GENESIS SOLAR ENERGY PROJECT UNIT 1
BURIED RESOURCE PHASE I AND PHASE II MITIGATION PLAN
RIVERSIDE COUNTY, CALIFORNIA

Prepared for:

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1. BACKGROUND

This document presents a plan for the mitigation of impacts to a buried prehistoric cultural resource discovered during the construction of the Genesis Solar Energy Project. Usually, treatment plans are very technical documents. However, given the wide-spread interest in this find on the part of non-specialists, additional background information and explanations of various analytical techniques has been provided.

GENESIS SOLAR ENERGY PROJECT

The Genesis Solar Energy Project (GSEP) is licensed as a nominally rated 250-megawatt (MW) solar thermal power generating facility located in Riverside County, California, between the community of Desert Center and the City of Blythe (Figure 1). The GSEP is located on public land managed by the Bureau of Land Management (BLM). The Project Disturbance Area, which includes both permanent and temporary disturbance, is approximately 1,819.5 acres, and includes approximately 1,727 acres for the Plant Site and approximately 70 acres for the Linear Facilities. The Plant Site includes the solar arrays, power blocks, power generating equipment, support facilities, and evaporation ponds. The Linear Facilities include a transmission line and an access road, natural gas pipeline, and a main access road connecting the GSEP Plant Site to the Wiley's Well Interchange off of I10 (Figure 2).

In August of 2009, Genesis Solar, LLC (Genesis Solar), a wholly owned subsidiary of NextEra Energy Resources, LLC, submitted an Application for Certification (AFC) to the California Energy Commission (Energy Commission) for the GSEP. The Energy Commission certified the Project in its Final Decision dated September 29, 2010, Docket Number 09-AFC-8 (Final Decision or License).

In addition to the Energy Commission's Final Decision, the Project received its Right-of-Way (ROW) Grant from BLM in November 2010 and Notice to Proceed (NTP) to construct Phase I from both the Energy Commission and BLM in January 2011. Genesis Solar received its Final NTP from the Energy Commission and BLM for construction of the remainder of the GSEP in September 2011. In addition to the construction of the solar facility itself, the activities that will occur given this final NTP include construction of a gas pipeline, the Generation Tie (gen-tie) line from the GSEP Plant Site to the Colorado River Substation (CRS), and access/spur roads along the gen-tie line.

The GSEP project area is divided into two parts, each approximately 900 acres in size, consisting of Unit 1 to the west and Unit 2 to the east. Each unit is further divided into rectangular blocks with eight blocks in Unit 1 and 10 blocks in Unit 2 (Table 1). GSEP cut-and-fill activities began in Unit 1 of the plant site on September 6, 2011. In cut areas, the ground surface is brought to grade using belly scrapers, cutting 6 to 12 inches per pass. In fill areas, the ground surface is scarified using a tractor pulling disc blades across the surface. Graded soils from the cuts are used to bring the surface to grade in fill areas.

Source: ESRI; NextEra Genesis

40 20 0 40 Miles

Scale: 1:2,534,500; 1 inch = 40mile(s)

Figure 1
Regional Map

Path: P:\2011\60220713\06GIS\6.3_Layout\Data_Recovery_and_Testing_Plan\GSEP_Figure_1.mxd, 4/18/2012, wilsons5

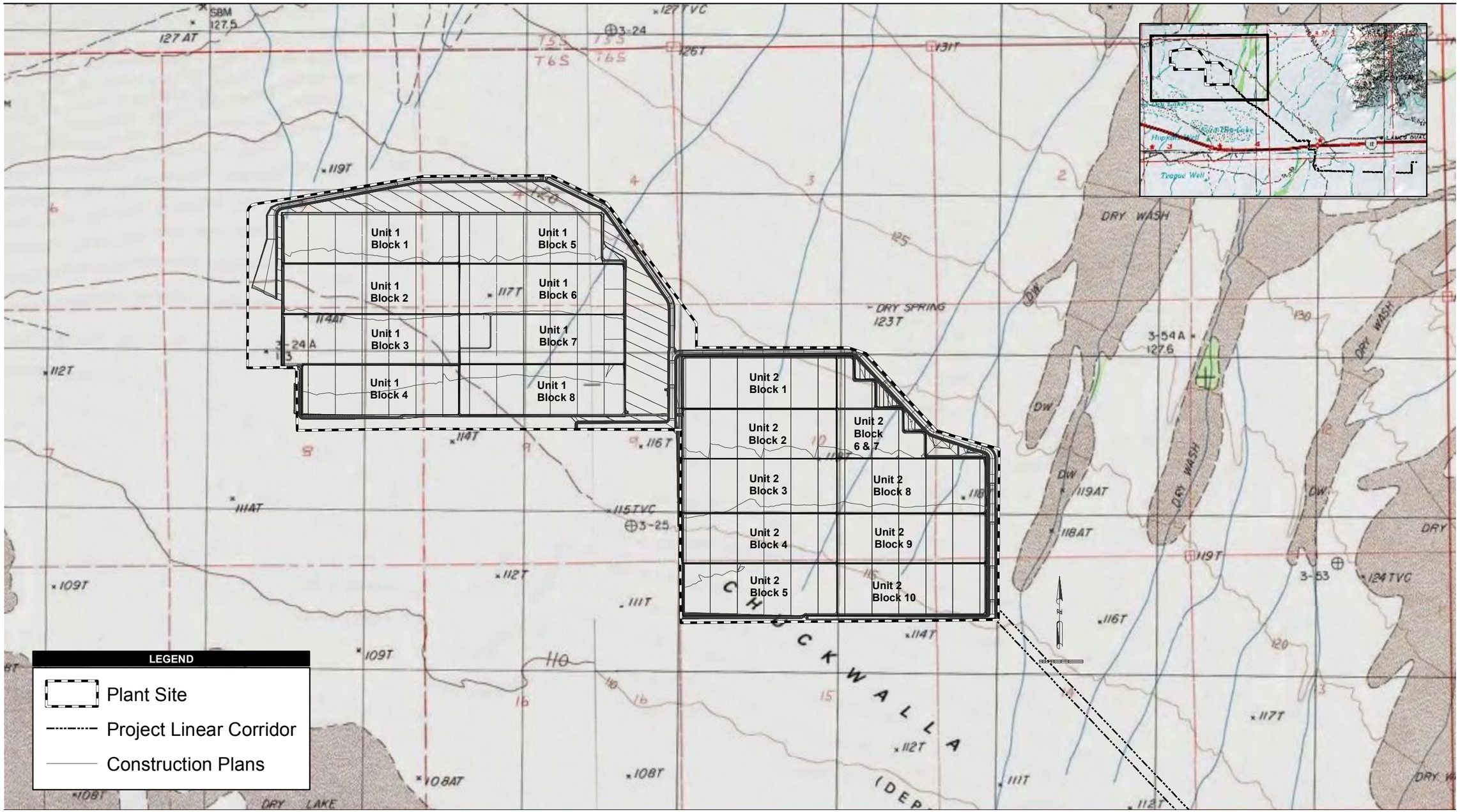

Figure 2
Project Area

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Table 1. GSEP Construction Blocks and Approximate Acreage

Unit 1	
Construction Block	**Approximate Acres**
Block 1	88
Block 2	90
Block 3	85
Block 4	85
Block 5	72
Block 6	84
Block 7	80
Block 8	86

Unit 2
Construction Block
Block 1
Block 2
Block 3
Block 4
Block 5
Block 6
Block 7
Block 8
Block 9
Block 10

REGULATORY ENVIRONMENT

Numerous federal and state laws, ordinances, regulations, and standards govern the management of cultural resources. Cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, and/or scientific importance. State and federal laws use different terms for when identifying cultural resources that are significant or important. California state law discusses significant cultural resources as "historical resources," whereas federal law uses the terms "historic properties" and "historic resources."

BLM is the lead federal agency for the undertaking for the purpose of complying with the National Environmental Policy Act and Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR Part 800). The treatment of cultural resources is governed by a Programmatic Agreement (PA), which is described in detail in the GSEP Historic Properties Treatment Plan (HPTP) (Farmer and Farrell 2011a). The Energy Commission is the lead agency under the California Environmental Quality Act (CEQA). The Energy Commission has approved the construction and operation of the GSEP pursuant to Section 25519, 155 § (c) of the Warren-Alquist Act of 1974. Under this certification, the treatment of cultural resources is governed by the GSEP Cultural Resources Conditions of Certification (COCs) and the Cultural Resources Management and Mitigation Plan (CRMMP) (Farmer and Farrell 2011b).

Compliance with the PA, HPTP, the COCs, and the CRMMP with respect to cultural resources are supervised by George Kline, M.A. on the behalf of BLM and Elizabeth A. Bagwell, Ph.D. on behalf of the Energy Commission. AECOM has been contracted by Genesis Solar, LLC to provide the cultural resources compliance monitoring services required by the HPTP, the CRMMP, and CUL-8 of the COCs (Construction Monitoring Program). AECOM archaeologists Stacey Jordan, Ph.D., RPA, and Matthew Tennyson, M.A., RPA, are Energy Commission - designated Cultural Resource Specialists (CRSs) for the GSEP. Mr. Tennyson also serves as the

GSEP's designated Project Prehistoric Archaeologist and Mary Ann Vicari, M.A., is serving as the Project Geoarchaeologist (PG).

Federal Regulatory Environment

Most of the plant, the associated transmission line, and access roads will be built on BLM land. BLM granted Genesis Solar permission (ROW grant) to use Public land managed by the BLM on November 4, 2010. To receive this permission, Genesis Solar completed many environmental studies, including several focused on cultural resources. These studies helped them comply with federal laws, such as Section 106 of the National Historic Preservation Act.

As part of the process of complying with the legal requirements, BLM consulted with the federally recognized Tribes, the State Historic Preservation Officer, the Energy Commission, and Genesis Solar to limit the way cultural resources might be affected by construction or operation of the project. The decisions reached in these conversations were put into a legal document (the Programmatic Agreement or PA) and described in detail in a treatment plan (Historic Properties Treatment Plan or HPTP). The BLM, State Historic Preservation Officer, and Genesis Solar signed this document, meaning that they are legally required to follow the PA and the HPTP. Because it is a federal document, the Energy Commission did not sign the PA. Genesis Solar is also required to meet the conditions and mitigation measures identified in the Energy Commission's COCs and CRMMP.

Based on these measures, BLM and the Energy Commission gave Genesis Solar permission to start building the plant perimeter fence and access road on December 10, 2010. On August 24, 2011, BLM and the Energy Commission gave Genesis Solar permission to start building the rest of GSEP.

Key Federal Legislation and Regulations

The following briefly summarizes the key federal cultural resources legislation and regulations that apply to the project.

National Historic Preservation Act, Title 16 United States Code Section 470, as amended. The National Historic Preservation Act (NHPA) sets in place a program for the preservation of historic properties. Section 106 of the NHPA requires federal agencies to take into account the effects of projects on historic properties (resources included in or eligible for the National Register of Historic Places). It also gives the Advisory Council on Historic Preservation and State Historic Preservation Office an opportunity to consult. Federal agencies issuing permits for the project, including the BLM, must comply with NHPA requirements.

36 CFR 800 – Protection of Historic Properties. These regulations issued by the Advisory Council on Historic Preservation outline how the Section 106 review process is to be carried out, specifying the actions federal agencies must take to meet their legal obligations. Included are requirements for consultation, identification and evaluation, assessment of effects, and resolution of adverse effects.

Native American Graves Protection and Repatriation Act (NAGPRA), Title 25 United States Code Sections 3001-3013. Provides for the protection of Native American graves, funerary objects, and "objects of cultural patrimony" on federal land and establishes the procedures for determining ownership for Native American human remains, funerary objects, and other sacred objects under federal jurisdiction. For undertakings on public land managed by the BLM, adherence to NAGPRA and other applicable federal laws will be managed by BLM personnel after a coroner's determination that recovered remains are Native American.

43 CFR Part 10, NAGPRA Regulations. These regulations implement NAGPRA and deal with intentional archaeological excavations, discoveries, consultation, custody, and lineal descent and cultural affiliation.

American Indian Religious Freedom Act (AIRFA), Title 42 United States Code Section 1996. This measure establishes a national policy to protect the right of Native Americans and other indigenous groups to exercise their traditional religions. Federal agencies issuing permits for the project are required to comply with this act if Native Americans identify issues regarding their right to exercise traditional religious practices.

Section 106 Process

This project falls under Section 106, with the BLM as the lead federal agency. As part of the Section 106 review process, a federal agency must determine if resources (i.e., properties eligible for listing the National Register of Historic Places) will be affected by a project. To be eligible for the National Register of Historic Places, a resource must be significant at the local, state, or national level under one or more of the following four lettered criteria. Eligible resources are those:

A. Associated with events that have made a significant contribution to the broad patterns of our history;

B. Associated with the lives of persons significant in our past;

C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or

D. that have yielded or may be likely to yield, information important in prehistory or history.

All resources or properties eligible for the National Register of Historic Places must retain integrity. This means the resource must possess the characteristics that existed during the resource's period of significance. Resources, therefore, must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling and association.

Assessments of project impacts are based on direct and indirect physical changes to a resource that is eligible for the National Register of Historic Places. A significant impact would occur if the project:

- alters a resource or its setting in a manner that affects the qualities that make it significant. Direct impacts to archaeological resources include grading, and for built resources include removal of key elements (e.g., roof), or demolition;

- indirectly alters the setting, access to, or other elements of the resource in a manner that negatively affects the significance of the resource. Examples of indirect impacts include increased erosion at archaeological sites or visual intrusion of buildings that are left vacant; or

- disturbs any human remains, including those located outside of formal cemeteries.

The Advisory Council on Historic Preservation's regulation 36 CFR 800.5(a)(1) defines significant impacts as "adverse effects." Adverse effects occur when:

> …an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. (36 CFR 800.5[a][1])

State Regulatory Environment

The Energy Commission is the California state agency that gives licenses to build and operate thermal power plants of 50 megawatts output or larger. As part of the Energy Commission licensing application process, Genesis Solar completed cultural resources studies for the GSEP project area analysis; that area including and surrounding the project site and transmission lines that would be directly or indirectly affected by the project. As part of its review, Energy Commission cultural resources staff; Genesis Solar; local, state, and federal agency representatives, and interested members of the public attended formal public meetings to identify cultural resources in the project area and discuss how they might be impacted by the construction and operation of GSEP.

On September 29, 2010, the Energy Commission approved Genesis Solar's application to build and operate GSEP. As part of this approval, the actions that would be taken to reduce the project's impact to cultural resources were specified (Conditions of Certification), including a requirement that Genesis Solar provide a detailed treatment plan, including protocols for dealing with unanticipated discoveries, prior to the start of ground disturbance at the project site (Cultural Resources Management and Mitigation Plan). For further information see the

California Energy Commission's Final Decision at http://www.energy.ca.gov/sitingcases/genesis_solar/documents/index.html. Key state cultural resources legislation and regulations that apply to the project are summarized below.

Warren-Alquist State Energy Resources Conservation and Development Act Public Resources Code Section 25000 et seq. This legislation created and gives statutory authority to the California Energy Commission. The Commission's siting process has been determined by the Secretary of the California Natural Resources Agency to be a certified regulatory program under the California Environmental Quality Act (CEQA) and the functional equivalent of preparing an Environmental Impact Report (EIR). The Energy Commission is the lead agency under CEQA for all projects it considers, and staff must meet the requirements of CEQA and the CEQA Guidelines when assessing a project's environmental impacts and their significance. However, Energy Commission staff prepares an independent Staff Assessment, rather than an EIR, to document the results of their environmental assessment.

California Code of Regulations Title 20. Public Utilities and Energy. California Energy Commission Regulations CEC-140-2008-001-REV\1. Article 6, Appendix B of this document identifies the information requirements for an AFC, including information about cultural resources in the project area.

CEQA, Pub. Res. Code21083.2. Under CEQA a unique archaeological resource is an artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets one of the following criteria: (1) Contains information needed to answer important research questions and that there is a demonstrable public interest in that information; (2) Has a special and particular quality such as being the oldest or best example of its type; or (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require that reasonable efforts be taken to preserve these resources in place or provide mitigation measures.

CEQA, Pub. Res. Code 21084.1 and CEQA Guidelines, California Code of Regulations Title 14 Section 15064.5 defines a "historical resource" to include:

- resource(s) listed or eligible for listing on the California Register of Historical Resources [14 California Code of Regulations (CCR) Section 15064.5(a)(1)]
- resource(s) either listed in the National Register of Historic Places or in a "local register of historical resources" unless "the preponderance of evidence demonstrates that it is not historically or culturally significant." [14 CCR Section 15064.5(a)(2)]
- resources identified as significant in an historical resource survey meeting the requirements of section 5024.1(g) of the Public Resources Code [14 CCR Section 15065.5(a)(2)].

For listing in the CRHR, a historical resource must be significant at the local, state, or national level under one or more of the following four numbered criteria. A resource will be eligible if:

1. it is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;

2. it is associated with the lives of persons important to local, California, or national history;

3. it embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; and/or

4. it has yielded or has the potential to yield information important to the prehistory or history of the local area, California, or the nation.

Under 14 CCR Section 15064.5(a)(3) the final category of "historical resources" may be determined at the discretion of the lead agency.

As with requirements for the NRHP, all resources eligible for the CRHR must retain integrity, which is the authenticity of a resource's physical qualities that existed during the resource's period of significance. Resources, therefore, must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling and association.

14 CCR Section 15064.5(d) requires consultation with appropriate Native Americans as identified by the Native American Heritage Commission, per Public Resources Code section 5097.98 if there is the existence of, or the probable likelihood of, Native American human remains within the project area.

Public Resources Code Section 5097.98. This section discusses the procedures that need to be followed upon the discovery of Native American human remains. The NAHC, upon notification of the discovery of human remains by the County Coroner, is required to notify those persons it believes to be most likely descended from the deceased Native American. It enables the descendant to visit the site of the discovery of the Native American human remains and to recommend to the land owner (or person responsible for the excavation) the preferred means of treating, with dignity, the human remains and any associated grave goods. These procedures must be followed when remains are found on lands not managed by the federal government. For projects on public land managed by the BLM, adherence to applicable federal laws will be managed by BLM personnel after a coroner's determination that recovered remains are Native American.

Public Resources Code Section 21084.1. This section sets forth that a project that may cause a significant adverse change in a significant historical resource is a project that may be considered to have adverse effects on the environment. Historical resources not listed on the CRHR or other

local lists may still be considered historical resources at the discretion of the lead agency on the project.

BURIED RESOURCE DISCOVERY

By November 16, 2011, a widely dispersed scatter of flaked stone and ground stone (manos and metates) artifacts, buried between 1 and 3 feet beneath the surface had been identified during construction grading in the eastern half (Unit 1) of GSEP. Based on subsequent controlled grading activities to identify the horizontal extent of the distribution (discussed below), the artifact distribution covers approximately 100 acres, though the boundaries remain uncertain. The artifacts likely represent resource processing activities along the former playa shoreline of Ford Dry Lake. Based on the lack of ceramics observed, these artifacts may date to the preceramic period prior to circa 1000 AD. Several sites recorded in the vicinity during the Class III surveys yielded diagnostic projectile points relating to the early and middle Archaic periods.

Following the legal documents and plans described above, and after consulting with concerned Tribes, the BLM and Energy Commission told Genesis Solar to: 1) stop construction in Blocks 1-4 of Unit 1; 2) find the boundaries of the resource both horizontally and vertically; 3) determine if the resource can be avoided by redesigning the project; 4) determine if the resource is significant and therefore requires mitigation; and 5) propose what sort of mitigation measures might be appropriate.

