorphic Hill, intermittently, from September 2 through 4, 2008. The archaeologists conducted meandering pedestrian surveys of the crest of the ridge and the topographic highs of the metamorphic rock outcrops that compose the Metamorphic Hill, or the Precambrian metamorphic inselberg complex. Photographs and GPS coordinates were taken of and for archaeological sites and loci of landscape modification that the archaeologists understood as unlikely to be Native American in origin, and of and for other archaeological sites and loci of indeterminate cultural affinity. Field notes on artifacts found in association with such sites or loci were taken. The other field recordation methods of the Reconnaissance Survey Protocol also appear to have been followed.

CH2M HILL archaeologists conducted the helicopter portion of the reconnaissance survey on September 8 and 9, 2008. Each of the 27 reconnaissance targets were subject to close aerial survey and videotaping at heights of approximately 50 to 300 feet above the ground, in apparent deviation from the Reconnaissance Survey Protocol. Navigation to each reconnaissance target was accomplished through the use of the GPS navigation computer in the helicopter, reference to hardcopy USGS 7.5-minute topographic quadrangle series maps, and hand-held GPS units. Where safe landing zones for the helicopter were found in Areas 1 through 7, and 11 (There were 14 such zones, or N =14), the archaeologists conducted meandering pedestrian surveys of the crest of target ridgelines and of the topographic highs. Photographs and GPS coordinates were taken along each surveyed ridge crest. The other field recordation methods of the Reconnaissance Survey Protocol also appear to have been followed.

The helicopter and pedestrian reconnaissance survey did not result in the discovery of archaeological features or deposits that CH2M HILL archaeologists understood to be Native American traditional use areas.

5.5 Summary of Known Archaeological Sites

One archaeological resource, ISEGS-01, is now known to be present in the project area of analysis. The results of the investigation to gather information to evaluate the historical significance of the archaeological site are found in the "ISEGS-01" subsection above. A summary of the information from the subsection is provided here as a brief context for BLM recommendation on the eligibility of the resource for listing in the CRHR.

ISEGS-01 is an archaeological site that includes five dry-stacked rock features and feature complexes arranged on either side of the crest of the tiny inselberg directly south of the larger eastern portion of the Precambrian metamorphic inselberg complex, which is east of the Ivanpah 3 project site boundary. The feature complexes include eastern and western sets of relatively long, rock-faced terraces; another contiguous series of four, small, roughly square, rock-faced terraces; a stand-alone, triangular rock-faced feature with a fill of angular cobbles of the local metamorphic rock; and a remnant dry-stacked rock wall.

The field inspection of ISEGS-01, its constituent rock features, and the near vicinity found no artifacts that could be unambiguously associated with the construction or use of the site. No portable material culture objects of any type were found in or among the site features. A sparse scatter of three historic artifacts was found in a range of 5 to 15 meters from the site.

The investigation of ISEGS-01 was unable to conclusively establish the age or the cultural identity of the builders or users of the site. Neither the review of the archaeological and ethnographic literature relating to rock art and rock feature sites nor the review of Southern Paiute, Chemehuevi, or Mojave architecture and construction methods found any information that could reliably be used to interpret the individual features of ISEGS-01 or the site as a whole. The geophysical prospection of the site and site vicinity with a metal detector produced no signals that would indicate the potential presence of metallic debris. Geoarchaeological examinations of the rock features of ISEGS-01 for potential indices of the relative age of the site conclude that the probable time of its construction ranges somewhere from the very late or terminal prehistoric period to the early historic period. The archaeologists for Solar Partners were ultimately unable to establish the cultural identity of the people who built the site. Among innumerable other potential interpretations for the site, CEC and BLM staff speculate whether it may be a late prehistoric or early historic Native American traditional use area, more specifically, a site the use of which may have been ritual in character.

Given that ISEGS-01, notwithstanding the thorough investigation and consideration of the resource, cannot be associated with events that have made a significant contribution to the broad patterns of our history or with the lives of persons significant in our past, that it cannot be associated with or said to embody the distinctive characteristics of a type, period, or method of construction, that it cannot be associated with or said to represent the work of a master, or possess high artistic values, and that it has not yielded, and is not likely to yield, information important to prehistory or history, BLM determined that the site does not meet any of the criteria for inclusion on the NRHP. In the Final Staff Assessment, CEC staff recommended that the CEC, as lead agency and pursuant to Title 13, Public Resources Code, section 21084.5, determine that ISEGS-01 is not eligible for listing in the CRHR.

5.6 Ethnographic Resources

No CRHR-eligible ethnographic resources have been found in the project area of analysis.

5.7 Built Environment Resources

Several built-environment resources are now known to be present in the ISEGS project area. They include the Hoover Dam-to-San Bernardino transmission line (CA-SBR-10315H); a dismantled, early to mid-twentieth century telephone line and an unimproved, two-track dirt road that parallels it (CA-SBR-12574H); an approximately 1,200-foot-long segment of a faint, unimproved two-track dirt road (CA-SBR-12575H); a segment of a dirt road that appears to correspond to the "Road to Bullion Mine" on the 1885 GLO map (36-020716), a segment of the Arrowhead Highway (CA-SBR-7689H); and the remains of Stateline well and corral/stock loading facility (CA-SBR-10803H).

Additional consideration is given here to the presence and the historical significance of a discontiguous, multi-element resource, the Hoover Dam-to-San Bernardino transmission facility, which incorporates the material elements that are critical for the resource to transmit electricity.

5.7.1 Hoover Dam-to-San Bernardino Transmission Line (CA-SBR-10315H)

The Hoover Dam-to-San Bernardino transmission line (CA-SBR-10315H) continues in operation today as the Eldorado-Baker-Coolwater-Dunn Siding-Mountain Pass 115-kV transmission line. The line trends approximately northeast to southwest between Ivanpah 1 and 2. The typical structures that make up the transmission line are metal, H-frame, riveted, latticed masts and metal crossbeams. The design specifications for the H-frame structures call for the masts to be 17 feet apart and 52 feet tall. The crossbeams that span each pair of masts are approximately 34 feet in length and carry three transmission cables. Only one of the H-frame structures in the project area appears to have been replaced since the original construction of the line. The replacement structure has wooden masts and a wooden crossbeam (Solar Partners I et al., 2008).