PURPOSE OF THE CURRENT DOCUMENT

The purpose of this document is to present a plan for the mitigation of impacts to the buried prehistoric cultural resource discovered during the construction of the GSEP Genesis Solar Energy Project. Given the dispersed nature of the buried resource, traditional mitigation in the form of data recovery excavation strategies are unlikely to substantively enhance the information that has already been collected during construction monitoring and controlled grading. Therefore, a suite of on- and off-site mitigation strategies is presented. The mitigation plan includes a geoarchaeological trenching program, a Ground Penetrating Radar study, LIDAR analysis, artifact analysis, a year-long ethnographic study, archaeological exploration of Ford Dry Lake, and multiple public outreach efforts.

2. NATURAL SETTING

The GSEP is located in eastern Riverside County's central Chuckwalla Valley. This east-southeast-trending valley is typical of California's Mojave Desert Geomorphic Province, which is characterized by east-west-trending ranges separated by desert valleys with enclosed drainages and dry lakes. The GSEP is bordered to the north by the Palen Mountains, to the northeast by the McCoy Mountains, to the south by the Little Chuckwalla Mountains, and to the west by the Chuckwalla Mountains. The GSEP is relatively flat, with elevations of approximately 400 to 370 feet (GSEP 2009, p. 3-3) and lies near the toe of alluvial fans carrying sheet wash from the Palen Mountains and the McCoy Mountains. The rain-created sheet wash eventually reaches the Ford Dry Lake playa about one mile south of the project, but more commonly is absorbed into the ground water (GSEP 2009, 5.4-3).

The GSEP sits in the transition between the Mojave and Colorado Deserts. The dryer Mojave Desert is characterized by Joshua Tree woodland with creosote bush and white bursage dominate the dry Mojave Desert, while additional trees like palo verde, ironwood and ocotillo are also present in the Colorado Desert (West et al. 2007, p. 30). Two main vegetation types are present at GSEP, Sonoran creosote bush scrub, and stabilized and partially stabilized sand dunes (GSEP 2009, p. 5.3-1).

Birds, reptiles and small mammals, particularly rabbits, ground squirrels, gophers, mice, and Kangaroo Rats, are present at GSEP. Larger mammals such as Coyote, Kit Fox, American Badger, Bobcat, and Mountain Lions have also been noted. Common reptiles noted in the area include snakes, Mojave Fringe-toed lizard, and the Desert Tortoise. Among the birds, hawks, quail, doves, burrowing owls, songbirds, and migrating waterfowl are relatively common (Bagwell and Bastian 2010).

Playa lakes, formed during the Holocene, are quite ephemeral, with life cycles of one to a few tens of years. Playa lakes deposit sediments are orange or brown in color; consist of silt and sand; do not form distinct layers; do not contain aquatic fossils; and contain saline layers. Geological bore samples from Ford Dry Lake show that it contains playa lake deposits to depths of approximately 160 meters (Tetra Tech EC, Inc 2010b). Geomorphological analyses also indicate that shorelines were present at elevations of 360, 370, 373 to 374, 377, and 380 ft above mean sea level, with the age of the shorelines decreasing sequentially from highest to lowest elevation (Kenney 2010:7).

3. CULTURAL SETTING

HISTORIC ETHNOGRAPHIC SETTING

Currently, it is believed that no singular historic Native American group or groups occupied or used the region in which the proposed project site is located, but instead that the area was used widely by various groups at one time or another for resource collection, travel, spiritual activities, and settlement. In maps identifying group territories, Kroeber (1925) suggests that the proposed project area is traditional Chemehuevi territory, while other documents suggest that the immediate area surrounding the proposed project site is likely near Cahuilla and Serrano territory (Bean 1978:576). Ultimately, however, it has been concluded (Singer 1984:36-38) that the area was not clearly assigned to any Native American group on maps depicting group territories. Following Johnson and Johnstone (1957), Singer observed that the west end of the Chuckwalla Valley was near the intersecting boundaries of Cahuilla-Serrano-Chemehuevi territory. Possibly before 800 BC, the Chemehuevi may have expanded into Serrano territory, occupying the Chuckwalla Valley. No evidence suggests that the Cahuilla occupied the area. Given its east-west orientation and location in the Chuckwalla Valley, the vicinity of the project may have served as an east-west trade and travel route for many of the Tribes in the region, including the Chemehuevi, Serrano, Cahuilla, Mojave, Quechan, Maricopa, and Halchidhoma.

In addition, the area experienced relative fluidity in territorial boundaries over time. This fluidity, in general, is represented in the use, abandonment, intrusion and displacement by the aforementioned ethnographic groups. Further, much of this shifting in territories and boundaries during the ethnographic period can be assigned to inter-tribal warfare. As such, the Project area, specifically the environs of Ford Dry Lake, evinces the potential use and/or occupation by some or all of these groups during various times. Further such activities may have fluctuated between territorial controls of the local resources to a joint-use model where multiple groups may have had varying levels of access to those resources.

ARCHAEOLOGICAL SETTING

Human populations have occupied the California desert for at least 10,000 years (Moratto 1984). Stratified sites that would aid in providing temporal controls and help establish a cultural chronology are virtually unknown in the study area. The earliest explorations of the Mojave and Colorado Deserts took place in the 1930s and 1940s (Campbell 1931, 1936; Campbell and Campbell 1935; Campbell et al. 1937; Rogers 1939, 1945). During this time a basic cultural-historical outline was established, which has formed the foundation for subsequent efforts (Arnold et al. 2002, pp. 46–48; Love and Dahdul 2002; Schaefer 1994; Warren 1984). However, these early attempts were based on surface scatters and inference rather than large-scale data recovery projects or regional surveys.

Numerous cultural resource management projects have resulted in dramatic increases in our understanding of the prehistory of the region. Two of the most notable synthetic works include the BLM's large-scale cultural resources inventory of the Central Mojave and Colorado Desert

Regions (Gallegos et al. 1980) and Crabtree's (1980) overview. It was not until the late 1990s that any archaeological site was excavated and reported in the literature within 100 kilometers (km) of the GSEP project areas. Jones and Klar's (2007) recent review of California archaeology builds from where these earlier authors left off, including the results of recent data recovery projects (Schaefer and Laylander 2007; Sutton et al. 2007). The following discussion and culture-historical sequence primarily follows the sources listed above.

Table 2. Regional Archaeological Chronology

Archaeological Period	Date Range	Characteristics
Paleo-Indian Period	about 10,000–8000 BC	Isolated fluted projectile points, assignable to the Western Clovis Tradition.
Lake Mojave Complex	about 8000—6000 BC	Stemmed Series projectile points (Lake Mojave and Silver Lake types), abundant bifaces, steep-edged unifaces, crescents, and occasional cobble tools and ground stone tools.
Pinto Complex	about 8000—3000 BC	Toolstone use focus upon materials other than obsidian and cryptocrystalline silicate (CCS). Pinto Series points are stemmed with indented bases.
Deadman Lake Complex	about 7500—5200 BC	Small-to-medium-size contracting stemmed or lozenge-shaped points, large concentrations of battered cobbles and core tools, and abundant bifaces, simple flake tools, and ground stone tools.
Possible Abandonment	about 3000 to 2000 BC	Few archaeological sites date to this period. It is possible some areas were largely abandoned during this period.
Gypsum Complex	about 2000 BC to 200 AD	Corner-notched Elko Series points, concave-base Humboldt Series points, and well-shouldered contracting-stemmed Gypsum Series points along with numerous bifaces, quartz crystals, paint, split-twig animal figurines, and rock art.
Rose Spring Complex	about 200 AD to 1000 AD	Wickiups, pit houses, and other types of structures in addition to artifact assemblages containing knives, drills, pipes, bone awls, various ground stone tools, marine shell ornaments, and large amounts of obsidian from this time.
Late Prehistoric Period	about 1000 AD to 1700 AD	Ceramic artifacts, Desert Series projectile points, shell and steatite beads, and a variety of milling tools as well as rock art, trails, and geoglyphs.

For the Chuckwalla Valley and vicinity, Singer (1984) has presented a lithic quarry-oriented prehistoric settlement model. Over 200 prehistoric sites occur in the region. Past peoples inhabiting the area appear to have been very mobile, especially during late prehistoric and early historic times. During early historic times, native peoples inhabited towns/hamlets located along

the Colorado River, within the Coachella Valley, and at major desert springs/oases. The Chuckwalla Valley was a relatively closed resource exploitation zone. It served as an east-west oriented trade route/corridor between the Pacific Ocean and the Colorado River/greater Southwest. An extensive network of trails is present within the Chuckwalla Valley. Given its orientation and location, the valley may have been neutral territory (i.e., a buffer zone), unclaimed by neighboring native peoples. Quarry sites probably were "owned" by tribal groups. The distribution of particular types of toolstones may have corresponded to a group's territorial boundaries, and a toolstone type may not have occurred beyond the limits of a group's specific territory.

Within the Chuckwalla Valley, prehistoric sites are clustered around springs, wells, and other obvious important features/resources. Sites include villages with cemeteries, occupation sites with and without pottery, large and small concentrations of ceramic sherds and flaked stone tools, rock art sites, rock shelters with perishable items, rock rings/stone circles, geoglyphs, cleared areas, a vast network of trails, markers and shrines, and quarry sites. Possible village locations are present at Ford Dry Lake, McCoy Spring, Palen Lake, Granite Well, and Hayfield Canyon. A cluster of temporary habitation and special activity (task) sites occurs around a quarry workshop in the Chuckwalla Valley. The Chuckwalla Valley aplite quarry workshop complex probably was used throughout the Holocene. During this period, Chuckwalla Valley most likely was occupied, abandoned, and reoccupied by a succession of ethnic groups. In the Early Holocene (i.e., Lake Mohave complex times), the area may have been relatively densely inhabited. During the Middle Holocene (i.e., Pinto and Gypsum complexes period) it may only have been sporadically visited. The subsequent Late Holocene Rose Spring and Late Prehistoric periods probably witnessed reoccupation of the valley by Yuman and Numic-speaking peoples.

4. PREVIOUS CULTURAL RESOURCES WORK CONDUCTED AT GSEP

Multiple cultural resources studies have been conducted at the GSEP site in order to identify the presence of any resources and propose mitigation measures for impacts that the project might have as required by both the BLM and the Energy Commission. Some of these efforts took place prior to, and were part of the decision making process for, choosing the location for the plant site, transmission lines, and access road. Others have been conducted as part of permitting requirements and during construction as unanticipated resources have been discovered. These efforts can be broken into two types, those related to ethnographic resources and those related to archaeological resources. Ethnographic resources represent the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. These resources are often identified in consultation with Native Americans and other ethnic groups, and issues that are raised by these communities may define the geographic boundaries of the area that is analyzed. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, shrines, or ethnic neighborhoods and structures. Archaeological resources include both prehistoric period resources associated with the human occupation and use of California prior to prolonged European contact as well as historic period resources associated with Euro-American exploration and settlement and the beginning of a written historical record.

ETHNOGRAPHIC RESOURCES

This section describes how ethnographic resources have been identified and the measures that have been implemented in an attempt to mitigate direct, indirect, and cumulative impacts to those resources as a result of GSEP. In addition, guidance provided by Tribal representatives regarding the preferred treatment of a buried resource discovered during construction grading, is summarized.

Native American Heritage Commission

For GSEP, the identification of ethnographic resources began during the permitting phase of the project by contacting the Native American Heritage Commission (NAHC). The NAHC maintains two databases to assist cultural resources specialists in identifying cultural resources of concern to California Native Americans, referred to in this document as Native American ethnographic resources. The NAHC Sacred Lands database has records for places and objects that Native Americans have advised the NAHC that they consider sacred or otherwise important, such as cemeteries and gathering places for traditional foods and materials. The NAHC Contacts database has the names and contact information for individuals, representing a Tribal group or themselves, who have expressed an interest in being contacted about development projects in specified areas. While the BLM must formally consult, government-to-government, with the federally recognized Native American Tribes that have traditional cultural ties to the area in which the project is located, the Energy Commission provides information, sends notices of all public events regarding the project to all Native American groups and individuals whom the

NAHC identifies as having an interest in development in the area, whether federally recognized or not; and meets with Tribal representatives, when requested, to discuss the project and solicit input on project-related impacts to important Native American religious or cultural resources.

Genesis Solar contacted the NAHC by email on October 17, 2007. The NAHC responded on October 19, 2007, with the information that the Sacred Lands File (SLF) database failed to indicate the presence of Native American cultural resources in the immediate GSEP vicinity. The NAHC also forwarded a list of Native American groups or individuals interested in development projects in Riverside County.

BLM Government-to-Government Consultation

On November 26, 2007, the Palm Springs-South Coast Field Office of the BLM sent letters to 28 Native American groups, including those identified by the NAHC, initiating government-to-government consultation for the proposed project. On November 23, 2009, BLM sent an additional letter to the Agua Caliente Band of Cahuilla Indians and informational copies to 12 other groups noting the *Federal Register* publication of the Notice of Intent (NOI) for the proposed project. Publication of the NOI initiated the scoping process to solicit public comments and identify issues. The letter urged any concerned Native American groups to utilize the Section 106 process to provide comments or identify specific concerns.

Between November 2007, and December, 2009 a number of Tribes—Agua Caliente Band of Cahuilla Indians, Morongo Band of Mission Indians, Cabazon Band of Mission Indians, Torres-Martinez Desert Cahuilla Indians, Pechanga Band of Luiseño Indians, Anza Cahuilla, Ramona Band of Mission Indians, Twentynine Palms Band of Mission Indians, and San Manuel Band of Mission Indians—attended meetings with BLM staff about various solar energy and transmission line projects in the region. In general, the Tribes expressed concern over possible damage to cultural resources, cultural landscapes, and traditional cultural properties. In addition, they expressed interest in receiving copies of archaeological reports after cultural resources surveys of the GSEP footprint and linear facilities corridors were complete and being informed about the amount of damage to these resources that was likely to occur during project construction.

Four Tribes—the Fort Yuma Quechan Tribe, the Agua Caliente Band of Cahuilla Indians, the Cabazon Band of Mission Indians, and the Chemehuevi Reservation—responded to the BLM letters about GSEP. The Agua Caliente Band of Cahuilla Indians, the Cabazon Band of Mission Indians, and the Chemehuevi Reservation expressed general concerns about the potential destruction of cultural resources and traditional cultural properties.

During this initial phase of the project analysis, the Fort Yuma Quechan Tribe contacted the BLM multiple times. Their concerns were summarized in a formal letter written in response to the proposed Programmatic Environmental Impact Statement for Solar Energy Development for the six southwestern states. In this letter, they consider the area around Blythe, including the GSEP site footprint and linear facilities corridor, to be part of the Quechan Tribe's traditional land. To alleviate potential impacts to cultural resources, spiritual landscapes, or traditional cultural properties (TCPs), they requested to be consulted at the inception of a project, prior to any plans being finalized. They further requested that the clustering of these large multi-

thousand-acre projects be prohibited, that traditional areas rich in cultural resources be avoided, that projects be placed on land that has already been disturbed, and that existing buildings be favored over undisturbed land for the placement of solar panels. Finally, they emphasized their concern over indirect as well as direct impacts to cultural resources. They requested that the BLM not "focus exclusively on archaeological site impacts, while failing to fully address impacts to resources such as cultural landscapes and TCPs" (Jackson 2009, p. 3).

Energy Commission Conditions of Certification – Ethnographic Study

The Energy Commission developed COC's to address the GSEP project's direct, indirect, and cumulative impacts to the prehistoric and ethnographic resources described above. The BLM incorporated these conditions into their ROW Grant. CUL-1 (Prehistoric Trails Network Cultural Landscape Documentation and Possible NRHP Nomination) established a regional research project funded by Genesis Solar and the owners of other nearby solar projects and managed by the Energy Commission. An ethnographic study was one part of this program.

Dr. Lowell Bean and Jim Toenjes developed an ethnographic context for the GSEP site and surrounding region from ethnohistoric and ethnographic records and sources (Bean and Toenjes 2011). The team also began a place name study which intends, to the extent possible, to connect places mentioned in oral histories or traditional songs with actual physical locations. Chemehuevi/Paiute groups had use rights to territory extending into California, with boundaries west of the Tehachapis and north to Mount Whitney, as well as parts of Nevada and Arizona. Ownership was established and recorded in songs that belonged to specific individuals; the songs named the places the singers owned.

Dr. Bean and his team also conducted a small number of interviews with representatives from the Native American groups that have expressed concerns about GSEP, with the hope of understanding current traditional uses of the desert area activities such as, hunting, plant gathering, mining, and trail running. The following discussion is based upon the team's report written for the Energy Commission (Bean and Toenjes 2011). These interviews found that traditional religious practice among the peoples whose ancestors occupied and used the GSEP vicinity survives principally in mortuary rites. At such rites, traditional songs that describe journeys and treks that took place in "creation time" are sung. These journeys and treks involve places in the GSEP vicinity for both the Chemehuevi/Paiute and Mohave. When the songs are sung, participants in the rites re-visualize the places that are mentioned, and this re-creation of the sacred past, respondents explained, involves a memory of what they have actually seen when they have traveled through the desert. Some of the sacred places are mountains; some are stands of plants like pinyons that they, like people in the sacred past, harvest with due ritual; some are the habitats of animals like mountain sheep that have religious significance for Native Americans; and some are places that may be marked by petroglyphs or rock features. Some respondents purposely make trips into the GSEP vicinity to seek religious power. Whether they do so or not, they indicate that the destruction to the landscape, both physical and visual, by solar projects, is an unmitigable offense to the sacredness and spirituality of the landscape. For many, it presents a denial of the opportunity to engage in traditional religious activities.

Many Native Americans interviewed felt that the only appropriate mitigation would be to not proceed with the projects. In the event that this is not feasible, the following recommendations were made:

1. Native Americans from groups most concerned should be present during construction to advise with respect to mitigation of impacts on surface and subsurface cultural resources.

2. Whenever possible, Native Americans should be employed on the project, not only during the construction phase, but also for on going operational tasks, particularly monitoring of archaeological field work and construction.

3. When impact to plant or animal communities of concern to Native Americans cannot be avoided by moving the lines (i.e. redesigning the project to avoid sensitive areas), consideration will be given to transplantation, especially if the species are endangered or rare.

4. Places that are eligible for the NRHP or CRHR on the basis of ethnographic and/or historic sensitivity will be avoided or protected. If avoidance is impossible, a plan for the protection of the resource will be developed with Native American participation.

5. Sites that have a high sensitivity rating because they have religious or spiritual value to Native Americans will be avoided or protected to the extent that a site with religious or spiritual value to any other group would be avoided or protected. The Native American Religious Freedom Act of 1978, P.L. 95-341 (Federal Agencies' Task Force 1979) reaffirms that Native Americans have the same rights to religious freedom as other Americans.

6. If Native American burial or cremation sites cannot be avoided and are in danger of negative impact, Native Americans will be consulted about appropriate action, including recovery and disposition of remains.

7. An effort will be made to curate artifacts collected from the Study Area in a facility approved by Native Americans or returned to a location at or near "where they [recovered materials] live," meaning where they were originally collected.