Southern Sierras Power Company, a wholly owned ally company of the Nevada-California Power Company, began construction of the original 132-kV Hoover Dam-to-San Bernardino transmission line in 1930 in BLM Right-of-Way (ROW) Grant No. R 01730 (Solar Partners I et al., 2008). The 225-mile-long line was completed in 1931 in a record 225 days. The original purpose of the line was to carry electricity from the city of San Bernardino to the construction site for Hoover Dam. The line was reversed in August of 1937 to carry electricity back to San Bernardino from Unit A-8, a 55,000-h.p., 40-MW hydroelectric turbine, at Hoover Dam. A telephone line, CA-SBR-12574H, was built in 1931 approximately 3,000 feet to the southeast of the transmission line, also inside the bounds of ROW Grant No. R 01730, to facilitate operational communications along the transmission line (Solar Partners I et al., 2008).

BLM and the California State Historic Preservation Officer (SHPO) concluded a consensus determination for the Hoover Dam-to-San Bernardino transmission line on October 22, 1993, as part of a consultation under Section 106 of the National Historic Preservation Act (California Office of Historic Preservation File Nos. ADOE-36-93-007- 00 and BLM841127R) (CH2M HILL, 2007). BLM and the SHPO agreed that the resource was individually eligible for inclusion in the NRHP under Criterion A due to its association with the construction of Hoover Dam, and the role of Hoover Dam in the development of the energy industry in the West (Solar Partners I et al., 2008). Under Title 14, California Code of Regulations, section 4851, subdivision (a)(1), the transmission line is on the CRHR as a result of the above consensus determination.

BLM has determined that CA-SBR-10315H retains sufficient integrity and is individually eligible for inclusion on the NRHP under Criterion A. In addition, the resource is potentially eligible under Criterion C.

5.7.2 CA-SBR-12574H

CA-SBR-12574H is a dismantled telephone line and a parallel, unimproved, two-track dirt access or service road. Only a portion of the resource appears to have been recorded in the project area, an approximately 2,200-foot-long segment through the northwestern quadrant of Ivanpah 1. The telephone line and the road trend approximately northeast to southwest. Both elements of the resource are traceable in aerial photographs east of I-15 and out across Ivanpah Valley.

The telephone line is now a line of wooden utility pole bases that have been cut off approximately 6 to 12 inches above the present surface of the project area. There is an assemblage of artifacts from the downed line among the pole bases. The assemblage includes a few of the downed cedar poles, which appear to have originally been 25 feet tall with hardware consisting of metal nuts and bolts, metal brackets or plates, metal cable, wooden cross beams, and glass insulators. The insulators (McLAUGHLIN No. 19 and HEMINGRAY–42) indicate a date range for the construction of the telephone line sometime from 1920 to 1967.

The approximately 10-foot-wide, two-track dirt road is about 10 feet northwest of and parallel to the telephone line. Ephemeral stream channels appear to dissect the road in a number of places along the recorded road segment.

No other artifacts, beyond the parts of the utility line, were found in association with either element of the resource (Fergusson, 2007).

The telephone line and the dirt access road were built in 1931 under BLM ROW Grant No. R 01730 by the Interstate Telegraph Company, a subsidiary of the Nevada-California Electric Corporation, for the apparent sole purpose of facilitating private transmission line communications along the Hoover Dam-to-San Bernardino transmission line (Solar Partners I et al., 2008). Given the resource's obvious loss of integrity of design, materials, and workmanship, BLM has determined that the portion of CA-SBR-12574H in the project area would not contribute to the eligibility of the line, as a whole, as a stand-alone resource, to the NRHP.

5.7.3 CA-SBR-12575H

CA-SBR-12575H is a faint segment of an unimproved, two-track dirt road that appears to have been abandoned for a while. Only a portion of the road in the project area, an approximately 1,200-foot-long segment through the northwestern quadrant of Ivanpah 1, was recorded. The approximately 8-foot-wide dirt road trends roughly east-southeast to west-northwest. The western end of the road continues on out of Ivanpah 1 toward the Clark Mountain Range, while the eastern portion of the road becomes progressively more difficult to trace as ephemeral stream channels obliterate the road tracks. No artifacts were found in direct association with the road (CH2M HILL, 2007; Fergusson, 2007).

Given that the resource cannot be associated with events that have made a significant contribution to the broad patterns of our history or with the lives of persons significant in our past, that it does 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, that it has not yielded, and is not likely to yield, information important to history, and that the resource does not retain integrity of design, workmanship, feeling, or association, BLM has determined that the site does not meet any of the criteria for eligibility for listing on the NRHP.

5.7.4 CA-SBR-7689H

CA-SBR-7689H, the Arrowhead Highway, has been previously determined not eligible by consensus determination by BLM and the SHPO in 1994 and by Federal Highways Administration (FHWA) and the SHPO in 2005.

5.7.5 CA-SBR-10803H

CA-SBR-10803H, remains of Stateline well and corral/stock loading facility, was previous determined not eligible by consensus determination by FHWA and the SHPO in 2005. BLM concurs with this determination.

5.7.6 CA-SBR-10806H

CA-SBR-10806H, a segment of the Ivanpah-Providence Road, was previously determined ineligible by consensus determination by FHWA and the SHPO in 2005. BLM concurs with this determination.

5.7.7 36-02071

36-02071, a segment of the “Road to Bullion Mine,” does not meet any of the criteria for inclusion on the NRHP.

5.8 Summary of NRHP- or CRHR-Eligible Resources for the Ivanpah SEGS Project

One cultural resource in the ISEGS project area is NRHP-eligible: the Hoover Dam-to-San Bernardino transmission line (CA-SBR-10315H).

SECTION 6

Monitoring and Discoveries during Construction

6.1 Personnel

The designated CRS for the ISEGS project was Clint Helton. Mr. Helton has an M.A. degree in anthropology with an emphasis on archaeology and 19 years of experience in archaeology and cultural resources management. He is a Registered Professional Archaeologist (formerly Society of Professional Archaeologists). Mr. Helton has served as principal investigator for several large cultural resources management projects during the permitting and construction compliance phases.

Cultural resources monitoring for the ISEGS was initiated on October 8, 2010, and continued at varying levels of intensity until January 30, 2013. During this period nine new discoveries were made during construction of the ISEGS, all of which were isolated finds. Each find was reported to the CEC Compliance Project Manager (CPM) and BLM upon discovery. The majority of the items observed and collected during construction were formal tools, specifically spear and projectile points, which are often temporally diagnostic items. This section includes an analysis of these items (see Appendix B).

6.2 Methods

The collection includes two main classes of artifacts: stone tools and ceramics. All stone artifacts were initially divided into two broad classes: ground stone and flaked stone. For this analysis, ground stone is used as a category for all tools that have been manufactured through grinding, pulverizing, or polishing as well as all tools that have become ground, pulverized, or polished through use as both of these show similar wear patterns (Schneider, 1998). The flaked stone category includes all tools created through flake removal that show no signs of being used for any grinding activities and have been used for scraping, cutting, and chopping activities (Robinson et al., 2001).

Material typing in this analysis was done macroscopically; 15 times magnifications were used for more ambiguous materials. Flaked stone tools were divided into the categories basalt, chert, and obsidian.

6.2.1 Ground Stone

Prehistoric peoples appear to have employed ground stone tools for a variety of tasks. In addition to the processing of seeds and plant material, ground stone tools have ethnographically and archaeologically been shown to be used for processing fish, sea mammals, clams, and small animals, such as lizards, insects, lagomorphs, and rodents (Kroeber, 1925; Yohe et al., 1991). Ground stone tools are also used for smoothing and abrading, as well as hide processing (Adams, 2002).

Recorded attributes for all ground stone tools include tool type, which was based on tool morphology, and metric data, which included length, width, thickness, the number of ground faces, as well as the number of shoulders, was also recorded. If the ground stone tool had been fire affected, this was noted.

6.2.2 Flaked Stone Tools

Prehistoric use of flaked stone tools covers a very wide range of activities. Flaked stone tools were used in food preparation, food gathering, hunting, treating animal skins, gathering raw materials, preparing reeds for weaving, and numerous other activities. All of the flaked stone tools in this collection are formal tools, either spear or projectile points, created from careful bifacial flaking, and edge modified flakes, expediently produced tools.

Recorded attributes for all flaked stone tools included tool type, which was based on tool morphology, and metric data, which included length, width, thickness, and weight. Projectile points were assigned to a point type group, if enough of the point was present to determine point type.

The majority of the analysis of flaked stone was conducted macroscopically; 15 times magnifications were used for the study of worked edges.

6.2.3 Ceramics

A single pot drop consisting of a small number of ceramics fragments was recovered during the monitoring phase. Ceramics analysis of a large assemblage can provide insight into site use, trade patterns, or even technological changes (Hoopes and Barnett, 1995); however, such analysis was not possible with the limited sample recovered. The ceramic sherds were measured and photographed. Both the type of clay used and the temper were noted, as well as the presence or absence of any decoration. Features examined for these sherds included thickness and any manufacturing evidence.

6.3 Results

Table 6-1 presents the results of the artifact analysis. DPR Primary forms are provided in Appendix B.

TABLE 6-1
Artifacts in the Collection, SBCM-6345

Isolate number	Artifact Type	Dimensions (mm)	Description
P-36-027172	Projectile point	41.5x26.6x5.4	The distal end of this point is broken and there may be retouch along the base. Additional measurements were taken, basal width, 22.0 mm; neck width, 13.8 mm. The morphology of the point is consistent with the Desert Side Notched point type, a common Side Notched point type in the Mojave; however, point dimensions are not consistent with that point type. Both morphology and measurements, however, are consistent with the Northern Side Notched points, an older point type not found in the Primm, Nevada, area. This point is overall larger, with a much wider mean width, basal width, and neck width, than the common Desert Side Notched, and is more likely an older point of the Northern Side Notched point type.
P-36-027173	Knife/biface	85.7x38.4x9.2	This artifact is a large, complete, leaf-shaped biface. It is likely a hafted dart point or knife. The overall shape of the biface is triangular. The proximal edge is straight. Large knives like this one are frequently associated with the Pinto Period.
P-36-027174	Projectile point	40.1x21.8x5.6	This point appears to have been broken on one side and then, expertly reworked. It is clearly notched on one side and rounded on the other with truncated base. The intact side has a corner notched point. The base is partly reworked, but the portion left appears to be slightly concave.
P-36-027175	Projectile point	35.1x21.0x6.1	This is a complete point. This point does not fit into known point typologies easily. The overall body shape is convex and highly irregular, likely due to inclusions and vesicles in the chert. Vesicles in the chert along one of the edges were noted that clearly affect the shape of the point. Inclusions were noted on the basal edge, and again these appear to affect the shape. This point, which is a mid-sized point could have been reworked or resharpened from a recognized type. Additional measurements taken are: basal width, 13.4 mm; neck width, 15.6 mm