Prehistoric Trails Network Cultural Landscape Studies

Contacts with the NAHC and government-to-government consultation with the BLM prior to project licensing by the Energy Commission or ROW approval by the BLM did not result in the identification of any specific resources which might be directly or indirectly impacted by the construction of GSEP. However, in the Energy Commission analysis (Staff Assessment), cultural resources staff designated a noncontiguous cultural landscape (historic district) that incorporates prehistoric archaeological sites associated with the Halchidhoma Trail (CA-Riv-0053T), referred to as the Prehistoric Trails Network Cultural Landscape (PTNCL) (Bagwell and Bastian 2010). This trail passes near the project site. This landscape consists of important destinations in the

Colorado Desert near Blythe, California; the network of trails that tie them together; and the features and sites associated with the trails. Six sites, located within the GSEP facility footprint and linear corridor, were identified as PTNCL contributors subject to direct impacts. Two hundred and forty-eight additional sites are located within the GSEP ethnographic area of analysis and are subject to indirect impacts.

The Energy Commission determined the PTNCL eligible for listing on the CRHR under Criteria 1 and 4. Under Criterion 1, a resource is eligible if it is associated with "events that have made a significant contribution to the broad patterns of our history". In the context of a Native American site where its importance is not recorded in written form, National Register Bulletin 38 (NPS 1998, pp. 12–13) makes it clear that the word "our" refers to the group that finds the property significant and "history" includes both traditional oral and written history. Important events can include specific events, or repetitive trends. Places referred to in Native American oral histories and creation stories, therefore, are potentially eligible.

Native American groups in the Mojave Desert consistently accord mythological importance to springs, petroglyph sites, and particularly trails systems. Trails across the desert mark the locations of travels of ancestral groups as they migrated to the confluence of the Gila and Colorado Rivers. Trails also facilitate dream travel to these places and the times when events mentioned in story and song occurred (Cleland 2005, p. 132). The particular trail that forms the connecting link for this cultural landscape, the Halchidhoma Trail (CA-RIV-0053T), is well known from multiple historical and ethnographic sources. It was an essential trade, transportation, and ritual route for Native American peoples and early European visitors in the Colorado Desert during prehistoric and historic times. This route was an essential connection between the Pacific Coast and the Southwestern deserts of Arizona and New Mexico.

Energy Commission considers the resources that make up the PTNCL to be significant under CRHR Criterion1, for their ties to important events in American history. However, most property types associated with the PTNCL exist today as archaeological resources, such as petroglyphs, pot drops, cleared circles, and webs of intersecting trails. These sites are also considered register-eligible under Criterion 4 for their ability to yield information important in history and prehistory.

Six sites, located within the GSEP facility footprint and linear corridor, are PTNCL contributors which were subject to direct impacts. The remaining 248 sites are located within the GSEP ethnographic area of analysis and are expected to be subject to indirect impacts. All of these sites are eligible for listing in the CRHR as contributors to the PTNCL. The largest of these sites, and the prehistoric focus of the entire region, is McCoy Spring National Register District (CA-RIV-0132). The site is located on the west side of the McCoy Mountains approximately 5 miles from the Wiley's Well Road Rest Area. This resource is already listed on the NRHP and the CRHR.

Unanticipated Discovery

As described in detail below, on November 16, 2011 a buried cultural resource was observed by Cultural Resources Monitors and Native American Monitors during the grading of Genesis Unit 1 Blocks 1-3. Section 9.3 of the HPTP and Section 9.3 of the CRMMP (Plan of Discovery

Procedures) call for representatives from BLM, Energy Commission, State Historic Preservation Officer (SHPO), N ative American Tribes, and t he G SEP C RS t o r eview a nd di scuss a ny proposed evaluation if an unanticipated cultural resource is identified during construction. This section s ummarizes f eedback pr ovided b y N ative American Tribes to B LM d uring f ormal government-to-government c onsultation a s w ell a s ot her c omments provided b y Tribal representatives during meetings and site visits related to this discovery.

The B LM c onducted f ormal g overnment-to-government c onsultation r egarding th is unanticipated di scovery w ith t he Colorado R iver Indian Tribes (CRIT) Tribal C ouncil on January 12, 2012; the Ft. Mojave Tribe on January 13, 2012; and the Fort Yuma Quechan Tribal Council on January 31, 2012. Tribal representatives from various groups have attended multiple site visits and meetings regarding this resource between November 2011 and April 2012. Overall, Tribal r epresentatives h ave r eported t hat t hey consider t his bur ied di scovery t o be bot h a n ethnographic resource a nd an a rchaeological r esource w hich i s pr imarily i mportant f or i ts religious and spiritual values. Their preferred treatment of the discovery is avoidance. Further, considering their belief in the importance of the discovery as an ethnographic resource, Tribal representatives consider the most appropriate method for evaluating its eligibility for listing on the NRHP and CRHR to be an ethnographic study. The archaeological or information values of the discovery were of interest, but the extensive ground disturbing techniques required to collect this information would compromise spiritual and religious values. The ethnographic study will emphasize interviews with local Tribal members focused specifically on Ford Dry Lake and its immediate vicinity. Tribal representatives also note that an ethnographic study will have been conducted during the resource identification phase, approximately around the same time as the initial pedestrian archaeological surveys which took place in 2007. When asked about possible mitigation measures appropriate to treat impacts to this discovery, Tribal representatives have emphasized compensatory off-site mitigation measures including: 1) ethnographic studies, 2) funding for a curation facility in eastern Riverside County, and 3) beginning and advanced Section 106 training for Tribal representatives.

ARCHAEOLOGICAL RESOURCES

Cultural r esources s tudies o f archaeological r esources l ocated w ithin t he G SEP p roject area include p edestrian s urveys, archaeological t esting p rograms, d ata r ecovery, artifact c ollection associated with construction monitoring, and controlled grading associated with the discovery of a l arge bur ied pr ehistoric r esource. These s tudies ha ve a ddressed bot h hi storic a nd pr ehistoric archaeological r esources; how ever, onl y t hose r elated t o p rehistoric resources are s ummarized here.

Pedestrian Surveys

The archaeologists for Genesis Solar (Tetra Tech and/or AECOM) undertook multiple distinct intensive pe destrian a rchaeological s urveys o f the G SEP s ite footprint a nd l inear facilities corridor alternatives. In total, Tetra Tech surveyed a total of 5,430.3 acres for the GSEP project. The total number of acres surveyed by AECOM is 82.6.

The initial survey was a BLM Class II Sampling Field Inventory, which was conducted to facilitate decision-making regarding the placement of the project footprint. During the Class II survey, 20 percent of a 9,480 acres project area was surveyed. To identify locations to survey, this area was divided into 40-acre parcels along eighth-section lines. Forty-eight 40-acre parcels were then randomly selected from a total sample universe of 237 using a random numbers table. In total, 1,896 acres were surveyed. The field work was conducted between November 2007 and January 2008. A total of 53 archaeological sites were discovered in the course of the Class II inventory: 46 are prehistoric, 5 are historic (exclusively refuse deposits), and 2 are dual-component (having both prehistoric and historic elements).

The second survey was an intensive BLM Class III survey of the 2,494-acre proposed project facility site plus a perimeter buffer of 200 feet as part of BLM's and the Energy Commission's CEQA/NEPA/Section 106 review of the Project. The field work was conducted between March and April, 2009. Sites that had been recorded in this area during the initial Class II survey were briefly revisited during the Class III survey and updated if necessary. Of the 21 sites identified, 5 are historic, 15 are prehistoric, and 1 is dual component (historic/prehistoric).

The third pedestrian survey was an intensive BLM Class III survey of the proposed linear facilities corridor as part of BLM's and the Energy Commission's CEQA/NEPA/Section 106 review of the Project. Survey coverage included the proposed linear alignment, plus 75 feet to either side of the center line of the routes. A total of 449.5 acres were surveyed. The field work was conducted in June of 2009. Of the seven sites identified, three are historic, three are prehistoric, and one is dual component (historic/prehistoric).

The fourth pedestrian survey was an intensive BLM Class III survey of a number of linear facilities corridor alternatives as part of BLM's and the Energy Commission's CEQA/NEPA/Section 106 review of the Project. Survey coverage included the corridor alternatives, plus 75 feet to either side of the center line of the routes. A total of 590.8 acres were surveyed. The field work was conducted in January and February of 2010. Of the 20 sites identified, 12 are historic, seven are prehistoric, and one is dual component (historic/prehistoric).

Genesis Solar filed an amendment with the Energy Commission on April 13, 2012 to modify the alignment of the gen-tie line and natural gas pipeline. AECOM conducted two addendum intensive BLM Class III surveys for transmission line realignments and adjustments. The first survey was conducted in August of 2011 and included a total of 4.98 acres near the proposed Colorado River Substation. No cultural resources were identified (Tennyson 2011). AECOM also conducted an additional Class III survey of a transmission line and utilities corridor re-route in March 2012 (Option B). A total of 77.6 acres were surveyed and four previously unidentified sites were recorded. Of the sites identified two were prehistoric and two were dual component. These four sites have not been evaluated, and it is uncertain if they will be subject to direct impacts.

Overall, 105 archaeological resources have been identified during pedestrian surveys associated with GSEP. Of these resources 25 were historic, 73 were prehistoric, and 7 were dual component. Forty-three resources—24 within the site footprint and 19 within the linear corridor— had the

potential to be directly impacted by construction. Some of these have since been avoided, particularly along the transmission and utilities corridor.

Broadly speaking, prehistoric cultural resources in the GSEP vicinity can be characterized as sparse artifact scatters and possible temporary campsites. Ethnographic sources suggest that portions of the Mojave Desert distant from water sources were primarily used for travel and ritual activities rather than for the collection of resources (Cleland 2005). These activities are associated with trails, trail-associated ceramic scatters, and petroglyphs. The sparse artifact scatters are primarily prehistoric flakes and cores. These tend to blend into the prehistoric isolates, which are also predominantly lithics, forming a landscape with regular but diffuse evidence of prehistoric human activities. These activities appear to be related to stone tool manufacturing and maintenance, possibly tied to the collection of wild resources, particularly along the margins of Ford Dry Lake.

Testing of Identified Sites

In October and December 2010, BLM directed Tetra Tech to undertake a limited testing program at eight sites (CA-RIV-9084, CA-RIV-9209, CA-RIV-9215, CA-RIV-9216, CA-RIV-9220, CARIV-9223, CA-RIV-9227, and CA-RIV-9072). The program was developed to confirm eligibility for the NRHP for these sites and to collect data to aid in the preparation of a Historical Properties Treatment Plan for the Project. Following BLM guidelines, the program was limited to the excavation of shovel test pits (STPs) that were 30 centimeters (cm) in diameter, placed in systematic arrays on the sites. The number of STPs used on each site did not exceed the four cubic meter and 25% surface area restrictions called for in the BLM guidelines. In addition, all artifacts encountered in the course of the work were analyzed in the field and no collections made. STPs were terminated at depths between 30 and 50 cm when the sterile Pleistocene alluvium was reached. The results of this program suggested that there are no buried deposits at any of the tested sites. BLM determined that seven of these sites were not eligible for listing on the NRHP; as such no further field testing was required by BLM. Site CA-RIV-9072, in contrast, was determined to be eligible for the NRHP. During the Energy Commission certification process these sites were assumed eligible for the CRHR, and Conditions of Certification were written requiring additional data collection. The data recovery is described in the next section.

In January 2011 the BLM directed Tetra Tech to undertake a limited testing program of 14 prehistoric artifact scatters. These sites included: CA-RIV-9047, CA-RIV-9048, CA-RIV-9051, CA-RIV-9206, CA-RIV-9207, CA-RIV-9208, CA-RIV-9210, CA-RIV- 9212, CA-RIV-9217, CA-RIV-9218, CA-RIV-9219, CA-RIV-9221, CA-RIV-9256, and CA-RIV-9257. During the Energy Commission certification process, these sites were determined to be ineligible for the CRHR. However, Archaic Period artifacts were found at some of these sites and, therefore, BLM determined that a limited testing program would be appropriate.

The goals and the methods used for this program were identical to those described above. The results of this program suggested that there are no buried deposits at any of the tested sites. The BLM determined five of these sites to be eligible for the NRHP due to their clear association with the Archaic Period and the lack of information from this period in the region. Further data

recovery was therefore required. The BLM determined that the remaining nine artifact scatters were not eligible for the NRHP, and further field efforts were not required.

In general, this testing program indicates that prehistoric cultural resources within GSEP consist of places which were visited regularly for short periods over thousands of years, most likely to collect and process wild resources.

Data Recovery

Prehistoric sites directly impacted by GSEP have been subjected to data recovery in several phases. This work has been guided by the BLM HPTP, and the Energy Commission COC's and CRMMP. Broadly speaking, field work consisted of the piece-plotting and collection of all artifacts located on the surface of each site using sub-meter accurate GPS unit. Tetra Tech completed this work at site CA-RIV-9227 in January of 2011 and at sites CA-RIV-9072, CARIV-9084, CA-RIV-9209, CA-RIV-9215, CA-RIV-9216, CA-RIV-9220, and CA-RIV-9223 in April 2011.

In August of 2011, AECOM conducted a secondary data recovery effort at CA-RIV-9072 (only the portion within the project site) as well as at the four Archaic Period sites (CA-RIV-9047, CARIV-9212, CA-RIV-9215, CA-RIV-9220). Additional data recovery in the portion of CARIV-9072 which is outside of the GSEP project site is planned for the future. This work will consist of detailed mapping of artifacts and features, if present, as well as the in-field analysis of a sample of the artifacts. No ground-disturbing activities are planned for this portion of the site.

Since GSEP construction began in the fall of 2011, AECOM has been monitoring all project-related ground disturbance. Frequently, as ground disturbance takes place at site locations additional artifacts are found. These artifacts have been plotted and collected and the site boundaries of existing sites have been modified as necessary.

As required by the BLM and the Energy Commission, all artifacts that will of have been collected as part of data recovery or construction monitoring will be analyzed and the results presented in the final cultural resources report.

Construction Monitoring

Personnel

As prescribed by CUL-8 of the COCs (Construction Monitoring Program), Sections 8.1 through 8.4 of the HPTP, and Sections 8.1 through 8.4 of the CRMMP, Cultural Resources Monitors (CRMs) have been present during all ground-disturbing activities of all native soil. GSEP cut-and-fill activities began in Unit 1 on September 6, 2011. From September 2011 to March 2012, there have been between one and 25 CRMs at the GSEP based on varying levels and location of construction activity, as required by CUL-8 of the COCs (Construction Monitoring Program), Section 8.1 of the HPTP, and Section 8.1 of the CRMMP. In the same time frame between one to ten Native American monitors, primarily from the Soboba Band of Luiseño Indians, have been on-site for all ground-disturbing activities where CRMs are present (see Table 3).

Table 3. Cultural Resources Monitoring Activities at GSEP

Month/Year	Construction areas	Construction Tasks	Number of Cultural Monitors	Major events for the month
January 2011	Access Road	grading, fence installation	**	
February 2011	Access Road	cut and fill activities	unknown number of CRM, 1 NAM	
March 2011	No information	no ground disturbing activities	**	Monitoring suspended on the 9th of March 2011
April 2011	East half of site	marking of cultural sites prior to mowing, site mowing, no ground disturbance	**	
May 2011	West half of site	mowing activities, UXO survey	1 CRM	UXO Survey
June 2011	Access Road; Eastern half of plant site; Well Pad 0; Well Pad 1; Well Pad 2; Unit 1; Unit 2	cut and fill activities, scarification and soil preparation, drilling activities	1 CRM, 1 to 3 NAM	Sites CON-H-1 and CON-H-2 first identified
July 2011	Unit 2; Northern Fenceline; Unit 1, near southern fenceline; Kit Fox Den 11 and 15; Access Road	cut and fill activities, scarification and soil preparation, drilling, kit fox den collapse	1 CRM, 1 to 2 NAM	
August 2011	Assembly building; Unit 2; Well pad 1; Well Pad 0; E Caisson Test Area; Common Area; NW Well Pad 2; perimeter fence; Centerline Road	cut and fill activities, scarification and soil preparation, EOD Survey, caisson drilling, and trenching activities	1 CRM, 1 to 2 NAM	EOD Survey took place.

Month/Year	Construction areas	Construction Tasks	Number of Cultural Monitors	Major events for the month
September 2011	Assembly building; Unit 2; Well pad 1; Well Pad 0; E Caisson Test Area; Common Area; NW Well Pad 2; perimeter fence; Centerline Road	cut and fill activities, scarification and soil preparation, EOD Survey, caisson drilling, and trenching activities	1 to 3 CRM, 1 to 3 NAM	EOD Survey took place.
October 2011	Unit 1, Blocks 1, 3, 4, 5, 6, and 7, Common Area and Contour Area; Well Pad 0; Assembly Building; Den 8	cut and fill activities, scarification and soil preparation, and various trenching activities	4 to 5 CRM, 3 NAM	
November 2011	Unit 1 Block 1, 2, 3, and 4	cut and fill activities, scarification and soil preparation	6 CRM, 2 to 4 NAM	The potential feature (GEN-SB-129), located in Unit 1, Block 2, was left *in situ* and flagged for avoidance
December 2011	Unit 1, Blocks 1, 2, 4, 5, 6, 7, and 8; Unit 2, Blocks 1, 3, 4, 5, 6, 7, 8, 9, and 10	cut and fill activities, scarification and soil preparation, caisson drilling, and drilling for temporary power lines	6 CRM, 3 to 6 NAM	Unit 1, Blocks 1, 2, 3, and 4 have been made exclusion zones
January 2012	Unit 1, Blocks 5 and 8; Unit 2, Blocks 1, 2, 3, 4, 5, 8, 9, and 10	cut and fill activities, scarification and soil preparation, caisson drilling, and drilling for temporary power lines	7 to 10 CRM, 4 to 8 NAM	Additional mitigation is required on site CA-RIV-9212. A plan is currently being prepared. The exclusion zones for CON-H-1 and CON-H-2 remain in place until a testing plan is submitted and approved.

Month/Year	Construction areas	Construction Tasks	Number of Cultural Monitors	Major events for the month
February 2012	Unit 1, Blocks 1, 5, 6, and 7; Unit 2, Blocks 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10, Channels C and D	cut and fill activities, scarification and soil preparation, caisson drilling, and various trenching activities on site	13 to 25 CRM, 4 to 9 NAM	Mitigation at CA-RIV-9212, Testing at CON-H-1 and CON-H-2, CRMs also monitored during implementation of the Controlled Grading Plan (Kline 2012), which took place in portions of Unit 1, Blocks 2, 3, and 4
March 2012	Unit 1, Blocks 1, 2, 4, 5, 6, and 7, Contour Area 1 and Common Area; Unit 2, Blocks 1, 2, 3, 4, 6, 7, 8, 9, and 10, Channels C and D	cut and fill activities, scarification and soil preparation, caisson drilling, and various trenching activities on site	14 to 17 CRM, 5 to 10 NAM	Unit 1 block 1,4, and eastern portions of block 2 and 3 were cleared for construction activities, The exclusion zones for the western portions of Unit 1 block 2 and 3 and diffuser in western portion of Unit 1 remain in place

** No information available

The GSEP CRMs have observed ground-intrusive construction activities and inspected cleared ground and excavation trenches for signs of previously undiscovered archaeological resources. When the CRM discovers any archaeological finds during construction, they have the authority to temporarily halt construction and must notify the CRS, BLM, and Energy Commission Compliance Project Manager (CPM) of any new archaeological sites finds, in accordance with Energy Commission COC's CUL-5 and, CUL-8 (Farmer and Farrell 2011b) and Section 8 of the HPTP (Farmer and Farrell 2011a). Isolated artifacts are recorded, measurements and photos are taken, the artifact's location is recorded with a sub-meter GPS and collected for transport to AECOM for further analysis. A new DPR 523A form is created for any isolated finds; also an updated DPR continuation form is created for any previously recorded sites containing new artifacts. All forms for a single month are compiled and distributed to the BLM and Energy Commission with the GSEP Monthly Compliance Report submitted to the Energy Commission.