TABLE 6-1
Artifacts in the Collection, SBCM-6345

Isolate number	Artifact Type	Dimensions (mm)	Description
P-36-027176	Biface/knife	95.0x32.6x8.3	This artifact is a large, complete, leaf-shaped biface. It is likely a hafted dart point or knife. The overall shape of this biface is convex. The proximal edge is straight. Large knives and bifaces of this type are frequently associated with the Pinto Period.
P-36-027177	Mano	117.8x66.3x35.4	This piece of ground stone is shaped into a long, two-handed mano, broken along the short axis. One side has evidence of striations and polishing from grinding and the leading edge of the mano is well worn and polished. The mano does not appear to be fire-affected. The cross section is irregular as only one face is ground. One shoulder is present on the ground side. The overall shape of the mano appears to be cylindrical, but as previously noted approximately 30 to 50 percent of the artifact appears to be missing.
P-36-027178	Pot drop	18.6x19.4x6.6 mm; 35.1x16.7x7.0 mm; 96.8x99.7x6.7 mm; 78.1x55.2x6.9 mm; 103.6x88.7x6.5 mm	Five sherds were found at this location; temper appears to be similar to local soil, and the color could be from local sources. The thickness is very uniform and the regular grooves on the inside of the sherds indicate that the pot was most probably manufactured with a potter's wheel. There is some evidence of firing on the outside, but overall, the firing is very even. The pot appears to be large, without decoration, and is likely utilitarian. The item which these sherds represent is not a product of the coiling or paddle and anvil technology and most likely dates to the Historic Era.
P-36-027179	Biface	27.4x19.2x6.4	The overall shape of this point is convex, with slight indentation at the neck and a rounded shoulder on one side of the point. The other edge was broken at the shoulder. There is some evidence of edge wear, specifically chipping damage, along this broken edge. The basal edge is concave. The point is dull in color, possibly due sand blasting or age. This point does not fit into a specific point typology. The point is small, but the maximum thickness of this point is much larger than other similarly sized points (similar maximum lengths and widths). It does not appear to be within the Western Triangular Point morphology. The point is simply too thick and it is not triangular. This point appears to have been modified, likely sharpened, from its original construction, an unknown point type.

Two of the artifacts in this collection do not fall into a specific point typology but rather, are consistent with the large, well-made bifacial knives that are frequently identified as a part of the Lake Mojave tool kit. Flaked stone artifacts, which make up the largest part of the toolkit, are often formal tools made of non-local materials, suggesting long-term curation of more easily carried items. Each of the large bifaces is well worn, and has use damage on all edges. The Lake Mojave Period dates from approximately 8000 to 6000 B.C. and is associated with the waning phases of now dry Great Basin lakes during the early Holocene, such as Ivanpah Lake (Wallace, 1962; Sutton et al., 2007). A relatively high density of Lake Mojave Period artifact assemblages are known at Fort Irwin, approximately 80 miles southwest of the project (Sutton et al., 2007).

One point identified within the project site exhibits morphology similar to the Northern Side Notched typology. These points have a lanceolate to a triangular shape, a thin bioconvex cross section, moderate to deep notches on the side, and basal ears that are frequently the same width as the shoulders. The basal ears are sometimes squared, sometimes sharp and sometimes rounded. This is an older point type that is manufactured from both percussion and pressure flaking. The point type dates from about 6000 to

5000 B.C. Many sites in the northern Great Basin and the southern Columbia Plateau contain points from this typology. The type is not usually found as far south as the ISEGS project area. Evidence for long-distance trade between the home range of where this point type is common and the southern coast of California is documented. Researchers note, specifically, that Olivella Grooved Rectangle beads have been found associated with this point type in numerous places, and the source for these beads is likely the southern Channel Islands, south of the project area (Justice, 2002; Sutton and Koerper, 2005).

One point identified with the project area is consistent with the Elko Corner Notched classification. Elko Corner Notched points vary in basic dimensions, usually have deep and narrow notch openings, exhibit pressure-flaked thin-lenticular cross sections, and have basal hafts that vary in morphology (convex to straight to slightly concave). Elko projectile points are thought to have been used as atlatl dart tips and date between 1500 to 1300 B.C and A.D 600 to 700. Elko points are found at hunter gatherer sites throughout the Great Basin, and in California's Mojave Desert in all ecological zones (Justice, 2002). The presence of an Elko Corner Notched point within the ISEGS project area is not remarkable.

None of the artifacts collected during the construction phase of the project was analyzed to determine chemical composition. Of the material types identified macroscopically in this collection, all could have been obtained locally. Several items found are manufactured of a peach-brown chert. Two items were manufactured from a white chert. A reddish-purple chert with white inclusions was also noted. Limestone beds are recorded in the Spring Mountains where the mountains meet the Ivanpah Valley. Chert nodules and layers have been recorded as associated with these limestone beds and the nodules would easily flow down the drainages into the valley below (Hewett, 1956). One isolated find reported here was manufactured from obsidian. The closest obsidian sources to the project are the Roach Lake, the Devil Peak West, and the Devil Peak North sources, all located close to each other and approximately 10 miles northwest of the project site (Northwest Research, 2011). Locally available basalt could be found at Black Mountain, the McCullough Range, and in the Lucy Gray Mountains. Basalt flows have also been reported in the vicinity of Jean, Nevada (Hewett, 1956).

6.4 Summary

Each of the artifacts above were found in an isolated context within the project site. These isolated finds offer some limited information regarding temporal use of the area, which could have extended from the Lake Mojave Period and into the Historic Period. Some limited information on lithic materials used, potentially all local materials, was also obtained from these finds. Interestingly, one projectile point was found during the monitoring phase that is consistent with the Northern Side Notched points, more commonly found in the northern Great Basin. None of the isolated finds can be directly correlated with any of the known prehistoric archaeological sites in the vicinity of the project area, generally associated with known springs in the surrounding mountains. Generally, these finds, which span most of the period humans are known to have been in the Ivanpah Valley, indicate that the project area is a travel corridor, and has been a travel corridor for millennia.

The mostly undeveloped and open desert of the project area has been used by prehistoric and historic travelers. The majority of these trails were only generally known routes between water sources with a fairly wide usable transportation corridor rather than marked and specific roads (Fowler, 2004). Corridors through this area of the Mojave are known to have been used by the Southern Paiute to reach the Virgin River, by the Anasazi to access the turquoise mines near Halloran Spring, one valley south of the Ivanpah Valley and by European explorers, and American trappers, prospectors, and immigrants. Thus, the presence of any of the above-described artifacts is expected, considering the number and variety of travelers crossing the project area throughout prehistory and history.

This collection will be curated at the San Bernardino County Museum, under the collection number SBCM-6346.

SECTION 7

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Appendix A
Conditions of Certification

APPENDIX A

Conditions of Certification

CUL-1 Prior to the start of ground disturbance (includes "preconstruction site mobilization;" "construction ground disturbance;" and "construction grading, boring, and trenching," as defined in the General Conditions for this project), the project owner shall obtain the services of a Cultural Resources Specialist (CRS), and one or more alternate CRSs, if alternates are needed. The CRS shall manage all consultation, monitoring, mitigation, curation, and reporting activities required in accordance with the Conditions of Certification (Conditions). The CRS may elect to obtain the services of Cultural Resource Monitors (CRMs) and other technical specialists, if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the eligibility to the NRHP and the CRHR of any cultural resources that are newly discovered or that may be affected in an unanticipated manner. No ground disturbance shall occur prior to CPM approval of the CRS, unless specifically approved by the BLM's Authorized Officer and the CPM. Approval of a CRS may be denied or revoked for non-compliance on this or other projects.

Cultural Resources Specialist

The resumes for the CRS and alternate(s) shall include information demonstrating to the satisfaction of the BLM's Authorized Officer and the CPM that their training and background conform to the U.S. Secretary of Interior Guidelines, as published in the Code of Federal Regulations, 36 CFR Part 61. In addition, the CRS shall have the following qualifications:

1. The CRS's qualifications shall be appropriate to the needs of the project and shall include a background in anthropology, archaeology, history, architectural history, or a related field; and
2. At least three years of archaeological or historic, as appropriate, resource mitigation and field experience in California.

The resume of the CRS shall include the names and telephone numbers of contacts familiar with the work of the CRS on referenced projects, and demonstrate that the CRS has the appropriate education and experience to accomplish the cultural resource tasks that must be addressed during ground disturbance, grading, construction, and operation.

Cultural Resources Monitors

CRMs shall have the following qualifications:

1. a BS or BA degree in anthropology, archaeology, historical archaeology or a related field and one year experience monitoring in California; or
2. an AS or AA degree in anthropology, archaeology, historical archaeology or a related field, and four years' experience monitoring in California; or
3. enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology or a related field, and two years of monitoring experience in California.

Cultural Resources Technical Specialists

The resume(s) of any additional technical specialists, e.g., historical archaeologist, historian, architectural historian, and/or physical anthropologist, shall be submitted to the BLM's Authorized Officer and the CPM for approval.

Verification:

1. At least 45 days prior to the start of ground disturbance, the project owner shall submit the resume for the CRS, and alternate(s), if desired, to the BLM's Authorized Officer and the CPM for review and approval.
2. At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS to the BLM's Authorized Officer and the CPM for review and approval. At the same time, the project owner shall also provide to the approved new CRS the AFC and all cultural documents, field notes, photographs, and other cultural materials generated by the project. If there is no alternate CRS in place to conduct the duties of the CRS, a previously approved monitor may serve in place of a CRS so that construction may continue up to a maximum of 3 days without a CRS. If cultural resources are discovered, then construction will remain halted until there is a CRS or alternate CRS to make a recommendation regarding significance.
3. At least 20 days prior to ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and stating that the identified CRMs meet the minimum qualifications for cultural resource monitoring required by this Condition. If additional CRMs are obtained during the project, the CRS shall provide additional letters to the BLM's Authorized Officer and the CPM identifying the CRMs and attesting to the qualifications of the CRMs, at least five days prior to the CRMs beginning on-site duties.
4. At least 10 days prior to beginning tasks, the resume(s) of any additional technical specialists shall be provided to the BLM's Authorized Officer and the CPM for review and approval.
5. At least 10 days prior to the start of ground disturbance, the project owner shall confirm in writing to the BLM's Authorized Officer and the CPM that the approved CRS will be available for onsite work and is prepared to implement the cultural resources Conditions.

CUL-2 Prior to the start of ground disturbance, if the CRS has not previously worked on the project, the project owner shall provide the CRS with copies of the AFC, data responses, and confidential cultural resources reports for the project. The project owner shall also provide the CRS, the BLM's Authorized Officer, and the CPM with maps and drawings showing the footprint of the power plant and all linear facilities. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS. The BLM's Authorized Officer and the CPM shall review submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless specifically approved by the BLM's Authorized Officer and the CPM.

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

At a minimum, the CRS shall consult weekly with the project construction manager to confirm area(s) to be worked during the next week, until ground disturbance is completed, and the project owner shall ensure that the project construction manager is available for such weekly consultations.

The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless specifically approved by the BLM's Authorized Officer and the CPM.

Verification:

1. At least 40 days prior to the start of ground disturbance, the project owner shall provide the AFC, data responses, and confidential cultural resource documents to the CRS, if needed, and the subject maps and drawings to the CRS and CPM. The BLM's Authorized Officer and the CPM will review submittals in

consultation with the CRS and approve maps and drawings suitable for cultural resources planning activities.

2. If there are changes to any project related-footprint, revised maps and drawings shall be provided at least 15 days prior to start of ground disturbance and construction for those changes.
3. If project construction is phased, if not previously provided, the project owner shall submit the subject maps and drawings 15 days prior to each phase.
4. On a weekly basis during ground disturbance, a current schedule of anticipated project activity shall be provided to the CRS and CPM by letter, email, or fax.
5. Within five days of identifying changes, the project owner shall provide written notice of any changes to scheduling of construction phase.

CUL-3 Prior to the start of ground disturbance, the project owner shall submit the Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by or under the direction of the CRS, to the BLM's Authorized Officer and the CPM for review and approval. The CPM shall provide the project owner with a model CRMMP to adapt for project use. The CRMMP shall identify general and specific measures to minimize potential impacts to sensitive cultural resources. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, each monitor, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless specifically approved by the BLM's Authorized Officer and the CPM.