The CRMs prepare a daily monitoring log which provides a brief description of the field conditions, construction progress and activities, non-compliance activities, and record of any finds of archaeological material. The daily monitoring logs are forwarded to the Energy Commission and the BLM daily. As of the week of December 12, 2011, all daily logs have also been sent to representatives of the Tribes contacted listed in Appendix I of the GSEP Programmatic Agreement and a list of contacts provided by George Kline of the BLM. All monitoring logs are compiled and incorporated into the Monthly Compliance Report for the GSEP.

Construction Finds

Monitoring at the GSEP began in January 2011. Between January and September 1, 2011, Energy Commission records indicate that 24 artifacts, including 4 prehistoric artifacts have been identified during monitoring. Artifacts recovered have included 2 flakes, one scraper, and a core was found on the surface during preliminary construction-related activities (i.e., assembly building construction, kit fox den collapsing, and channel grading). As construction activities have increased, additional CRMs have been deployed to monitor those activities. Between September 1, 2011 and March 30, 2012 a total of 550 prehistoric artifacts have been recovered from both Unit 1 and Unit 2 of the GSEP during construction monitoring. Artifacts recovered include groundstone, cores, scrappers, hammerstone, and flakes all of which were found during construction related activities.

Construction monitoring took place in Unit 1, Blocks 1 and 2 beginning in October 2011. During that time, CRMs identified a total of 35 artifacts in Unit 1, Block 1 and 66 artifacts in Unit 1, Block 2 (a total of 101 artifacts). Of the 101 artifacts recovered in Blocks 1 and 2 of Unit 1, there were 52 recovered from the western portion of Block 2 on November 16 and 17, 2011. Two to three CRMs monitored construction activities in this area, in accordance with the COCs (CUL-8: Construction Monitoring Program), Section 8.1 of the HPTP, and Section 8.1 of the CRMMP. While the number of artifacts recorded increased (suggesting a higher artifact density in Unit 1, Blocks 1 and 2 compared to previously monitored sections of the GSEP), most of these finds were recorded as isolates per Section 9.3 of the HPTP and Section 9.3 of the CRMMP. The HPTP and CRMMP define an isolate as:

> … the presence of fewer than three artifacts. An isolate does not constitute a site. Isolated finds are *a priori* considered ineligible for inclusion on the NRHP and/or CRHR, unless the artifact itself is of exceptional significance (Farmer and Farrell 2011a:9-3; Farmer and Farrell 2011b:9-3).

Artifacts identified in Unit 1, Block 2 include lithics, metates, manos, cores, and a stone pendant that was taken to the AECOM office in San Diego. The number of artifacts identified makes it unclear whether the artifacts represent widely dispersed isolates or a diffuse cultural resource of unknown dimensions and depth. In general, the resources have been identified between 1 and 3 ft below the surface, but definite depths, accurate to the centimeter, have not been determined. Efforts were made to ascertain the depths of the artifacts against grade markers in the construction area, but recording depths accurate to the centimeter-level cannot be obtained without the use of advanced survey equipment such as a total station

Because of the number of isolates identified during cut-and-fill activities in Blocks 1 and 2 of Unit 1 BLM archaeologist George Kline visited the GSEP site on November 17, 2011. Mr. Kline held a meeting with GSEP representative Jessica Auck, CRMs, and Native American monitors to plan immediate changes to the scraping/grading methods in order to minimize the depth of the soil removal. Construction-related grading in the western portion of Block 2 was altered so that a smaller layer of sediment, approximately 4 to 6 in., was removed during each pass. In addition, following the meeting, artifacts identified during scraping and grading activities were staked *in situ* with lath, flagged, and avoided on the next pass in order to facilitate a better view of the distribution of artifacts. After several passes revealed a distribution of artifacts, Mr. Kline decided the artifacts could potentially represent a site versus a concentration of isolates. Work was stopped in the area around the artifacts, as called for in CUL-9 of the COCs (Authority to Halt Construction; Treatment of Discoveries). The distribution of artifacts identified in Unit 1 as of November 18 is depicted in Figure 3.

Controlled Grading Program

Goals

In February 2012, BLM designed a controlled grading plan in an attempt to determine the horizontal and vertical boundaries of the artifact distribution in the western portions of blocks 2, 3, and 4 of Unit 1. Data from controlled grading can be useful in discerning any patterns or relationships between artifacts. While controlled grading is not useful for understanding the stratigraphy of an area, it has the potential to be a useful tool for understanding the relationship between artifacts and features within a known stratigraphic sequence (see EDAW 2003; Maxon 2002a, 2002b). The BLM issued a Notice to Proceed for controlled grading activities on February 24, 2012 and the Energy Commission issued its Limited Notice to Proceed via e-mail on February 27, 2012 (Veerkamp 2012). Genesis Solar implemented the plan on February 28, 2012.

Methods

Nine controlled grading areas (CGs) were placed within Unit 1 Blocks 2-4 (Figure 4). Each CG measured 5 meters wide and 100 meters long. A road grader was used to remove approximately 2.5-centimeter layers of soil at a time until a site (three or more artifacts within 30 m) was found or the sedimentary strata were reached that were naturally deposited before the widely accepted dates of human occupation of North America.

All controlled grading areas were monitored by Energy Commission-approved cultural resources monitors (CRMs) and Native American monitors primarily from the Soboba Band of Luiseño Indians. During implementation of the Plan, daily results were sent via e-mail to the BLM and Energy Commission staff. Per the Plan, grading at CG locations was terminated at the direction of the BLM archaeologist upon either (a) the identification of three or more artifacts within 30 m (98.42 ft) of each other or any exceptional individual artifact (b) exposure of Qoaf alluvium. For the purposes of directing controlled grading activities, isolates (defined as fewer than three artifacts within 30 m [98.54 ft] of each other) identified in a CG location were considered as not contributing to or assisting in the definition of the provisional boundary per the BLM archaeologist.

Figure 3 – Monitoring Finds (through 11/18/11)

A map containing sensitive archeological resource location data has been deleted from the Public Release copy of this document pursuant to exemption 3 of the Freedom of information Act (FOIA) (5 U.S.C. § 552(b)(3)) and the Archeological Resources Protection Act (16 U.S.C. § 470hh). Exemption 3 allows an agency to withhold records that are specifically exempt from disclosure by another Federal statute. If you believe the deleted material must be released, you may request it under the FOIA by writing to: FOIA Coordinator, Bureau of Land Management, 2800 Cottage Way, Suite W1623, Sacramento, CA 95825, or sending an e-mail to BLM_CA_FOIA@blm.gov.

Figure 4 – GSEP Unit 1 Controlled Grading Program Results

A map containing sensitive archeological resource location data has been deleted from the Public Release copy of this document pursuant to exemption 3 of the Freedom of information Act (FOIA) (5 U.S.C. § 552(b)(3)) and the Archeological Resources Protection Act (16 U.S.C. § 470hh). Exemption 3 allows an agency to withhold records that are specifically exempt from disclosure by another Federal statute. If you believe the deleted material must be released, you may request it under the FOIA by writing to: FOIA Coordinator, Bureau of Land Management, 2800 Cottage Way, Suite W1623, Sacramento, CA 95825, or sending an e-mail to BLM_CA_FOIA@blm.gov.

The horizontal and vertical location of each identified artifact was recorded using a total station unit and an electronic theodolite combined with an electronic distance meter, which can read slope distances between the instrument and a specific point (in this case an individual artifact) to provide horizontal and vertical locational data accurate to within centimeters. In addition, a datum for each CG was calibrated off of a single datum point, a USGS survey marker, and ongoing data analysis will allow additional mapping of the CGs relative to this datum.

Results

Of the nine CG locations, five of the CG locations were moved based on the results or previously graded CGs (see Figure 4). CG-1, CG-2, and CG-4 were the first CGs excavated. CG-2 and CG4 were placed in an attempt to identify a boundary to the resource in Blocks 2 and 3 of Unit 1. Results of the CG excavations are summarized in Table 4.

Artifacts associated with the resource were found between 0.3 and 2.2 feet below the preconstruction ground surface and do not appear to extend beyond the eastern boundary of Blocks 2-4. However, the exact horizontal limits of the resource, particularly its relationship to sites CARiv-9072 and CA-Riv-9223, remain unclear. No features or soil changes attributable to human use or occupation were identified.

Based on the observed distribution of artifacts from the controlled grading locations, a provisional site boundary was identified by BLM on a conference call between BLM, Energy Commission, Genesis Solar and AECOM on March 5, 2012. This boundary consists of a line drawn along the border between Blocks 1 and 2 at the north; continuing 30 m (98.42 ft) east of the easternmost artifacts identified in CG-2, -3, -5 and -6; and a line 30 m (98.42 ft) south of the easternmost artifacts identified in CG-6 and proceeding westward 30 m (98.42 ft) north of the inferred 377' last high lake stand of Ford Dry Lake (see Figure 4).

Within this boundary, artifact types appear to be horizontally distributed in the same manner as observed during construction monitoring efforts, namely a diffuse scatter of flaked and ground lithic material occurring generally in low densities across the units in question. No features, midden deposits or dense subsurface deposits of cultural material were observed during the controlled grading program. While the data suggests that buried artifacts exist and the BLM identified a resource in Blocks 2 and 3 of Unit 1, the grading program did not reveal sufficient data to make a recommendation regarding NRHP or CRHR eligibility of the resource.

Interpretation of Controlled Grading Results

Archaeological staff from the BLM, Colorado River Indian Tribes (CRIT), the Energy Commission, and Genesis Solar met on March 21, 2012 to discuss the results of the controlled grading program and to develop purely archaeological strategies to evaluate and mitigate for the potential loss of the information values of the resource. Major points are summarized below.

Table 4. Results of the GSEP Controlled Grading Program

Controlled grading unit	Current status	Artifacts present	Depth/ Pass	Moved from original location	Date completed
CG-1	Shut down per BLM, encountered site	[redacted]	9 passes	no	2/28/2012
CG-2	Shut down per BLM, encountered site	[redacted]	33 passes	no	3/1/2012
CG-3	Encountered site	[redacted]	2 feet/ 25 passes	yes	2/29/2012
CG-4	Completed, encountered Qoaf	[redacted]	2.5 feet/ 45 passes	no	2/28/2012
CG-5	shut down per BLM, site found in Qoaf	[redacted]	10 passes	yes	2/29/2012
CG-6	Completed, encountered site	[redacted]	8 passes	yes	3/1/2012
CG-7	Canceled- Per BLM				3/3/2012
CG-8	Shut down per BLM	[redacted]	12 passes	yes	3/3/2012
CG-9	Shut down per BLM	[redacted]	5 passes	yes	3/3/2012
CG-10	Completed	[redacted]	35 passes	no	3/1/2012

1) There was general agreement that while the arbitrary definition of a site (3 artifacts within 30m) outlined in both treatment plans (HPTP and CRMMP) was useful during the archaeological surveys prior to construction, it is not a useful definition for this particular resource. CRIT has since informed the BLM that while it acknowledges that this topic was discussed at the meeting, it did not take an official position.

2) In addition, there was agreement that the large size and diffuse nature of the resource severely limits the possible archaeological techniques which could be used to evaluate and mitigate it. The group recommended that despite its diffuse nature, this buried artifact scatter will be evaluated and, if deemed eligible, mitigated, and managed as a single resource. Further, the group recommended that the evaluation of the resource should proceed despite the lack of clearly defined boundaries. CRIT has since informed

Information under the Table 4 – Results on the GSEP Controlled Grading Program, under the heading "Artifacts Present"

This information contains sensitive archeological resource location data has been deleted from the Public Release copy of this document pursuant to exemption 3 of the Freedom of information Act (FOIA) (5 U.S.C. § 552(b)(3)) and the Archeological Resources Protection Act (16 U.S.C. § 470hh). Exemption 3 allows an agency to withhold records that are specifically exempt from disclosure by another Federal statute. If you believe the deleted material must be released, you may request it under the FOIA by writing to: FOIA Coordinator, Bureau of Land Management, 2800 Cottage Way, Suite W1623, Sacramento, CA 95825, or sending an e-mail to BLM_CA_FOIA@blm.gov.

the BLM that while it acknowledges that this topic was discussed at the meeting, it did not take an official position.

3) Finally, the group agreed on some archaeological methods which could be implemented to evaluate and mitigate the resource. For on-site resource evaluation, geoarchaeological trenching was proposed as a method to evaluate the integrity of the resource and ground penetrating radar was proposed to identify possible buried features, though some members of the group did not believe that ground penetrating radar would be an effective site evaluation method in this case. Additional controlled grading was proposed for on-site mitigation if the resource was determined to be eligible for the NRHP and the CRHR. CRIT has since informed the BLM that while it acknowledges that this topic was discussed at the meeting, it did not take an official position.

These and other techniques are described in detail in the following sections.

5. FORMAL ASSUMPTION OF ELIGIBILITY TO NRHP AND CRHR UNDER SECTION 106 AND CEQA

After review of existing information, consultation with tribal representatives, and discussion among the BLM, the Energy Commission, the SHPO, and Genesis Solar, the buried resource in Unit 1 of GSEP is being assumed eligible under the NRHP and CRHR respectively and the rationale for this assumption is presented below.

BLM Eligibility Assumption

The BLM is the lead federal agency ensuring the Genesis Solar Energy Project's (GSEP) compliance with NEPA during its construction and operation. The BLM imposed a number of cultural resources requirements to be implemented during construction, most notably through the PA and HPTP. HPTP Section 8.2 and 9 specify how cultural resources discovered during construction will be treated. They also require GSEP to halt construction in the vicinity of an applicable find pending completion of certain procedures, including to first consider avoidance of the find. The BLM and the Energy Commission, in consultation with the SHPO, will also assume or formally determine eligibility for the NRHP or CRHR.

Eligibility for the NRHP and the CRHR is evaluated with respect to (1) formal criteria of significance and (2) aspects of integrity. The NRHP and CRHR significance criteria, respectively, are set forth at 36 CFR 60.4 and 14 CCR 15064.5(a)(3). Thus, to qualify for the national or California registers, a cultural property or resource must: first, satisfy at least one of four significance criteria (i.e., be associated with an important event, or be associated with an important person, or have high artistic merit, or hold important information potential); and, second, retain the aspects of integrity (of location, design, setting, materials, workmanship, feeling, and association) related to the specific criterion/a of significance under which the property/resource is being evaluated. In addition, the National Park Service has published a series of *National Register Bulletins* that provide detailed official guidance for anyone evaluating the NRHP-eligibility of a property. In the context of federal undertakings, properties listed or eligible for listing in the NRHP must be treated in accordance with Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, 36 CFR 800, while resources eligible for the CRHR are to be treated in accordance with the California Environmental Quality Act (CEQA).

The BLM's Assumption of a Cultural Resource's Eligibility for the National Register of Historic Places

In the case of the GSEP Unit 1 buried resource, the BLM does not have sufficient data to make a determination of eligibility and recognizes that insufficient time is available to gather additional data. Therefore the BLM is assuming the resource eligible for the NRHP on the basis of the data currently available, including information obtained through consultation with affected Indian tribes. 36 CFR 800.4(b)(2) allows the BLM to defer final identification and evaluation of historic properties with respect to large land areas. Section 9 of the HPTP contains no specific

requirement for the timing of an eligibility decision. If eligibility is assumed, it is within the BLM's discretion to change the assumption to a formal determination based upon new or additional information. This is consistent with 36 CFR 800.4(c)(1), which provides that "The passage of time, changing perceptions of significance, or incomplete prior evaluations may require the agency official to reevaluate properties previously determined eligible or ineligible." This language, which recognizes that NRHP eligibility is not a permanent, fixed management status for a cultural resource, has been interpreted to mean that reevaluation of resource eligibility is meant to be a routine aspect of dynamic resource management under Section 106. This dynamic manner of resource management has given rise to the useful tool of assuming a resource's eligibility in the present. This tool allows SHPOs and Federal agencies to expeditiously process cultural resources that they regard as potentially or likely eligible without completing a formal evaluation. Assuming a resource to be eligible is also provided for in the PA at section VI(c). No particular documentation of these eligibility assumptions is required.

The BLM has decided, on the basis of existing information and as enabled by the above laws, regulations, and practice, and in consultation with the Energy Commission and the SHPO, that the Unit 1 buried resource is assumed eligible for the NRHP under criteria A and D, both as an individual resource and as a contributor to an archaeological district assumed to be eligible for NRHP. These assumptions are provided below to help inform our ongoing discussions with the Energy Commission, local Native American communities, SHPO, and Genesis Solar, and to make our joint deliberations more transparent to the public at large.

Assumed Eligibility under NRHP Criterion A as an Individual Ethnographic Resource

NRHP eligibility criterion A requires a cultural resource to be associated with events that have made a significant contribution to the broad patterns of our history.

The Unit 1 buried resource is assumed eligible for the NRHP as an individual resource under NRHP criterion A. The BLM notes that representatives of several Native American communities have indicated that the groundstone artifacts of the resource have religious and ceremonial associative values for them. Ethnographic information not yet shared may include indigenous knowledge of resource exploitation and adaptation to changing environmental trends that the artifacts represent.

The BLM acknowledges that there is insufficient information to establish integrity at this time. Therefore, the Unit 1 buried resource is assumed to retain sufficient integrity in the pertinent aspects of location, setting, feeling, and association to convey the broad pattern of Chuckwalla Valley cultural heritage, for which it is assumed NRHP-eligible.

Assumed Eligibility under NRHP Criterion D as an Individual Archaeological Resource

NRHP eligibility criterion D requires a cultural resource to have yielded or may be likely to yield, information important in history or prehistory.

The Unit 1 buried resource is assumed eligible for the NRHP as an individual resource under NRHP criterion D for the following reasons and based upon current information:

1. In the current knowledge of Chuckwalla Valley archaeology, the Unit 1 buried resource may be distinctive in exhibiting an extensive buried resource, in contrast to the great majority of known local archaeological sites;

2. In the current knowledge of Chuckwalla Valley archaeology, the Unit 1 buried resource may be distinctive in the predominance of ground stone (estimated at roughly 90 percent) in the artifact assemblage, relative to other types of artifacts, which is the reverse of what is typical of local archaeological sites; and

3. The Unit 1 buried resource may represent one or more behaviors of probably Archaic-Period people along a series of former shorelines of an ephemeral playa lake that are not well-documented elsewhere in the Chuckwalla Valley; while a later (probably dating from the Rose Spring Complex [AD 200–AD 1000], from the presence of a Rose Spring projectile point, through the Late Prehistoric Period [AD 1000–AD 1700], from the presence of Tizon Brown ware ceramics), extensive (three-mile-long) lakeshore site (CA-Riv-1515), described as a seasonal campsite, is known at Palen Dry Lake,[1] (Ritter 1981), it is known only from a surface component and is much more recent in date than the Unit 1 buried resource.

4. Groundstone artifacts may yield important scientific information on paleo-environments, and past climate change. The buried groundstone artifacts may also yield information of Archaic Period human behaviors from residues and pollens concentrated on their surfaces.