The CRMMP shall include, but not be limited to, the following elements and measures:

1. The following statement included in the Introduction: "Any discussion, summary, or paraphrasing of the Conditions in this CRMMP is intended as general guidance and as an aid to the user in understanding the Conditions and their implementation. The Conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the Conditions in the CRMMP. The Cultural Resources Conditions of Certification from the Commission Decision are contained in Appendix A."
2. A proposed general research design that includes a discussion of archaeological research questions and testable hypotheses specifically applicable to the local prehistory and history of the project area, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design. The research design shall specify that the preferred treatment strategy for any buried archaeological deposits is avoidance. A mitigation plan shall be prepared for any NRHP-eligible resource (as determined by the BLM's Authorized Officer) or any CRHR-eligible resource (as determined by the CPM), impacts to which cannot be avoided. A prescriptive treatment plan may be included in the CRMMP for limited data types.
3. Specification of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground disturbance and post-ground–disturbance analysis phases of the project.
4. Identification of the person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team.
5. A description of the manner in which Native American observers or monitors will be included, the procedures to be used to select them, and their role and responsibilities.
6. A description of all impact avoidance measures (such as flagging or fencing), to prohibit or otherwise restrict access to sensitive resource areas that may be found during construction

and/or operation and may subsequently need to be avoided, and identification of the areas where these measures are to be implemented. The description shall address how these measures would be implemented and how long they would be needed to protect the resources from project-related effects.

7. A statement that all cultural resources encountered shall be recorded on a DPR form 523 and mapped and photographed. In addition, all archaeological materials collected as a result of the archaeological investigations (survey, testing, and data recovery) shall be curated in accordance with the State Historical Resources Commission's "Guidelines for the Curation of Archaeological Collections," into a retrievable storage collection in a public repository or museum.
8. A statement that the project owner will pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the project. The project owner shall identify three possible curation facilities that could accept cultural resources materials resulting from project activities.
9. A statement that the CRS has access to equipment and supplies necessary for site mapping, photographing, and recovering any cultural resource materials that are encountered during ground disturbance and that cannot be treated prescriptively.
10. A description of the contents and format of the Cultural Resource Report (CRR), which shall be prepared according to Archaeological Resource Management Report (ARMR) Guidelines.

Verification:

1. Upon approval of the CRS proposed by the project owner, the CPM will provide to the CRS an electronic copy of the model CRMMP.
2. At least 30 days prior to the start of ground disturbance, the project owner shall submit the subject CRMMP to the BLM's Authorized Officer and the CPM for review and approval. Ground disturbance may not commence until the CRMMP is approved, unless specifically approved by the BLM's Authorized Officer and the CPM.
3. At least 30 days prior to the start of ground disturbance, a letter shall be provided to the BLM's Authorized Officer and the CPM indicating that the project owner agrees to pay curation fees for any materials collected as a result of the archaeological investigations (survey, testing, data recovery).

CUL-4 The project owner shall submit the CRR to the BLM's Authorized Officer and the CPM for approval. The CRR shall be written by or under the direction of the CRS and shall be provided in the ARMR format. The CRR shall report on all field activities related to the implementation of the CRMMP including dates, times and locations, findings, samplings, and analyses. All survey reports, DPR 523 forms, and additional research reports not previously submitted to the CHRIS and the SHPO shall be included as an appendix to the CRR.

If the project owner requests a suspension of ground disturbance and/or construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the BLM's Authorized Officer and the CPM for review and approval on the same day as the suspension/extension request. The draft CRR shall be retained at the project site in a secure facility until ground disturbance and/or construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the BLM's Authorized Officer and the CPM for review and approval at the same time as the withdrawal request.

Verification:

1. Within 90 days after completion of ground disturbance (including landscaping), the project owner shall submit the CRR to the BLM's Authorized Officer and the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.
2. Within 90 days after completion of ground disturbance (including landscaping), the project owner shall provide to the BLM's Authorized Officer and the CPM a copy of an agreement with, or other written commitment from, a curation facility that meets the standards stated in the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, to accept cultural materials, if any, from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.
3. Within 10 days after CPM approval of the CRR, the project owner shall provide documentation to the BLM's Authorized Officer and the CPM that copies of the CRR have been provided to the SHPO, the CHRIS, the curating institution, if archaeological materials were collected, and to the Chairperson(s) of any Native American groups requesting copies of project-related reports.
4. Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the BLM's Authorized Officer and the CPM for review and approval.

CUL-5 Prior to and for the duration of ground disturbance, the project owner shall provide WEAP training to all new workers within their first week of employment at the project site and on the linear facilities. The training shall be prepared by the CRS, may be conducted by any member of the archaeological team, and may be presented in the form of a video. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance, including landscaping, is completed. The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. Samples or visuals of artifacts that might be found in the project vicinity;
3. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;
4. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;
5. Instruction that the CRS, alternate CRS, and CRMs have the authority to halt construction in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;
6. Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;
7. An informational brochure that identifies reporting procedures in the event of a discovery;
8. An acknowledgement form signed by each worker indicating that they have received the training; and
9. A sticker that shall be placed on hard hats indicating that environmental training has been completed.
10. No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the BLM's Authorized Officer and the CPM.

Verification:

1. At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the training program draft text and graphics and the informational brochure to the BLM's Authorized Officer and the CPM for review and approval, and the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.
2. On a monthly basis, the project owner shall provide in the MCR the WEAP Training Acknowledgement forms of persons who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-6 The project owner shall ensure that construction is immediately halted should anyone discover buried archaeological materials on the project site or linear facilities (Discovery). Archaeological materials may include, but are not limited to, such items as whole or fragmentary flaked or ground stone tools, stone flaking debris, discolored, fire-altered rock, animal bone, charcoal, ash, discolored, burned earth, rocks and minerals not common to the project site, and fragments of ceramic, glass, or metal. In the event of such a Discovery, the project owner shall ensure the immediate notification of the CRS, who shall either evaluate the NRHP and CRHR eligibility of the Discovery, in person, on the project site, or supervise the evaluations that a CRM or an appropriate cultural resources technical specialist would make of the historical significance of the Discovery, also in person, on the project. The recommendations of significance shall be substantiated by and reported to the BLM's Authorized Officer and the CPM by the CRS. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor, in a manner agreed to by the CRS.

In the event cultural resources that are over 50 years of age or that may be considered NRHP- or CRHR-eligible are found, or impacts to such resources can be anticipated, construction shall be halted or redirected in the immediate vicinity of the Discovery sufficient to ensure that the resource is protected from further impacts. The halting or redirection of construction shall remain in effect until either the CRS, a CRM, or appropriate cultural resources technical specialist has made evaluations of the historical significance of the Discovery, and all of the following have also occurred:

1. The CRS has notified the project owner, and the BLM's Authorized Officer and the CPM have been notified within 24 hours of the Discovery, or by Monday morning if the cultural resources Discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the Discovery (or changes in character or attributes), the action taken (i.e. work stoppage or redirection), recommendations of eligibility, and recommendations for mitigation of any cultural resources Discoveries, whether or not a determination of significance has been made.
2. The CRS has ensured completion of field notes, measurements, and photography for a DPR 523 primary form. The "Description" entry of the 523 form shall include a recommendation on the significance of the find. The project owner shall submit completed forms to the BLM's Authorized Officer and the CPM.
3. The CRS, the project owner, and the BLM's Authorized Officer and the CPM have conferred, and the BLM's Authorized Officer and the CPM have concurred with the recommended eligibility of the Discovery and approved the CRS's proposed data recovery, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.
4. The CRS, the BLM's Authorized Officer and the CPM have conferred, and the BLM's Authorized Officer and the CPM have determined whether the Discovery reveals new information about the subsurface archaeological character of the project site that warrants the initiation of monitoring for portions of the project site.

5. When the BLM's Authorized Officer and the CPM make a determination that a Discovery does reveal new information about the subsurface archaeological character of the project site that warrants the initiation of monitoring for portions of the project site, the BLM's Authorized Officer and the CPM shall provide notification, by letter or e-mail, to the project owner and the CRS, where on the project site monitoring shall be necessary and why, and notification that **CUL-7** shall be implemented for the subject portions of the project site.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the BLM's Authorized Officer, the CPM, and the CRS with a letter confirming that the CRS, alternate CRS, and CRMs have the authority to halt construction activities in the vicinity of a cultural resources Discovery, and that the project owner shall ensure that the CRS notifies the BLM's Authorized Officer and the CPM within 24 hours of a Discovery, or by Monday morning if the cultural resources Discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.
2. Completed DPR form 523s shall be submitted to the BLM's Authorized Officer and the CPM for review and approval no later than 24 hours following the notification of the BLM's Authorized Officer and the CPM, or 48 hours following the completion of data recordation/recovery, whichever is more appropriate for the subject cultural material.

CUL-7 If there is a discovery of archaeological material, and after the BLM's Authorized Officer and the CPM notify the project owner and the CRS that the initiation of monitoring is necessary for portions of the project site or linear facilities, the project owner shall ensure that the CRS, alternate CRS, or CRMs shall monitor full time on the portions of the project site and linear facilities which the BLM's Authorized Officer and the CPM may specify, and ground disturbance full time on the portions of the laydown areas or other ancillary areas which the BLM's Authorized Officer and the CPM may also specify, to ensure there are no impacts to further undiscovered resources and to ensure that newly found resources are not further impacted in an unanticipated manner.

Full-time archaeological monitoring for this project shall be the archaeological monitoring of all earth-moving activities on the portions of the construction site or the linear facility routes which the BLM's Authorized Officer and the CPM may specify for as long as the activities are ongoing. Full-time archaeological monitoring shall require one monitor per active earthmoving machine working in archaeologically sensitive areas, as determined by the CRS in consultation with the BLM's Authorized Officer and the CPM. If an excavation area is too large for one monitor to effectively observe the soil removal, one or more additional monitors shall be retained to observe the area.

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

The research design in the CRMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resource activities and any instances of non- compliance with the Conditions and/or applicable LORS. Copies of the daily logs shall be provided to the BLM's Authorized Officer and the CPM by the CRS as directed by the BLM's Authorized Officer and the CPM. The CRS shall use these logs to compile a monthly summary report on the progress or status of cultural resources-related activities. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended. The CRS or alternate CRS shall report daily to the BLM's Authorized Officer and the CPM on the status of cultural resources-related activities at the project site, unless reducing or ending daily reporting is requested by the CRS and approved by the BLM's Authorized Officer and the CPM.

The CRS, at his or her discretion, or at the request of the BLM's Authorized Officer and the CPM, may informally discuss cultural resource monitoring and mitigation activities with Energy Commission technical staff.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the BLM's Authorized Officer and the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the BLM's Authorized Officer and the CPM.

A Native American monitor shall be obtained to monitor ground disturbance in areas where Native American artifacts may be discovered. Informational lists of concerned Native Americans and Guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that shall be monitored.

Verification:

1. At least 30 days prior to the start of ground disturbance, the CPM will provide to the CRS an electronic copy of the form to be used as a daily monitoring log.
2. Daily, the CRS shall provide a statement that "no cultural resources over 50 years of age were discovered" to the BLM's Authorized Officer and the CPM as an e-mail or in some other form acceptable to the BLM's Authorized Officer and the CPM. If the CRS concludes that daily reporting is no longer necessary, a letter or e-mail providing a detailed justification for the decision to reduce or end daily reporting shall be provided to the BLM's Authorized Officer and the CPM for review and approval at least 24 hours prior to reducing or ending daily reporting.
3. On a monthly basis, while monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS. Copies of daily logs shall be retained by the project owner and made available for audit by the BLM's Authorized Officer and the CPM.
4. At least 24 hours prior to implementing a proposed change in monitoring level, documentation justifying the change shall be submitted to the BLM's Authorized Officer and the CPM for review and approval.