Additionally, the Unit 1 buried resource is assumed to retain sufficient integrity in the pertinent aspects of location, setting, and materials to physically convey the aspects of prehistory, above, for which it is assumed NRHP-eligible. While Genesis Solar has raised questions about the integrity of the materials of the Unit 1 buried resource due to the effects of erosion over time, as George Kline explained in a recent teleconference (April 27, 2012), the Advisory Council on Historic Preservation recognizes that no archaeological site is entirely intact. While it is possible that some sorting may have occurred among the smaller and lighter artifacts of the resource's assemblage, based upon existing information, the primary associations of the larger and heavier fraction of the assemblage appear to be virtually intact and to retain the bulk of the data for which the resource is being assumed eligible under criterion A as an individual resource.

Assumed Eligibility under NRHP Criterion A as a Contributor to a Potentially NRHP-Eligible Ethnographic District

The Unit 1 buried resource is assumed eligible under NRHP criterion A as a contributor to an assumed eligible ethnographic district. The BLM notes that representatives of several Native American communities have stated that artifacts have religious and ceremonial associative values for them. Ethnographic information not yet shared may include indigenous knowledge of

[1] Site CA-Riv1515 is managed by BLM as an Area of Critical Environmental Concern (ACEC).

resource exploitation and adaptation to changing environmental trends that can be correlated with the Unit 1 artifact assemblage.

Assumed Eligibility under NRHP Criteria A and D as a Contributor to a Potentially NRHP-Eligible Archaeological District

A historic district must qualify as eligible for the NRHP under at least the same, but possibly other additional, criteria as an individual resource. NRHP eligibility criterion D requires a cultural resource to have yielded, or have the potential to yield, information important to prehistory or history.

The identified district is assumed eligible as an archaeological resource under both NRHP criteria A and D, for the district's associative values which link the district to important patterns in prehistory, and for its potential to provide information important to the prehistory of the Chuckwalla Valley. Representatives of several Native American communities have indicated that the district may also have associative values as an ethnographic resource which would come under consideration under criterion A.

Archaeologists interested in the prehistoric and historic use of the Chuckwalla Valley can pose numerous research questions that data from this district could answer about the prehistoric use of Ford Dry Lake, our knowledge of which is presently spare. The Unit 1 buried resource is assumed eligible for the NRHP as a contributor to this archaeological district that appears to be NRHP eligible under criterion D, because the buried resource may represent one type of behavioral pattern among the many that comprised the early sociocultural system that once teemed along the northern shore of Ford Dry Lake, the system that the overarching district represents.

The Unit 1 buried resource is assumed to retain sufficient integrity in the pertinent aspects of location, setting, materials, feeling, and association to physically convey information on the aspects of prehistory, above, for which it is assumed NRHP-eligible.

Assumed Eligibility under NRHP Criterion D as a Contributor to the Assumed NRHP-Eligible Prehistoric Trails Network Cultural Landscape (District)

A historic district must qualify as eligible for the NRHP under at least the same, but perhaps under additional, criteria as an individual resource. NRHP eligibility criterion D requires a cultural resource to have yielded, or have the potential to yield, information important to history or prehistory.

In its simultaneous review of the applications of GSEP, Blythe Solar Power Project, and Palen Solar Power Project in 2010, the BLM in consultation with the Energy Commission and SHPO identified two regional cultural landscapes (historic districts) that were assumed eligible for the NRHP and to which BLM assumed most prehistoric archaeological resources found on the three project sites were contributors. The BLM and Energy Commission defined the Prehistoric Trails Network Cultural Landscape (PTNCL) as the Halchidhoma Trail and the associated joining and diverging trails (and trail-related features such as pot drops and rock cairns), and the varied loci

of importance to prehistoric Native Americans that these trails connected. These loci included springs (and the dry lakes when they were not dry), food and materials resource areas, and ceremonial sites (geoglyphs, rock alignments, petroglyphs). A cultural landscape can include multiple themes across multiple time periods, so the resources that can contribute to a cultural landscape can be both archaeological and ethnographic. Neither the BLM nor the Energy Commission could definitively establish the boundaries of the PTNCL, but at this time considers the boundaries to roughly coincide with the geographic boundaries of the Chuckwalla Valley and the Palo Verde Mesa.

Archaeologists interested in the prehistoric and historic use of the Chuckwalla Valley can pose numerous research questions that data from this cultural landscape could answer about the prehistoric use of the Chuckwalla Valley, about which at this time little is known.

The Unit 1 buried resource is assumed eligible for the NRHP as a contributor to the assumed NRHP-eligible PTNCL under criterion D because it is located near one of the trails network destinations—Ford Dry Lake as a water and probable food and materials source--and appears to contain data pertinent to archaeological research questions regarding the little known prehistoric use of the Chuckwalla Valley.

The Unit 1 buried resource is also assumed to retain sufficient integrity in the pertinent aspects of location, setting, materials, and association to physically convey the aspects of prehistory, above, for which it is assumed to be a contributor to the assumed NRHP-eligible PTNCL.

Energy Commission Assumption of Eligibility

The California Energy Commission (Energy Commission) is the lead state agency ensuring the Genesis Solar Energy Project's (GSEP) compliance with the California Environmental Quality Act (CEQA) during its construction and operation. As conditions for its licensing of GSEP, the Energy Commission imposed a number of cultural resources conditions of certification. Among these is CUL-9, which specifies how cultural resources discovered during construction will be treated. CUL-9 requires GSEP to halt construction in the vicinity of a cultural resources discovery until the Energy Commission's Compliance Project Manager (CPM) has determined whether the discovered resource is eligible for the California Register of Historical Resources (CRHR). If the CPM determines that the discovered resource is eligible, and if significant impacts to the eligible resource cannot be avoided, as determined by the CPM, CUL-9 prohibits the resumption of construction until the CPM has approved the project owner's data recovery or other mitigation plan, and the onsite mitigation has been completed.

Energy Commission's Authority to Determine a Cultural Resource Eligible for the California Register of Historical Resources

As informed by cultural resource staff, the Energy Commission CPM can make a determination of CRHR-eligibility of the GSEP discovered resource based on CEQA §21084.1, which states, "The fact that a resource is not listed in, or determined to be eligible for listing in, the California Register of Historical Resources, not included in a local register of historical resources, or not deemed significant pursuant to criteria set forth in subdivision (g) of Section 5024.1 shall not

preclude a lead agency from determining whether the resource may be an historical resource for purposes of this section." The ability of a CEQA lead state agency to determine the eligibility of a cultural resource is most necessary in the instance of a discovery such as the GSEP Unit 1 buried resource. None of the standard modes of determining CRHR eligibility could apply to a resource not previously known and needing an expeditious determination, which could result in an undue delay in construction.

CEQA Guidelines §15064.5 amplifies the above code section, as follows: "Generally, a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources…including the following".[2] This same section qualifies a lead agency's ability to make significance determinations as follows: "…provided the lead agency's determination is supported by substantial evidence in light of the whole record."

The procedure for determining a resource eligible for the CRHR first considers what type of resource it is —building, site, structure, object, or historic district (California Code of Regulations, Title 14, Chapter 11.5, §4852(a))—and whether or not the resource qualifies under one or more of the four criteria. For a historic district, geographic boundaries and contributing and non-contributing resources must be designated, with contributing resources also listed in the CRHR if the district qualifies (California Code of Regulations, Title 14, Chapter 11.5, §4852 (a)(5)). If a resource qualifies, the level at which it qualifies—local, state, or national—must be established (California Code of Regulations, Title 14, Chapter 11.5, §4852(b)). Next the status of the resource's aspects of integrity are considered, including location, design, setting, materials, workmanship, feeling, and association (California Code of Regulations, Title 14, Chapter 11.5, §4852(c)). The latter seven aspects vary in weight in the assessment, depending upon the criterion under which a resource qualifies. That is why the criterion under which a resource qualifies is considered first, and the pertinent aspects of its integrity last.

Based on the above, staff's consideration of eligibility for a discovered resource is to require the owner to collect data sufficient to support or reject its eligibility (substantial evidence in light of the whole record) and, referencing the collected data, to make a recommendation on the status of the discovered resource's pertinent aspects of integrity, including location, design, setting, materials, workmanship, feeling, and association. Staff would review the collected data and the owner's recommendations, possibly do additional research, and then make an independent determination of eligibility.

[2](1) It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
(2) It is associated with the lives of persons important to local, California, or national history;
(3) It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or
(4) It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.
Also see "State Regulatory Environment" in Background Section

Energy Commission's Assumption of a Cultural Resource's Eligibility for the California Register of Historical Resources

In the case of the GSEP Unit 1 buried resource, staff does not have sufficient data to make a determination of eligibility and recognizes that insufficient time is available to gather additional data. Staff is therefore assuming the resource eligible for the CRHR on the basis of the data currently available. While no state code explicitly grants an agency the authority to assume a cultural resource eligible for the CRHR, Energy Commission staff may rely on the guidelines and practice of federal cultural resources entities in those circumstances on which state law is silent. Such is the case with the assumption of the CRHR eligibility of a cultural resource by a lead state agency. Staff therefore relies on the federal practice of assuming eligibility, developed as follows.

All State Historic Preservation Officers (SHPOs) and federal agencies acting as lead agencies on projects subject to federal oversight on environmental impacts have at their disposal a tool derived from 36 CFR 800.4(c)(1) which includes this statement regarding a federal agency's evaluation of the National Register of Historic Places (NRHP) eligibility of cultural resources subject to project impacts: " The passage of time, changing perceptions of significance, or incomplete prior evaluations may require the agency official to reevaluate properties previously determined eligible or ineligible." This language, which recognizes that NRHP eligibility is not a permanent, fixed management status for a cultural resource, has been interpreted to mean that reevaluation of resource eligibility is meant to be a routine aspect of dynamic resource management under Section 106. This dynamic manner of resource management has given rise to the useful tool of assuming a resource's eligibility in the present. This tool allows SHPOs and federal agencies to expeditiously process cultural resources that they regard as potentially or likely eligible without going through a formal evaluation of them. No particular documentation of these eligibility assumptions is required. The SHPO and the lead federal agency must, however, agree to the assumption of eligibility.

State code provides for analogous considerations of the possible need to reevaluate evaluated cultural resources. California Code of Regulations, Title 14, Chapter 11.5, §4856) provides for the de-listing of CRHR-listed cultural resources due to loss of integrity or new evidence that disproves eligibility. Section §4562(e)(3) requires that documentation of a resource identified as CRHR eligible in a historical resources survey that is more than five years old must be updated before that resource can be nominated to the CRHR. While not as broadly interpreted as the federal regulations noted above, these state provisions support the spirit of the use of the assumption of eligibility tool by state agency cultural resources staff.

On the basis of existing information and as enabled by the above laws, regulations, and practice, Energy Commission cultural resources staff assumes the Unit 1 buried resource eligible for the CRHR at the local level under criteria 1 and 4, both as an individual resource and as a contributor to an archaeological district that appears to be eligible for CRHR. In broad strokes, staff's rationale for these assumptions is provided below to help inform our ongoing discussions with the BLM, local Native American communities, and the GSEP project owner, and to make our joint deliberations more transparent to the public at large.

Assumed Eligibility at the Local Level under CRHR Criterion 1 as an Individual Ethnographic Resource

CRHR eligibility criterion 1 requires a cultural resource to be associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.

Energy Commission cultural resources staff assumes the Unit 1 buried resource eligible for the CRHR at the local level as an individual resource under CRHR criterion1. Staff notes that representatives of several Native American communities have indicated that the groundstone artifacts of the resource have religious and ceremonial associative values for them. Ethnographic information not yet shared may include indigenous knowledge of resource exploitation and adaptation to changing environmental trends that the artifacts represent.

Staff also assumes the Unit 1 buried resource retains sufficient integrity in the pertinent aspects of location and association to convey the broad pattern of Chuckwalla Valley cultural heritage, for which it is assumed CRHR-eligible.

Assumed Eligibility at the Local Level under CRHR Criterion 4 as an Individual Archaeological Resource

CRHR eligibility criterion 4 requires a cultural resource to have yielded, or have the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Energy Commission cultural resources staff assumes the Unit 1 buried resource eligible for the CRHR at the local level as an individual resource under CRHR criterion 4. While assuming eligibility, staff also notes the following:

1. In the current knowledge of Chuckwalla Valley archaeology, the Unit 1 buried resource is distinctive in exhibiting an extensive buried resource, in contrast to the great majority of known local archaeological sites;

2. In the current knowledge of Chuckwalla Valley archaeology, the Unit 1 buried resource is distinctive in the predominance of ground stone (estimated at roughly 90 percent) in the artifact assemblage, relative to other types of artifacts, which is the reverse of what is typical of local archaeological sites; and

3. It is evident that the Unit 1 buried resource represents one or more behaviors of probably Archaic Period people along a series of former shorelines of an ephemeral lake that are not well-documented elsewhere in the Chuckwalla Valley; while a later (probably dating from the Rose Spring Complex [AD 200 –AD 1000], from the presence of a Rose Spring projectile point, through the Late Prehistoric Period [AD 1000–AD 1700], from the presence of Tizon Brown ceramics), extensive (three-mile-long), lakeshore site (CA-Riv-1515), described as a seasonal campsite, is known at

Palen Dry Lake (Ritter 1981).[3] It is known only from a surface component and is much more recent in date than the Unit 1 buried resource.

Staff also assumes the Unit 1 buried resource retains sufficient integrity in the pertinent aspects of location, setting, and materials to physically convey the aspects of prehistory, above, for which it is assumed CRHR-eligible. While the owner has raised questions about the integrity of the materials of the Unit1 buried resource due to the effects of erosion over time, as BLM archaeologist George Kline explained in a recent teleconference (April 27, 2012), the Advisory Council on Historic Preservation recognizes that no archaeological site is entirely intact. While in theory it is possible that some sorting may have occurred among the smaller and lighter artifacts of the resource's assemblage, the primary associations of the larger and heavier fraction of the assemblage would appear to be virtually intact and to retain the bulk of the data for which the resource is being assumed eligible under criterion 1 as an individual resource.

Assumed Eligibility at the Local Level under CRHR Criterion 1 as a Contributor to a Potentially CRHR-Eligible Ethnographic District

Energy Commission cultural resources staff assumes the Unit 1 buried resource is eligible at the local level under CRHR criterion 1 as a contributor to a potentially eligible CRHR-eligible ethnographic district. Staff notes that representatives of several Native American communities have indicated that artifacts have religious and ceremonial associative values for them. Ethnographic information not yet shared may include indigenous knowledge of resource exploitation and adaptation to changing environmental trends that can be correlated with the Unit 1 artifact assemblage.

Assumed Eligibility at the Local Level under CRHR Criteria 1 and 4 as a Contributor to a Potentially CRHR-Eligible Archaeological District

A historic district must qualify as eligible for the CRHR under at least the same, but possibly other additional, criteria as an individual resource. CRHR eligibility criterion 4 requires a cultural resource to have yielded, or have the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

It is beyond the scope of Energy Commission cultural resources staff to attempt to evaluate the Early to Middle Archaic, or at least aceramic, archaeological district that appears to be CRHR-eligible, now posited in broad terms as being largely present along the surface of several of the northern former shorelines of Ford Dry Lake. The identified district has the potential to be eligible as an archaeological resource under both CRHR criteria 1 and 4, for the district's associative values which link the district to important patterns in prehistory, and for its potential to provide information important to the prehistory of the Chuckwalla Valley. Representatives of several Native American communities have indicated that the district may also have associative values as an ethnographic resource which would come under consideration under criterion 1.

[3] Site CA-RIV1515 is managed by BLM as an Area of Critical Environmental Concern (ACEC).

Archaeologists interested in the prehistoric and historic use of the Chuckwalla Valley, can readily pose numerous research questions that data from this district could answer about the prehistoric use of Ford Dry Lake, our knowledge of which is presently spare. Staff assumes the Unit 1 buried resource is eligible for the CRHR at the local level as a contributor to this archaeological district that appears to be CRHR-eligible under criterion 4, because the buried resource represents one type of behavioral pattern among the many that comprised the early sociocultural system that once teemed along the northern shore of Ford Dry Lake, the system that the overarching district represents.

Staff also assumes the Unit 1 buried resource retains sufficient integrity in the pertinent aspects of location, setting, materials, and association to physically convey information on the aspects of prehistory, above, for which it is assumed CRHR-eligible.

Assumed Eligibility at the Local Level under CRHR Criterion 4 as a Contributor to the Assumed CRHR-Eligible Prehistoric Trails Network Cultural Landscape (District)

A historic district must qualify as eligible for the CRHR under at least the same, but perhaps under additional, criteria as an individual resource. CRHR eligibility criterion 4 requires a cultural resource to have yielded, or have the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

In its simultaneous review of the licensing applications of GSEP, Blythe Solar Power Project, and Palen Solar Power Project to the Energy Commission in 2010, cultural resources staff identified two regional cultural landscapes (historic districts) that staff assumed were eligible for the CRHR and to which staff assumed most prehistoric archaeological resources found on the three project sites were contributors. Staff defined the Prehistoric Trails Network Cultural Landscape (PTNCL) as the Halchidhoma Trail and the associated joining and diverging trails (and trail-related features such as pot drops and rock cairns), and the varied loci of importance to prehistoric Native Americans that these trails connected. These loci included springs (and the dry lakes when they were not dry), food and materials resource areas, and ceremonial sites (geoglyphs, rock alignments, petroglyphs). A cultural landscape can include multiple themes across multiple time periods, so the resources that can contribute to a cultural landscape can be both archaeological and ethnographic. Staff did not definitively establish the boundaries of the PTNCL, but at this time staff considers the boundaries to roughly coincide with the geographic boundaries of the Chuckwalla Valley and the Palo Verde Mesa.

Archaeologists interested in the prehistoric and historic use of the Chuckwalla Valley, can readily pose numerous research questions that data from this cultural landscape could answer about the prehistoric use of the Chuckwalla Valley, at this time little known.

Staff assumes the Unit 1 buried resource is eligible for the CRHR at the local level as a contributor to the assumed CRHR-eligible PTNCL under criterion 4 because it is located near one of the trails network destinations—Ford Dry Lake as a water and probable food and materials source—and appears to contain data pertinent to archaeological research questions regarding the little known prehistoric use of the Chuckwalla Valley.

Staff also assumes the Unit 1 buried resource retains sufficient integrity in the pertinent aspects of location, setting, materials, and association to physically convey the aspects of prehistory, above, for which it is assumed to be a contributor to the assumed CRHR-eligible PTNCL.

6. UNIT 1 BURIED RESOURCE MITIGATION PROGRAM

The BLM and the Energy Commission have agreed that the efforts outlined below are the minimum necessary to mitigate impacts to this resource. The overall, not-to-exceed dollar amount for these measures is: $3,044,885 which includes a 17.6% contingency fee. The budget is included in Appendix A and the agency oversight of Genesis Solar's implementation and management of the mitigation program is discussed in Appendix B. Nothing in this plan negates or overrides the requirements of the project's NAGPRA Plan of Action.

Traditional techniques used to mitigate impacts to archaeological sites are generally focused on the recovery of additional data through subsurface excavation. However, such methods (including hand excavation of 1 m by 1 m or larger units or controlled grading of a sample of the site) are not appropriate for this resource due to its size and diffuse nature as well as its limited range of artifact types. The BLM and Energy Commission believe that the data recovered from such efforts would not sufficiently mitigate direct and cumulative impacts to the resource. Instead, mitigation efforts will consist of two phases of on- and off-site activities.