CUL-8 Prior to the dismantling, by any party, of any portion of the Hoover Dam-to- San Bernardino transmission line (CA-SBR-10315H) located with the boundaries of the project site, the project owner shall obtain the services of an architectural historian. The project owner shall provide the BLM's Authorized Officer and the CPM with the name and resume of the architectural historian. No ground disturbance shall occur prior to CPM approval of the architectural historian, unless specifically approved by the BLM's Authorized Officer and the CPM.

The resume for the architectural historian shall include names and telephone numbers of contacts familiar with the architectural historian's work and all information needed to demonstrate that the architectural historian has the following qualifications:

1. meets the Secretary of Interior's Professional Standards for architectural history;

2. has at least three years' experience in recording twentieth-century industrial structures; and
3. has completed at least one recordation project within the past five years involving coordination with the National Park Service's Heritage Documentation Program (HDP).

Verification:

1. At least 90 days prior to the dismantling of any portion of the Hoover Dam-to-San Bernardino transmission line located within the boundaries of the project site, the project owner shall submit the name and resume of the selected architectural historian to the BLM's Authorized Officer and the CPM for review and approval.
2. At least 75 days prior to the dismantling of any portion of the Hoover Dam-to-San Bernardino transmission line located within the boundaries of the project site, the project owner shall confirm in writing to the BLM's Authorized Officer and the CPM that the approved architectural historian is available for onsite work and provide a date by which the architectural historian will undertake the HAER-type documentation of the tower types and the cabling system of the portion of the Hoover Dam-to-San Bernardino transmission line located within the boundaries of the project site.

CUL-9 Prior to the dismantling, by any party, of any portion of the Hoover Dam-to- San Bernardino transmission line (CA-SBR-10315H) located within the boundaries of the project site, the project owner shall ensure that the approved architectural historian prepares HAER-type documentation of the historic context and historic setting of the resource, and recordation of those physical parts of the Hoover Dam-to-San Bernardino transmission line that are located within the boundaries of the project site. The project owner shall ensure that the architectural historian consults with the HABS/HAER Coordinator in the Pacific West Regional Office of the HDP, in Oakland, and complies with the Coordinator's guidance on the extent and content of documentation appropriate for the Hoover Dam-to-San Bernardino transmission line, as a resource eligible for inclusion in the National Register of Historic Places, and on the format and materials to be used in the documentation. No dismantling of the Hoover Dam-to-San Bernardino transmission line located within the boundaries of the project area shall occur prior to the completion, by the architectural historian, of the recording, in the field, of the historic setting and the portion of the line located within the boundaries of the project site, and the submission to and approval by the BLM's Authorized Officer and the CPM of the draft HAER-type documentation of the Hoover Dam-to-San Bernardino transmission line, unless specifically allowed by the BLM's Authorized Officer and the CPM.

Verification:

1. At least 60 days prior to the dismantling, by any party, of any portion of the Hoover Dam-to-San Bernardino transmission line located within the boundaries of the project site, the project owner shall submit to the BLM's Authorized Officer and the CPM a letter or memorandum from the architectural historian detailing the scope of the HDP-recommended documentation of the resource.
2. At least 30 days prior to the dismantling, by any party, of any portion of the Hoover Dam-to-San Bernardino transmission line located within the boundaries of the project site, the project owner shall provide a copy of the draft HAER-type documentation of the resource to the BLM's Authorized Officer and the CPM for review and approval.
3. Within 90 days after completion of ground disturbance (including landscaping) the project owner shall include in an appendix to the CRR copies of the transmittal letters for the submission of copies of the final HAER-type documentation of the portion of the Hoover Dam-to-San Bernardino transmission line located within the boundaries of the project site to the California State Library and to at least two local libraries in San Bernardino County, and a copy of the letter of acceptance of the final HAER documentation by the Library of Congress, if accepted by that repository.

4. Alternately, at least 150 days prior to the dismantling, by any party, of any portion of the Hoover Dam-to-San Bernardino transmission line located within the boundaries of the project site, the project owner may submit to the BLM's Authorized Officer and the CPM, for review and approval, a copy of final HAER-type documentation of the portion of the Hoover Dam-to-San Bernardino transmission line located within the boundaries of the project site produced by any party, that meets HAER-type standards. If the project owner chooses this alternative, within 90 days after completion of ground disturbance (including landscaping), the project owner shall include in an appendix to the CRR copies of the transmittal letters for the submission of copies of the alternative final HAER-type documentation to the California State Library and to at least two local libraries in San Bernardino County.

CUL-10 If fill soils must be acquired from a non-commercial borrow site or disposed of to a non-commercial disposal site, unless less-than-five-year-old surveys of these sites for archaeological resources are documented to and approved by the BLM's Authorized Officer and the CPM, the CRS shall survey the borrow and/or disposal site(s) for cultural resources and record on DPR 523 forms any that are identified. When the survey is completed, the CRS shall convey the results and recommendations for further action to the project owner and the BLM's Authorized Officer and the CPM, who will determine what, if any, further action is required. If the BLM's Authorized Officer and the CPM determines that significant archaeological resources that cannot be avoided are present at the borrow site, all these conditions of certification shall apply. The CRS shall report on the methods and results of these surveys in the CRR.

Verification:

1. As soon as the project owner knows that a non-commercial borrow site and/or disposal site will be used, he/she shall notify the CRS and CPM and provide documentation of previous archaeological survey, if any, dating within the past five years, for CPM approval.

2. In the absence of documentation of recent archaeological survey, **at least 30 days prior** to any soil borrow or disposal activities on the noncommercial borrow and/or disposal sites, the CRS shall survey the site/s for archaeological resources. The CRS shall notify the project owner and the BLM's Authorized Officer and the CPM of the results of the cultural resources survey, with recommendations, if any, for further action.

Confidential Appendix B
Site Forms

Note: This appendix is confidential and has been submitted under separate cover