Phase I mitigation will focus on preparation of a framework for a full ethnographic study as well as recovery of information from the analysis of previously collected artifacts within the exclusion zone, on-site geoarchaeological trenching, and an on-site remote sensing program. In comments to the original draft plan for site evaluation, CRIT indicated that geoarchaelogical trenching is not consistent with the HPTP; however, the HPTP does not prohibit the use of geoarchaeological trenching to assist with data recovery as a mitigation measure. Following completion of the on-site Phase I mitigation activities, construction and associated cultural resources monitoring will be authorized to continue within the buried resource exclusion zone.

Phase II mitigation will focus on off-site cultural resources research, artifact analysis, and public outreach activities. As part of the Phase II mitigation, a long-term ethnographic study will be prepared. Off-site archaeological studies will include LIDAR analysis, sediment core analysis, pedestrian archaeological study and artifact analysis along the Ford Dry Lake shoreline, and assessment and potential nomination of a Ford Dry Lake archaeological district. Public outreach efforts will include production of an educational website, production of an augmented reality application, establishment of a green energy/NEPA scholarship, and Section 106 training support.

PHASE I MITIGATION

The Phase I mitigation efforts are expected to begin upon issuance of a Notice to Proceed from the BLM and Energy Commission. It is anticipated that mitigation will begin the third week of May 2012. All Phase I mitigation tasks are anticipated to take place concurrently, to the extent logistically possible and will be overseen by Stacey Jordan-Connor, PhD. When the CRS, with verbal concurrence from the BLM and Energy Commission, has determined that all on-site field work associated with the Phase I mitigation efforts is complete, the BLM and Energy Commission will issue a NTP releasing the exclusion zone for normal construction activities. The anticipated timeframe for Phase I mitigation activities is presented in Table 5.

Table 5. Phase I Mitigation Timeframe

Task	Duration	Estimated Completion Date
On-Site Geoarchaeological Trenching	3 weeks	Field work and preliminary report late May 2012; final report early June 2012
On-Site Ground Penetrating Radar	3 weeks	Field work and preliminary report early June 2012, final report late July 2012
LIDAR Analysis	1.5 weeks	Early June 2012
Preliminary Ethnographic Framework	1 month	Mid- June 2012
Exclusion Zone Artifact Analysis	3 weeks	Early June 2012

Geoarchaeological Trenching

Trenching affords the exposure of large subsurface profiles that facilitate more precise documentation of buried cultural materials in sedimentary context; that is, how artifacts and features relate to the natural stratigraphy. Ideally, archaeological materials are confined to discrete cultural strata that can be distinguished from the surrounding sterile matrix. However, archaeological contexts are often disturbed as the result of post-depositional processes (e.g., erosion, bioturbation, physical and chemical weathering of the soil), which cause mixing of cultural and sterile deposits, intrusion of artifacts into sterile strata, obliteration of features, and loss of stratigraphic definition. These processes generally manifest with great intra-site variability according to factors such as underlying geologic parent material, vegetation, and slope; therefore, even sites subjected to intense post-depositional disturbance have the potential to contain portions of intact stratigraphy. The identification of intact subsurface archaeological contexts can be achieved by documenting 1) the appearance and occurrence of all sedimentary deposits present; 2) the degree to which deposits have been weathered in-situ to form soils; and 3) the stratigraphic relationships between sedimentary deposits, soils, and cultural materials.

A trenching program will be undertaken to fully characterize the Unit 1 resource within its geologic context and account for the depositional processes which created the observed resource. By exposing subsurface stratigraphy in the vicinity of CA-RIV-9072 and CA-RIV-9223, trenching will also address how the Unit 1 resource relates to these two NRHP- and CRHR-eligible prehistoric sites. Finally, by establishing the location of the ancient Ford Dry lake high stand shoreline, trenching will yield paleoenvironmental data relevant to the interpretation of the Unit 1 resource as a possible lakeshore complex. Use of trenching is an accepted geoarchaeological method. Trenching will be closely monitored by archaeologists and Native American Monitors to minimize damage to cultural resources to the extent practicable. If significant cultural resources are found, then more refined excavation methods would be utilized to reveal the resource.

Summary of Site Stratigraphy

A geomorphological report was generated during the permitting phase of the Project (Kenney 2010). While this was not a geoarchaeological report, it did present the overall geomorphic context of the general site area. The Quaternary alluvial deposit (Qal), occurring at an average thickness of 1 ft (30 cm) across the site, is characterized by varying degrees of soil development and contains soils dating from 1-3 thousand years ago (kya) and 7-8 kya. This deposit, consisting of fine to coarse brown sand with small gravels, has the highest potential to contain subsurface cultural resources. The Qal deposit is overlain in places by relict sand sheet and degraded coppice dunes (Qsr), consisting of fine brown sand with coarse sand and gravel desert pavement surfaces with soil horizons dating 1-7 kya. Qsr deposits are generally 4-8 in (10-20 cm) thick. At elevations above 374', Qal deposits are typically underlain by older Pleistocene alluvial fan deposits (Qoaf) extending at least 1.5 ft (45 cm) in depth, and containing soil horizons, dating from 12-20 kya. At elevations below 374', Qal deposits are often underlain by Ford Dry Lake playa deposits (Ql) of varying thicknesses, characterized by light yellowish brown fine to medium sandy silt with iron oxide staining. These deposits can be observed in the southwest portion of project footprint. The oldest Pleistocene shoreline is inferred to follow the 377' contour, which transects the southwestern portion of Unit 1 (following Kenney 2010).

Trenching Program

Trenches will be excavated in nine locations which together form two linear, perpendicular transects across the revised exclusion area (Figure 5), defined on the basis of controlled grading results in Unit 1. The trenching strategy will be flexible in nature, with final locations subject to amendment by the BLM and Energy Commission, in consultation with the CRS, based on findings. These two linear transects, each consisting of a series of individual trenches, will yield a high-resolution representative cross-section of site stratigraphy. Each trench will measure 30 meters in length, three feet in width, and will not exceed four feet in depth.

A northeast/southwest-running trenching alignment will capture longitudinal stratigraphic variability represented in Block 2, as well as relate the Unit 1 cultural resource to CA-RIV-9072, a large prehistoric site located immediately west of the project area. A perpendicular northwest/southeast-running trench alignment will be implemented to characterize stratigraphic variability in Blocks 2 and 3, and to relate the Unit 1 cultural resource to the highest lake stand of Ford Dry Lake. Longitudinal trenches are oriented northeast/southwest to maximize exposure of a representative soil catena across the alluvial fan slope. All Block 2 trenches are located in preserved areas containing native soils; Block 3 trenching will necessitate excavation of overburden to reach underlying native soils.

Trenching of these locations will accomplish three primary objectives relevant to establishing the environmental and depositional context of the Unit 1 cultural resource: 1) characterizing stratigraphy relative to vertical distribution of artifacts in Unit 1, contextualizing subsurface cultural materials relative to Qal deposits, and identifying intact cultural features and/or paleosols; 2) correlating stratigraphy between the Unit 1 buried resource in Unit 1 and adjacent eligible sites CA-RIV-9072 and -9223 to understand potential relationships between these

resources; and 3) defining the location of the Ford Dry Lake high stand shoreline in relation to the Unit 1 buried resource.

Goal 1

Two linear trench alignments are proposed to characterize stratigraphic variability along the northwest/southeast and northeast/southwest axes of Blocks 2 and 3 and to identify potential intact cultural deposits in the Unit 1 resource. Of specific interest here is the identification and mapping of the Quaternary alluvial deposit (Qal) determined to have the highest potential to contain subsurface cultural resources (Kenney 2010). The Qal unit, occurring at an average thickness of 1 ft (30 cm) across the site, is characterized by varying degrees of pedogenic (soil) development and contains soils dating from 1-3 kya and 7-8 kya. While conducting a site visit to Block 2, the Genesis Solar project geoarchaeologist observed a high degree of variability in both the thickness and degree of soil development within the Qal deposit, likely tied to differences in slope and drainage conditions.

Trenching will be conducted in two linear transects, one oriented northeast/southwest, and the other oriented northwest/southeast. Trenches are oriented perpendicular and parallel to the slope axis because slope is one of the primary controls of depositional and pedogenic variability at the site. One series of trenches will be oriented perpendicular to the slope axis (northwest/southeast) to expose alluvial sheetwash and channel deposits in profile. A second series of trenches will be oriented parallel to the slope axis (northeast/southwest) to expose the full range of soils represented at the site, which are expected to vary according to slope position. The excavation of a series of trenches along these two axes will enable the geoarchaeologist to fully examine and describe the range of variability of the Qal deposit within Blocks 2 and 3, and to document the existence of any intact subsurface cultural features exposed during trenching. This information will be used to generate a detailed facies model depicting stratigraphic relationships between natural alluvial deposits and cultural strata.

Trenching will determine the potential for buried, intact features on the basis of the presence and thickness of the Qal deposit, as well as the presence of any paleosols associated with relict occupational surfaces. Areas with thicker Qal sequences will have a greater potential for containing intact cultural materials and features; likewise, areas with well-developed soils and paleosols will have a greater potential to contain intact, buried cultural features. Any paleosols or discrete cultural strata (such as midden deposits or other cultural features) encountered will be drawn in profile, photographed, and described in accordance with NRCS guidelines. Bulk sediment samples (a minimum of 100 grams) may be collected for particle size analysis (PSA) if granulometric assays are warranted to quantify argillic (clay) enrichment associated with buried soils or otherwise characterize physical properties of deposits. Any organics identified in buried A horizons or cultural features will be mapped in profile and collected for radiometric analysis. Optically stimulated luminescence (OSL) samples (a minimum of 250 grams) may be collected from buried A horizons in the absence of radiocarbon samples. OSL, directly dates the last exposure of sediments to sunlight, is a useful method for establishing the age of relict occupational surfaces.

Figure 5 – Geoarchaeological Trenching Locations

A map containing sensitive archeological resource location data has been deleted from the Public Release copy of this document pursuant to exemption 3 of the Freedom of information Act (FOIA) (5 U.S.C. § 552(b)(3)) and the Archeological Resources Protection Act (16 U.S.C. § 470hh). Exemption 3 allows an agency to withhold records that are specifically exempt from disclosure by another Federal statute. If you believe the deleted material must be released, you may request it under the FOIA by writing to: FOIA Coordinator, Bureau of Land Management, 2800 Cottage Way, Suite W1623, Sacramento, CA 95825, or sending an e-mail to BLM_CA_FOIA@blm.gov.

Goal 2

The Unit I cultural resource sits immediately east of two prehistoric sites, CA-RIV-9072 and CA-RIV-9223, which may or may not be spatially contiguous with the project area site. Subsurface testing at CA-RIV-9072 revealed limited to no subsurface cultural material, suggesting the site is predominantly a surface component. The fact that a substantial subsurface cultural component has been encountered in Unit 1 as the result of construction activities and controlled grades would suggest some difference in depositional intensity between the two sites, resulting in the differential exposure of prehistoric materials at the surface. Unit 1, which sits at a higher elevation on the alluvial fan landform, may be aggrading at a faster rate, thus explaining the increased prevalence of subsurface cultural materials relative to CA-RIV-9072.

To resolve these issues, a northeast/southwest-running trench will be placed at the nexus of the Unit 1 exclusion area and CA-RIV-9072 to expose deposits underlying both resources in a single profile. Trenching will enable stratigraphic correlation of the two sites, specifically comparisons of the depth and thickness of Qal sequences. Particular attention will be directed towards determining whether Qal deposits exhibit any erosional or depositional unconformities that would account for the more pronounced subsurface component in Unit 1 relative to CA-RIV-9072.

Any paleosols or discrete cultural strata (such as midden deposits or other cultural features) encountered will be drawn in profile, photographed, and described in accordance with NRCS guidelines. Bulk sediment samples (at least 100 grams) may be collected for PSA if granulometric assays are warranted. Any organics identified in buried A horizons or cultural features will be mapped in profile and collected for radiometric analysis. OSL samples (a minimum of 250 grams) may be collected from buried A horizons in the absence of radiocarbon samples.

Goal 3

A northeast/southwest-oriented trench will be placed to transect the inferred 377' shoreline in Block 3, in order to establish the relationship between the Unit 1 cultural resource and lacustrine (Ql) deposits. Ql deposits were detected in controlled grades of Block 4, suggesting they may interdigitate with later Quaternary (Qal) cultural deposits. Ql deposits were also observed in a drainage cut at the southeast corner of Unit 1, suggesting lake deposits may occur at higher elevations than originally suggested (Kenney 2010). Lake deposits associated with the 377' shoreline are tentatively dated to 12 kya; therefore, the location of the Ford Dry Lake high stand carries implications for interpretations regarding prehistoric habitation and use of the lakeshore environment. Mapping the occurrence of the highest playa lake shoreline within the project area will also clarify the southern terminus of the Unit 1 buried resource.

Logistics

The Genesis Solar geoarchaeologist Mary Ann Vicari or an alternate approved by the BLM and Energy Commission will conduct the geoarchaeological field work with alternate Project Prehistoric Archaeologist Andy York and assisted by two AECOM employees to be determined who have been previously approved as Cultural Resources Monitors. John Dietler and Benjamin Vargas will also provide oversight and support for the geoarchaeological trenching effort.

Trenching field work is expected to be conducted over a period of one week, starting the third week of May 2012, with a preliminary report upon completed field work to be submitted in early June 2012. All PSA analyses will be conducted by Mary Ann Vicari at SWCA, Inc. facilities or by a similar analyst approved by the BLM and the Energy Commission. PSA samples can be analyzed within three days (max: n=10). A written report on the results of the trenching program will be completed by Mary Ann Vicari and is anticipated to take one week, following completion of the PSA analyses, for submittal in early June 2012. Radiocarbon analyses will be conducted by Beta Analytic, with results within 14 bus iness days of sample submission. The initial field report will be revised to include results of any radiocarbon analyses upon receipt of those results. OSL dates, should any be required, generally take over six months to receive and results will be incorporated into a revised report upon receipt.

Ground Penetrating Radar

Ground P enetrating R adar (GPR) w ill be conducted t o i dentify s ubsurface c ultural f eatures associated with the Unit 1 resource using a remote, non-invasive technology. In particular, GPR is used here to target buried prehistoric thermal or storage features, such as hearths and storage pits. S ubsequent t esting a nd e xcavation of a ny features i dentified us ing G PR m ay yield ecological d ata (faunal an d et hnobotanical r emains) r elevant t o r esearch o n p rehistoric subsistence a nd pa leoenvironmental c ontext. S ubsurface c ultural f eatures a lso h ave good potential t o c ontain da table m aterials, ne cessary f or e stablishing c hronologic c ontrol f or associated cultural materials at the site. Remote sensing methods have a long and proven track record of d etection, de lineation, and m apping o f prehistoric sites and associated s ite f eatures such as burnt rock middens, hearths, excavations, foundations, burials, and dwellings.

Phase I GPR Testing

It is unknown whether the soils in the study area are amenable to GPR methods. The technology is widely used; however, it has limitations which are sometimes caused by ground conditions that reduce t he e ffective de pth of pe netration a nd r esolution of t he r adar w aves. In pa rticular, t he presence of silt and clay, even in minor amounts, can effectively limit the depth of radar waves. Such conditions and potential interferences from steel reinforcement and other nearby reflecting objects on t he surface may result in not all subsurface features being detected or false positives being created.

As a c ontingency, t herefore, a P hase I f ull-coverage grid s urvey w ill be c onducted o f a n ungraded 1-acre p arcel within B lock 2 as an initial test of GPR as an effective method in the project area. Given appropriate site conditions (suitable topography and absence of vegetation and obstructions), the survey mode method involves collection of data in a regularly spaced grid of transects. This method, also called a radar transect grid or the gridded transect method, allows for the greatest flexibility in recording and post-processing of results for subsequent production of r adar pr ofiles and pl an-view m aps. In t his m ode, e ach s urvey cell encompasses a grid of survey transects spaced at 0.5 m intervals. The grid origin will be established at t he s outhwest corner of t he s urvey cell w ith t ransects r unning along a t rue nor th-south ax is. The co rrect positioning and staking of all grid corners will be accomplished with metric survey tapes based upon s outhwest and northeast cell corners that were previously geo-located with the GPS unit. Acquisition of the GPR data in survey mode enables the processing of all of the line data as a 3-

D data cube. This cube can then be viewed in plan-view as depth slices of the subsurface. The data in each plan-view slice represent the radar reflection amplitude at that depth level and is somewhat analogous to viewing aerial photo imagery of historic ground surfaces.

Any anomalies found during field review of GPR results will be marked with pin flags to avoid errors associated with re-locating anomalies using hand-held GPS units. Post-field data processing will be conducted in the evenings to yield higher-resolution datasets and facilitate interpretation of results. Following post-processing of the data, anomalies will be ranked according to signal strength to prioritize stronger anomalies for further testing. Rankings decisions will be made by the archaeologist field lead and equipment operator, who is experienced in distinguishing between natural and cultural signatures. Ground-truthing will be used to establish a base-line specific to the project area for interpreting signal strengths.

Shovel-testing will be performed to ground-truth the lesser of 10 percent or 10 individual anomalies of those identified in the test survey. Ground-truthing will occur while GPR equipment is still in the field Anomalies will be ground-truthed by excavating shovel test units centered on the anomaly using a shovel or trowel. Excavation depth will be determined by the projected depth of the GPR anomaly. Archaeologists will excavate until they exceed that depth or reach strata that are not likely to contain cultural materials. Ground-truthing is intended to determine the presence/absence and nature of the buried material and to compare these results with GPR data with minimal impact to cultural resources. Creating baseline data from particular anomalous signatures will aid our understanding of radar signatures for future GPR work if successful. Subsequent to ground truthing, all test excavations will be backfilled and the UTM coordinates will be recorded using a sub-meter accurate Trimble GPS unit. Any cultural features identified during Phase I ground-truthing will be excavated according to the data recovery protocols in the CRMMP and HPTP.

Logistics

The GPR survey and all associated data analysis/interpretation will be conducted by SWCA, Inc. or an alternate approved by the BLM and the Energy Commission and can proceed at the same time as trenching. The work is anticipated to start the third week of May 2012. The GPR survey will be conducted by geophysical specialist Dr. Blake Weissling, or an alternate approved by the BLM and the Energy Commission, and one assistant. Ground-truthing will be performed by one crew of two or three archaeologists from SWCA whom are already approved as Cultural Resources Monitors for the GSEP. John Dietler and Benjamin Vargas will also provide oversight and support for the geoarchaeological trenching effort. Excavations may be conducted by this crew or a larger crew, depending on the number of cultural features identified. Phase I GPR survey (with a maximum survey area not to exceed 1 acre) will be completed within four to five days. Total GPR survey, analysis, ground-truthing, and excavation will be performed within a period of time not to exceed two weeks. A preliminary letter report will be submitted upon completion of the field effort in early June 2012, with a final report expected nine weeks following completion of the field work at the end of July 2012.

Resumption of Construction Activities within Exclusion Zone

As soon as the CRS, with verbal concurrence from BLM and the Energy Commission, concludes that all Phase I field work, consisting of the geoarchaeological trenching and the GPR testing, is complete, Genesis Solar may resume construction within the exclusion zone. All construction activities will be monitored in accordance with the HPTP and CRMMP. Any artifacts or features discovered during construction activities will be reported, recorded and collected (as appropriate) in accordance with the HPTP and CRMMP. Except as necessary to record/collect an artifact or treat an identified feature in accordance with the HPTP and CRMMP, construction activities will not be halted for any additional site evaluation/mitigation purposes. Similarly, all conditions of the Native American Graves Protection and Repatriation (NAGPRA) Plan remain in effect.

LIDAR Analysis

LIDAR (Light Detection and Ranging) data has been generated for the GSEP as part of its permitting process. LIDAR is a remote sensing technology that can be useful in creating spatially accurate maps that have the potential to reveal surface indications of archaeological deposits that are undetected by conventional discovery techniques (see Harmon et al. 2006). Data gathered for the GSEP can be analyzed and may be useful to determine if cultural features (i.e., intact buried resources) and geologic features (i.e. remnant shorelines for Ford Dry Lake) are present within or near the GSEP. LIDAR data may be analyzed in a micro-topographic scale that may demonstrate minute changes in elevation changes indicative of buried features, which have to date not been observed during monitoring activities (Fennell 2010; Harmon et al. 2006; Jaillet 2011; Jalliet-Wentling 2012 Kvamme et al. 2006).

This analysis will be conducted by AECOM archaeologists Andy York and Matthew Tennyson and two AECOM GIS specialists, Stacie Wilson and Peter Augello, or by similar specialists approved by the BLM and the Energy Commission. The analysis and generation of a report is expected to require one and a half weeks beginning during the fourth week of May 2012, with the draft report submitted for BLM and Energy Commission review and comment by the beginning of June 2012.

Archaeological Analyses

Mitigation of the buried resource under criterion D/4 will focus on recovery of information on prehistoric use of the Ford Dry Lake basin. Specifically, the setting of this resource near what is believed to be the high shoreline of Ford Dry Lake provides an opportunity to assess prehistoric adaptations to desert lacustrine environments. While such adaptations to the pluvial lakes of the terminal Pleistocene and early Holocene in the Mojave Desert have been relatively extensively researched, adaptations to later, more ephemeral lakestands in smaller basins such as Ford Dry Lake are less well known. This research, however, has been impeded by poor resolution of both the archaeological and environmental records. Analysis of the artifacts previously collected from the buried resource exclusion zone will yield data on activities represented within this buried resource, as well as potentially provide information on resource exploitation and use in the vicinity of the pluvial shoreline. Geoarchaeological trenching will provide information as to the processes by which this resource formed and its environmental context, while a Ground

Penetrating Radar study will enable the identification and analysis of any intact buried features reflecting prehistoric use of this pluvial lacustrine environment.

Artifact Analysis

Material recovered during monitoring and controlled grading in Unit 1 consists of flaked lithics and groundstone artifacts. Systematic analysis of these artifacts may reveal patterns relevant to use of Ford Dry Lake during the Archaic and Late Prehistoric Periods. To date, analysis has been limited to preliminary identification and cataloging as construction has progressed.

Analysis of the artifacts collected to date from the Unit 1 resource have the potential to address several research topics relating to human land use of the Colorado and Mojave Deserts. The discussion below incorporates and supplements research questions developed for the GSEP and listed in Section 5.0 of the CRMMP and Section 5.0 of the HPTP (Farmer and Farrell 2011a, Farmer and Farrell 2011b). Key research themes include the following:

- *Chronology:* Can the artifacts be assigned to specific time periods? While no materials suitable for radiocarbon dating have been obtained, certain artifact forms can provide at least a general timeframe for some archaeological deposits. Analysis of the flaked stone tool collection, for example, may reveal types of projectile points or other tools that have chronological implications.

- *Subsistence:* What kinds of plants and animals were used for food by prehistoric groups in this area? Does the resource contain evidence of specific dietary preferences? Currently, animal bone is lacking from the assemblage that can provide direct information on hunting. Groundstone implements, however, can provide important data on the use of plant resources. Recent refinements in the recovery of pollen and phytoliths from groundstone, for example, suggest that it may be possible to obtain a relatively robust sample from artifacts recovered from the buried resource. Key data sets include the following:

    - *Subsistence-related Artifacts*: A general sense of the kinds of foods that were emphasized can be provided by artifacts that were directly related to the procurement and processing of subsistence resources. For example, assemblages dominated by groundstone implements may reflect an emphasis on the gathering of plant foods, while projectile points suggest hunting activity.

- *External Relations and Exchange:* Because population densities in the Mojave and Colorado Deserts overall were relatively low, prehistoric groups moved through wide areas, as attested by the extensive network of prehistoric trails throughout the region. Because trade and long-distance travel was an element of broader social relations, the magnitude and direction of the movement of people and commodities, as well as any changes over time, is important to assess. The present sample contains the following data relating to this issue:

    - *Flaked Stone Raw Material:* Preliminary examination of the flaked stone collection suggests that most items are of raw materials that were available in the

immediate area. However, some specimens may be present that indicate either trade or long-distance procurement. Examples could include wonderstone, from the west side of the Imperial Valley, or obsidian from the Coso source near the Owens Valley.

The analysis of the artifacts recovered during the monitoring and controlled grading of the Unit 1 buried resource will apply a variety of techniques designed to provide data relevant to the research questions discussed above.

- *Flaked Stone:* The flaked stone artifacts collected during the monitoring of the buried resource and the controlled grading program will be analyzed to determine material type and basic technological profiles. The identification of material type will use the general categories currently applied to flaked stone in the Ford Dry Lake basin, such as chert, basalt, chalcedony, and jasper. These will be compared to known sources in the vicinity to provide data on the degree to which local vs. more distant sources of flaked stone were utilized. Technological analysis of the flaked stone materials is expected to be limited because smaller items are unlikely to have been collected during the monitoring and controlled grading. Nevertheless, the analysis may suggest whether the processing of flaked stone within the project area focused on the production of finished tools or the initial reduction of cores. The analysis of the flaked stone artifacts will be conducted by Theodore Cooley of AECOM, or an analyst approved by the BLM and the Energy Commission.

- *Groundstone:* Analysis of groundstone implements will be directed at assessing artifact type, material, and size, as well as on any residues of pollen or other microscopic plant remains that could indicate the kinds of plant resources being processed. The analyzed sample will include the groundstone implements recovered from the monitoring and controlled grading. Each groundstone implement will be measured as appropriate for length, width, and thickness and material type will be determined. This analysis will be conducted by Theodore Cooley and Matthew Tennyson of AECOM, or analysts approved by the BLM and the Energy Commission.

The analysis of previously collected artifacts will be conducted by AECOM archaeologists Andy York, Theodore Cooley, Tanya Wahoff, and Matthew Tennyson and is expected to begin during the fourth week of May 2012. Analysis and reporting is expected to take three weeks, with submittal of a letter report to the BLM and the Energy Commission for review and approval by early June 2012.

Preliminary Ethnographic Framework

Although Tribal representatives have requested an ethnography focused on the buried resource be completed prior to evaluating the resource, sufficient information already exists to assume eligibility under Criterion A/1. Ethnographers approved by the BLM and the Energy Commission will examine information collected from consultation with Native American stakeholders, archaeological information collected as part of the GSEP environmental permitting process, and previously published ethnographic and/or archaeological data. With this

information, the ethnographer will author a document which synthesizes this information in relation to the resource's eligibility under Criterion A/1. This effort is expected to take three to four weeks to complete, for submittal in the middle of June 2012. Construction within the exclusion zone may proceed prior to the completion of this document if the CRS, with verbal concurrence from the BLM and Energy Commission, has determined that all Phase I mitigation field work is complete. The goal of this effort is to refine and plan for a larger, year-long ethnographic study in Phase II mitigation, including identifying and providing focus on the issues and knowledge most relevant to the Native American s takeholders who will be participating in the Phase II effort. This preliminary framework will be submitted to the Energy Commission and BLM for review and approval.

Reporting of Phase I Mitigation Results

Upon completion of each effort, a separate Phase I Mitigation Results Report will be prepared for each mitigation task. These reports will be submitted to the Energy Commission and BLM or review and approval. Following approval of the Phase I Mitigation Results Reports, detailed plans and budgets for the Phase II mitigation tasks described below will be prepared at the request of the Energy Commission and BLM.

PHASE II MITIGATION

All Phase II mitigation tasks are anticipated to take place concurrently, to the extent logistically possible. The anticipated timeframe for Phase II mitigation activities is presented in Table 6 and will be initiated as soon as possible by the consultants specified in this section of the Plan or alternates approved by the BLM and the Energy Commission.

Table 6. Phase II Mitigation Timeframe

Task	Duration	Estimated Completion Date
Ethnographic Study	1 year	Third quarter 2013
Off-Site Geoarchaeological Trenching	3 weeks	Field work early third quarter 2012; report; report early fourth quarter 2012
Off-Site Sediment Coring	4-6 months	End of second quarter 2012
Off-Site Pedestrian Survey and Artifact Analysis		Field work and artifact analysis fourth quarter 2012; report second quarter 2013
Assessment of Archaeological District	8 weeks	Mid-2013
Educational Website	6-9 months	Mid-2013
Augmented Reality Application	4-7 months	Mid-2013
Smart Phone App/Virtual Kiosk	6 months	Mid-2103
Instructional Module	6 months	Second quarter 2013

Task	Duration	Estimated Completion Date
Green Energy/ NEPA Scholarship	1 month	Year end 2012
Section 106 Training	n/a	Year end 2012 (dependent upon training organization availability)

Ethnographic Study

An ethnographic study of the region around the project area will provide an ethnographic context for cultural material recovered from the resource and assist in the preservation and dissemination of Native American understandings of the landscape and the places and material remains within it. It is imperative that an ethnographic study be done in coordination with local Tribes, especially those named in the GSEP programmatic agreement. The study will also benefit from coordination and/or collaboration with concurrent studies, such as the Prehistoric Trails Network Cultural Landscape studies led by Lowell Bean.

The research questions which will guide the ethnographic study should be determined in coordination with local tribal representatives and elders, with an emphasis on the GSEP resource(s), Ford Dry Lake, and the broader Chuckwalla Valley extending to the Colorado River. As a mitigation measure, it is essential that this study be focused on the goals of the Native American peoples it represents. It is recommended that an ethnographic working group be formed from members of each Tribe participating in the GSEP programmatic agreement, or their representatives. The working group will provide a means for Native American input as well as a direct link from the Ethnographer(s) back to the Tribes. With the facilitation of the study's Ethnographer(s), the working group would be tasked with monitoring the progress of the study, determining the study's research questions, and determining the more specific interview questions. The working group would also be responsible for assembling a list of key informants and important locations to be included in the ethnographic study.

Before conducting field work for the ethnographic study, a thorough review and synthesis of the Phase 1 mitigation ethnographic framework and of the existing literature would also be necessary. Sources include, but are not limited to:

- Barrows, David Prescott. 1967. *The Ethno-Botany of the Coahuilla Indians of Southern California*. Malki Museum Press.
- Bean, Lowell John. 1974. *Mukat's People: The Cahuilla Indians of Southern California*. University of California Press.
    - 1976. *Native Californians: A Theoretical Retrospective*. Ballena Press.
    - 1982. *Temalpakh Cahuilla Indian Knowledge and Usage of Plants*. Malki Museum Press.
    - 1989. *The Cahuilla* (Indians of North America). Chelsea House Publishers.

    - 1991. *The Cahuilla Landscape: The Santa Rosa and San Jacinto Mountains*. Ballena Press.
    - 1992. *California Indian Shamanism*. Malki-Ballena Press.
- Bronson, Leisa G. *A Chronological history of the Quechan Indians and their lands*.
- Cuero, Delfina and Florence Connolly Shipek. 1991. *Delfina Cuero: Her Autobiography - An Account of Her Last Years and Her Ethnobotanic Contributions*. Ballena Press.
- Ezell, Paul and Greta Ezell Dodyns. 1963. *Death of a Society: The Halchidhomas*. Ethnohistory.
- Forbes, Jack D. 1965. *Warriors of the Colorado: The Yumas of the Quechan Nation and Their Neighbors* (Civilization of American Indian). University of Oklahoma Press.
- Halpern, A. M. 1997. *Kar?úk: Native Accounts of the Quechan Mourning Ceremony*. University of California Publications in Linguistics, University of California Press.
- Kroeber, Alfred Louis. 2006. *Handbook of the Indians of California, Vol. 2*. Kessinger Publishing, LLC.
    - 2009. *Yuman Tribes of the Lower Colorado*. BiblioBazaar.
- Laird, Carobeth. 1976. *The Chemehuevis*. Malki Museum Press.
    - 1984. *Mirror and Pattern: George Laird's World of Chemehuevi Mythology*. Malki Museum Press.
- Luthin, Herbert W. 2002. *Surviving Through the Days: Translations of Native California Stories and Songs*. University of California Press.
- Manners, Robert A. 1974. *Paiute Indians, Vol. 1: Southern Paiute and Chemehuevi- an Ethnohistorical Report* (American Indian Ethnohistory: California and Basin-Plateau Indians). Garland Publishing.
- Mason, William Marvin and Lowell John Bean. 1962. *The Romero Expeditions 1823 - 1826*. Ward Ritchie Press.
- Mifflin, Margot. 2009. *The Blue Tattoo: The Life of Olive Oatman*. University of Nebraska Press.
- Miller, Ronald Dean. 1975. *The Chemehuevi Indians of Southern California*. Malki Museum Press.
- Odens, Peter. 1971. *The Indians and I : Visits with the Dieguenos, Quechans, Fort Mojaves, Zunis, Hopis, Navajos and Piutes*. Imperial Printers.
- Redhawk, Richard. 1987. *Grandmothers Christmas Story: A True Quechan Indian Story*. Sierra Oaks Publishing Company.

- Santiago, Mark. 2010. *Massacre at the Yuma Crossing: Spanish Relations with the Quechans, 1779-1782*. University of Arizona Press.

- Snider, Jackie. 1986. *The Quechan Indians: Cultural aspects of a California Indian tribe* (Publications in American Indian studies). Department of American Indian Studies: San Diego State University.

- Strong, William Duncan. 1972. *Aboriginal Society in Southern California*. Malki Museum.

- Trafzer, Clifford E. 1997. *Chemehuevi people of the Coachella Valley: A short history of the Sovereign Nation of the Twenty-Nine Palms Band of Mission Indians of Southern California*. Chemehuevi Press.

- Trimble, Stephen. 1993. *The People: Indians of the American Southwest*. School of American Research (SAR) Press.

- Vane, Sylvia Brakke and Lowell John Bean. 1990. *California Indians: Primary Resources: A Guide to Manuscripts, Artifacts, Documents, Serials, Music, and Illustrations*. Malki-Ballena Press.

The field team will be composed of two senior Ethnographers and two junior Ethnographers unless agreed to otherwise by the BLM and the Energy Commission. The ethnographic working group will be involved in the evaluation and selection of the field team. To further support the preservation of local Native American culture, one or both of the junior Ethnographers should be a Native American student. The working group may also consider the usefulness of an ethnobotanist to complete an inventory of the project area for inclusion in the ethnographic study. Interviewees/participants should be given a small honorarium to compensate them for their time. Additionally the field team should escort interviewees/participants on visits to the project site as well as other relevant traditional cultural sites in the region. The field team will also provide for a photographer, should the need arise, to document viewsheds and landscape elements that form part of a traditional cultural place. It is anticipated that ethnographic field work would comprise a full-time effort for up to a year, and distribution of the ethnographic study would be determined in conjunction with the Native American ethnographic study working group, BLM and the Energy Commission. This effort is expected to begin following approval of a detailed Ethnographic Study Plan by BLM and the Energy Commission in the third quarter of 2012, with the subsequent establishment of the ethnographic team and selection of the ethnographic working group. Write-up of the ethnography will follow the one year of field work, with the study anticipated to be complete by the third quarter of 2014.

Archaeological Study

The archaeological study supporting the off-site mitigation program will focus on the development of a cohesive reconstruction of human land use at Ford Dry Lake over the course of the Holocene. Using archaeological, paleoenvironmental, and geomorphological data, the program will focus on how the episodic infilling and drying of the lake may have influenced human settlement and subsistence at this location. In marginal environments such as the

California deserts, the effects of both short and long-term environmental shifts may be especially profound, resulting in wide fluctuations in the availability of food, water, and other resources important to humans. Desert lake basins, in particular, may provide abundant resources during wetter intervals, but very few when dry; and the ways in humans adjusted to these varying conditions is an important area of research.

The archaeological study in support of the off-site mitigation will tie into a range of recent investigations in California that explore how humans adapt to their environment and respond to environmental change. In marginal environments such as the California deserts, the effects of both short and long-term environmental shifts may be especially profound, resulting in wide fluctuations in the availability of food, water, and other resources important to humans. Desert lake basins, in particular, may provide abundant resources during wetter intervals, but very few when dry; and the ways in humans adjusted to these varying conditions is an important area of research. This research, however, has been impeded by poor resolution of both the archaeological and environmental records. The present off-site research program is designed specifically to integrate the records both of past environments and of human land use to fully explore the prehistoric human-environmental interactions at Ford Dry Lake.

The investigation will take a layered approach designed to integrate a variety of environmental and archaeological information. Key elements of this will include:

- A geoarchaeological study designed to identify the different kinds of sediment in the project area and the conditions and sequence in which they were deposited. When correlated with the archaeological remains, the geoarchaeological data will provide a physical context for past human habitation along and near the lakeshore.

- A series of sediment cores taken from the Ford Dry Lake playa. Analysis of the sediment within these cores will focus on identifying wet and dry intervals within the basin. Additionally, preserved pollen within the core sediments will provide a record of vegetation change in the surrounding area.

- A more complete and focused inventory of the surface archaeology of the northern shoreline of Ford Dry Lake that addresses the full range of prehistoric resources and the potential for establishment of a National Register District and/or Area of Critical Environmental Concern.

- Analysis of groundstone and flaked stone artifacts collected during the monitoring and controlled grading, as well as from other selected archaeological sites in the vicinity.

These approaches are discussed in detail below.

Geoarchaeological Investigations

The discovery of artifacts at depth during the Genesis monitoring program highlights the importance of assessing geomorphological and stratigraphic sequences within the study area. Of particular importance is to determine whether the finds represent an intact buried deposit or if they are the result of geologic processes that have redeposited them to their current locations.

While some stratigraphic work has been done in the area using natural or construction-related exposures, the off-site mitigation program will utilize mechanically excavated trenches at selected locations to provide information directly relevant to archaeological interpretation. Trenching is not to exceed 300 m in total length; the locations of individual trenches will be defined in the formal Geoarchaeological Trenching Plan to be submitted to the Energy Commission and BLM following approval of Phase I mitigation efforts. The trenching program will be supervised by Mary Ann Vicari, or an Agency-approved alternate of SWCA, who will also prepare a report on the investigations. This effort is expected to begin following approval of a detailed Off-Site Geoarchaeological Trenching Plan by BLM and the Energy Commission at the beginning of the third quarter of 2012 The trenching is anticipated to require approximately one week, with an additional week for PSA lab work. Samples collected for radiocarbon dating will be submitted to Beta Analytic for analysis, with results within 14 business days of sample submission. The draft geoarchaeological report will include results of any radiocarbon analyses upon receipt of those results, and is expected to be submitted for BLM and Energy Commission review and comment early in the fourth quarter of 2013.

The trenching program will avoid known cultural sites within the study area, but will, in consultation with the project geoarchaeologist specifically target areas directly relevant to assessing the archaeological resources such as the former lake shorelines. Each trench proposed as part of this program will be 3 ft wide and will be excavated to a maximum depth of 4 ft below surface, per Occupational Safety and Health Administration standards in this vicinity, in order to investigate the overall stratigraphy in the area and potentially to identify buried deposits associated with the prehistoric lake stands of Ford Dry Lake. Trenching and sampling of each trench will be conducted in accordance with Section 9.4.2 of the HPTP, Section 9.4.2 of the CRRMP, and successful methods employed for other geoarchaeological trenching programs (McGuirt and Lerch 2008).

Spoils from each trench will be systematically sampled and screened for the identification of cultural materials. As employed successfully in previous trenching programs, one 5-gal bucket of excavated soil for every three backhoe buckets will be screened through 1/8-in. mesh screen to identify cultural materials (McGuirt and Lerch 2008). A trench record form will be completed for each trench including essential characteristics (trench number, length, width, and depth), the locations and types of archaeological features, the stratigraphy and characteristics of exposed sediments, and locations of disturbances such as tree roots or animal burrows. Trench walls, excavated within the boundaries of identified archaeological sites, will be scraped with hand tools to provide a clear exposure of subsurface cultural remains for detailed profile drawings and photographic documentation.

Sediment Cores

The sediment cores taken from the Ford Dry Lake playa will be designed to provide a baseline record of environmental change at this locality. Because deposition of sediment within playa bottoms is typically low-energy, the disturbance of sediments is minimal and the resolution of the sedimentary record is high. Desert playa settings have been shown to contain high concentrations of preserved pollen, which can provide a record of vegetation change in the surrounding area. If sufficiently controlled by radiocarbon dating, this environmental record will provide a valuable context for the archaeological results.

Research Questions

The program of sediment coring will be designed specifically to provide baseline data on the lacustrine history of Ford Dry Lake as well as information on vegetation change at this location throughout the Holocene. Key research questions include the following:

- *Lacustrine Episodes:* What was the duration and frequency of lakestands in Ford Dry Lake? Because most human activity in the study area likely took place during intervals when lakes were present, it is of interest to know when, and for how long, these lakestands took place. Analysis of sediments within the cores should reveal layers of clay that formed at the bottom of lakes as well as layers wind-blown silts or alluvium that represent dry intervals. If sufficient carbon is present within these layers in the form of charcoal or plant remains, radiocarbon dating can be used to derive direct calendar dates for these intervals.

- *Correlation with Regional Climate:* Do these lakestands, and intervening dry intervals, correlate with reconstructions of broader climatic trends in the Mojave and Colorado Deserts, or do they reflect primarily localized conditions? For example, the regionally dry conditions of the middle Holocene would produce relatively few lakestands, while high precipitation associated with the Little Ice Age (ca. AD 1350 – 1850) may have resulted in perennial lakes within the basin.

- *Vegetation Change:* How has vegetation in the Ford Dry Lake basin changed during the Holocene? Local vegetation communities would have been sensitive to changes in both temperature and precipitation, which would in turn affect the distribution of biotic resources important to humans. These changes can be assessed through analysis of pollen preserved in the cores.

Methods

Coring

Two cores will be extracted from selected locations within the Ford Dry Lake playa. The core locations will be selected in consultation with a specialist from PaleoResearch Inc. (PRI), who will serve as the paleoenvironmental consultant. The cores will be extracted using a truck-mounted hydraulic coring system that employs a 3-inch diameter split-barrel sampler deployed in a hollow-stem auger. The cores will be collected in individual sections, or drives, measuring approximately five feet in length. Collection, packaging, and labeling of individual drives will be directly supervised by the PRI specialist with assistance from one AECOM archaeologist. Each drive will be packaged in a plastic tube marked with the core designation and drive number. The drives will then be placed in wooden boxes and transported by truck to the PRI laboratory in Golden, Colorado. The coring will take approximately five days.

Analysis

Sediment within the cores will be examined macroscopically by the project geoarchaeologist and paleoenvironmental consultant to identify sediments representing lakestands and dry intervals.

To extract the pollen, a hydrochloric acid solution will be used to remove calcium carbonate. The samples will be screened through 250 micron mesh. Pollen will then be separated from the sediment and extraneous organic matter will be removed. Pollen diagrams will be produced using Tilia 2.0 and TGView 2.0.2. Total pollen concentrations are calculated in Tilia using the quantity of sample processed in cubic centimeters (cc), the quantity of exotics (spores) added to the sample, the quantity of exotics counted, and the total pollen counted and expressed as pollen per cc of sediment. This effort is expected to begin following approval of a detailed Sediment Core Analysis Plan by BLM and the Energy Commission in the third quarter of 2012. The analysis of the core sediments and associated report will be completed by PRI and will require approximately four to six months, with an anticipated submittal date of a draft report for BLM and Energy Commission review and comment by the end of the second quarter of 2013.

Pedestrian Survey and Artifact Analysis

While previous archaeological survey within the Genesis project area provides preliminary information on prehistoric use of areas near the highest shoreline, additional data are needed to develop a fuller picture of prehistoric human use of the Ford Dry Lake basin as a whole. In particular, relatively little work has been done along the existing playa margin, an area that likely attracted human groups during ephemeral lakestands over the past several hundred years. Additional archaeological survey and artifact analysis is therefore proposed as part of the off-site mitigation to explore additional areas along the current and former lake margins.

Research Questions

Preliminary identification of relict lake shorelines within and near the Genesis project area suggests that some former lakestands in the basin were substantially more extensive than those represented by the current Ford Dry Lake playa. The elevation of the high shoreline features above the present playa suggests that these high lakestands were relatively deep (>10 feet) and likely of long (multi-year or longer) duration. Lakes that periodically form in the current playa, in contrast, are typically much more ephemeral. The presumed differences in the durations of these lakestands suggest that there were differences in associated biotic communities as well, including resources important to humans. Temporal and spatial variability in the local physical and biotic environments will be clarified by the geoarchaeological investigations and sediment core analysis discussed above.

The pedestrian survey and artifact analysis proposed for the off-site mitigation will focus primarily on assessing the ways in which prehistoric humans exploited the lakeshore habitats and how this may have changed over time. The specific research issues to be addressed consist of the following:

- *Chronology:* Can the archaeological sites in the study area be assigned to specific time periods? In the absence of controlled excavations within the archaeological sites, it is doubtful that any materials suitable for radiocarbon dating will be obtained. Nevertheless, certain artifact forms can provide at least a general timeframe for some archaeological deposits. The use of pottery, for example, is limited to about the last millennium or so. Small-sized projectile points used with the bow and arrow appeared slightly earlier, by around 1300 to 1400 years ago. Larger projectile points of the Elko and Pinto series were

in use during the early and middle Holocene, and certain earlier forms such as Lake Mojave points are thought to be more than 8,000 years old. Additional information on chronology of specific sites can be provided by the geomorphic setting: for example, a deposit within an active sand dune is likely to be relatively recent, while sites associated with earlier landforms may be older. The geoarchaeological study discussed previously will provide more refined criteria for assessing the age of sites based on their physical context.

- *Frequency and Duration of Occupations:* How often, and for how long, did prehistoric groups occupy the Ford Dry Lake basin? Can differences be discerned between the occupations along the high shoreline vs. the current playa margin? Can changes over time in settlement frequency and duration be identified? For example, if extended lakestands attracted longer-term occupations, then more substantial archaeological remains might be associated with the higher shoreline. This is the pattern that is seen on a larger scale on portions of the high shoreline of ancient Lake Cahuilla in the Coachella Valley (Schaefer and Laylander 2007). On the other hand, regional population increase may have led people to more intensively occupy the current playa margin during the late prehistoric period. Key data sets relating to this issue include the following:

    - *Artifact Density and Diversity:* Sites in different settings within the Ford Dry Lake basin may exhibit significant variability in the density and diversity of artifact assemblages. Comparison of surface assemblages of sites identified during the off-site mitigation with those in the Genesis project area may suggest different mobility and land use strategies.

    - *Features:* The presence of features such as hearths or roasting pits within artifact scatters is consistent with domestic activities associated with prehistoric camps. It is likely that hearth features will be identified at sites recorded during the off-site mitigation investigations, and these may exhibit variability (i.e. large, multiple-use hearths vs. smaller, single-episode features) that may suggest levels of mobility. Where these features have been dispersed, their presence may still be indicated by fire-affected rock.

    - *Portability:* As discussed previously, based on their dimensions and material type, groundstone artifacts may be classified into portable and non-portable forms. While collections from sites identified during the off-site mitigation investigations are expected to be limited, basic measurements in the field of groundstone artifacts at these sites can provide important comparative information.

    - *Site Structure:* While controlled assessments of site structure will not be conducted during the off-site mitigation, preliminary data in for form of artifact clustering and possible activity areas will provide some basis for comparison with site in the Genesis project area.

- *Subsistence:* What kinds of plants and animals were used for food by prehistoric groups in this area? Does the resource contain evidence of specific dietary preferences? Are any

differences in diet discernible at the sites associated with the high shoreline vs. the current playa margin? It is doubtful, at the survey level, that sufficient animal bone will be found at any of the sites to discern any meaningful dietary patterns and currently, animal bone is lacking from the assemblages that can provide direct information on hunting. Groundstone implements, however, appear to be relatively common and can provide important data on the use of plant resources. Recent refinements in the recovery of pollen and phytoliths from groundstone, for example, suggest that a relatively robust sample can be obtained from a variety of contexts within the study area. Key data sets include the following:

- *Subsistence-related Artifacts*: A general sense of the kinds of foods that were emphasized at specific sites can be provided by artifacts that were directly related to the procurement and processing of subsistence resources. For example, assemblages dominated by groundstone implements may reflect an emphasis on the gathering of plant foods, while projectile points suggest hunting activity.

- *Pollen and Phytoliths:* More direct evidence of subsistence can be obtained from the removal in the laboratory of pollen and phytoliths from groundstone implements. Where these can be separated from ambient pollen adhering to the artifact, they can disclose specific species of plants being processed.

- *Protein Residue:* Artifacts used to hunt or process animals for food may retain residues of blood proteins. Analysis of these can identify the animals being hunted to at least the family level.

Additionally, while animal bone is expected to be rare in sites within the off-site mitigation study, field examination of archaeological specimens can provide some information on the kinds of animals being hunted.

- *External Relations and Exchange:* Because population densities in the Mojave and Colorado Deserts overall were relatively low, prehistoric groups moved through wide areas, as attested by the extensive network of prehistoric trails throughout the region. Because trade and long-distance travel was an element of broader social relations, the magnitude and direction of the movement of people and commodities, as well as any changes over time, is important to assess. Preliminary examination of the flaked stone collection suggests that most items are of raw materials that were available in the immediate area. However, some specimens may be present that indicate either trade or long-distance procurement. Examples could include wonderstone, from the west side of the Imperial Valley, or obsidian from the Coso source near the Owens Valley. Additionally, it is anticipated that the off-site mitigation may reveal additional classes of material, such as obsidian or marine shell, which will provide additional information.

Methods

The methods to be applied to the pedestrian survey and artifact analysis are designed to help address the research questions discussed above.

Pedestrian Survey

The off-site archaeological survey will be designed to provide a fuller picture of site types and distributions within the Ford Dry Lake basin. While recent surveys within the Genesis project area provide data on sites near the lake's maximum shoreline, the off-site surveys will be directed at areas between the Genesis project area and the playa margin. The surveys will focus primarily on the northern playa margin, to provide data for comparison to the sites along the maximum shoreline. Additional data on site distributions will be provided by sample survey blocks between the playa and the Genesis project area.

To identify resources adjacent to the playa, a team of archaeologists will systematically survey areas along the north side of the playa that have not been previously surveyed. A survey corridor will be defined that follows the north side of the playa margin and extends from the playa north 100 m. At an estimated 10 miles (16 km) in length, this corridor would encompass approximately 400 acres. Two previously recorded cultural sites along the playa margin—CARIV-1516 and CA-RIV-2159—will be revisited and the site records updated as discussed below.

In addition, sample survey blocks will be conducted in the area between the north edge of the playa and the Genesis project area. These blocks will be consistent with the Class II inventory conducted in this general area by Tetra Tech (Farmer et al. 2010), with each block measuring 0.25 mile on a side (40 acres). Using the grid established for the Class II survey, a total of 10 blocks totaling 400 acres will be randomly selected.

The survey will be conducted by a team of three to five archaeologists walking in parallel transects spaced no more than 15 m apart. The ground surface will be carefully examined for prehistoric or historic artifacts or features such as hearths or roasting pits. Areas containing three or more artifacts or within 30 m of one another will be recorded as archaeological sites. Artifacts more than 30 m apart will be recorded as isolated finds. Field navigation will be conducted using handheld global positioning (GPS) units supplemented by hard copies of aerial images showing the survey areas.

Site and Isolate Recording

Sites identified during the pedestrian survey will be recorded in standard California Department of Parks and Recreation format (DPR Form 523). Site recording will include the production of a scaled sketch map showing natural features (topography and vegetation) as well as the locations of artifacts, artifact clusters, and features. A datum will established at each site and its coordinates recorded using a GPS unit. Each site will be photographed in at least two directions. Features and selected artifacts at each site will also be photographed. Isolated finds will be described, photographed and mapped using a GPS unit. All artifacts collected from the surface for analysis (see below) will be mapped using a GPS unit.

Artifact Analysis

Laboratory analysis will be conducted on selected artifacts collected from sites identified during the off-site pedestrian survey. This analysis has the potential to address several research topics relating to human land use of the Colorado and Mojave Deserts. The analysis will apply a variety of techniques designed to provide data relevant to the research questions discussed above.

To some degree the scope of the analysis of artifacts to be analyzed in support of the off-site mitigation will depend on the recovery of appropriate samples.

- *Flaked Stone:* Analysis of flaked stone artifacts for the off-site mitigation will include the flaked stone specimens collected during monitoring and controlled grading efforts within the exclusion zone. In addition, representative specimens of tools or debitage may be collected from the surface of sites identified during the pedestrian survey for assessment of technology or raw material.

- *Groundstone:* The analyzed sample will include the remaining groundstone implements recovered from the monitoring and controlled grading, as well as selected groundstone artifacts from sites discovered during the off-site survey. Each groundstone implement will be measured as appropriate for length, width, and thickness, and material type will be determined.

- *Pollen, Starch, and Phytoliths:* As discussed above, a total of 20 groundstone artifacts recovered from the Genesis project area will be submitted to PRI for analysis of pollen, starch, and phytolith residues. Additionally, up to 20 groundstone artifacts with associated soil controls will be selected from sites identified during the off-site pedestrian surveys.

- *Protein Residue:* Up to 10 specimens collected from playa margin sites identified during the pedestrian survey, will be submitted to PRI to identify protein residues adhering to the artifact. The analytical methods will be the same as those described previously.

- *Ceramics:* Selected specimens from the surface of sites identified during the off-site pedestrian survey will be submitted to a SWCA archaeologist Suzanne Griset for typological analysis. On a general level, the analysis will be directed at identifying vessel form as well as ware (i.e., Tizon Brown Ware, Lower Colorado River Buff Ware). Additional attributes may identify a fuller range of types from the Colorado River area. As appropriate, petrographic analysis of selected samples will be conducted to possibly identify sherds manufactured in the immediate vicinity. This analysis will be conducted by Desert Archaeology, Inc. (Tucson, Arizona) or specialists approved by the BLM and the Energy Commission.

- *Obsidian:* Obsidian at archaeological sites in this region is usually from two sources: Obsidian Butte in the Imperial Valley, and the considerably more distant Coso Volcanic Field roughly 250 miles to the northwest. The former was probably within the seasonal range of people occupying the project area; the latter probably required a more formalized exchange network to obtain in quantity. Although obsidian appears to be rare at sites in the Ford Dry Lake area, some specimens may be recovered and will be subjected to geochemical sourcing and hydration analysis. The geochemical sourcing will be conducted by the Richard Hughes of the Geochemical Research Laboratory, while hydration will be conducted by Origer Obsidian Hydration Laboratory.

- *Shell:* Although uncommon in this area, marine shells can provide information human movements based on whether they are of species found along the Pacific coast or Gulf of California.

It is expected that the survey effort and artifact analysis will be led by AECOM archaeologists Andrew York, Theodore Cooley and Matthew Tennyson. Additional details on the survey and personnel will be included in the formal Off-Site Pedestrian Survey and Artifact Analysis Plan. The survey effort is expected to begin immediately following approval of the Off-Site Pedestrian Survey and Artifact Analysis Plan by BLM and the Energy Commission in the third quarter of 2012 for a period of three to four weeks. Artifact analysis of previously collected material from the exclusion zone will occur concurrently with the survey effort. Analysis of artifacts collected during the pedestrian survey is expected to take two months following completion of the survey, including special studies. A draft report on the results of the pedestrian survey and artifact analysis is expected to be submitted to the Energy Commission and BLM for review and comment by the second quarter of 2013.

Assessment of Archaeological District

Based on the findings of the off-site mitigation investigations, portions of the Ford Dry Lake area may be considered for National Register of Historic Places (NRHP) eligibility as a district. The National Park Service defines a district as a grouping of sites, buildings, structures, or objects that are linked historically by function, theme, or physical development. Archaeological districts typically contain groups of resources that have a direct relationship through cultural affiliation, related elements of a pattern of land use, or historical development (Little et al. 2000).

Consideration of the project area as a district would likely focus on thematic links related to cultural affiliation, regional trail systems, and/or ecological-cultural relationships of a lakeshore environment. These themes would be developed in consultation with the BLM, Energy Commission, and Native American tribal representatives. If the area appears to meet the criteria for a National Register district, AECOM will prepare a nomination for BLM's submittal to the California SHPO and subsequently to the Keeper of the National Register. If the area does not appear to meet the requirements for a NRHP district, AECOM will prepare a report documenting the assessment and the reasons for the negative conclusion. The draft nomination/report will be prepared by Andrew York and Rebecca Apple of AECOM or by similar specialists approved by the BLM and the Energy Commission, with major assistance from a GIS specialist to prepare the necessary spatial data. It is anticipated that approximately eight weeks will be required to prepare the draft nomination/report, and that it would be completed for BLM and Energy Commission review and comment mid-2013 following the pedestrian survey and artifact analysis efforts described above.

Public Outreach

As part of the off-site mitigation measures, a number of activities should be developed that involve the general public and/or Native American stakeholder groups. These include:

Production of Educational Website

An educational website should be produced that includes archaeological and ethnographic information about the project area, the mitigation measures in place, and the level of involvement of the various surrounding Tribes. The website may include descriptions of various artifacts and features found at the site, historic and contemporary photographs, as well as video "featurettes" of interviews with Native American elders, cultural resources staff, or other Tribal leaders about the importance of the area and the attachment they may have to the region. The website may also include timelines of the area told from various perspectives, including those Tribes involved in the project. While the production of the website will be conducted by AECOM web developer Doug Johnston and/or a subconsultant with website developing experience, the various Tribes should be consulted with regarding content, detail, and organization. AECOM ethnographers, public outreach staff, and archaeologists will be involved in the development of content. This will include the development of maps, photographs of artifacts, digitizing of historic photographs, interviews and filming of featurettes with Tribal Elders/other Tribal representatives, and senior QA/QC review of materials. The graphic design of the website and materials will be led by the AECOM graphic design team. Materials to be produced include a general look and feel/tone for the website, logos and fonts needed (as needed), maps and other visual materials designed to be consistent with the tone of the website as a whole and readable online. AECOM will also program the website, including building the website architecture, registering and maintaining the web domain, formatting materials for online viewing, rendering video materials for proper playback. It is anticipated that the website would involve five key, core AECOM team members for the development and review of content and of the website itself. Additional staff may be added as needed for video production for featurettes.

Additional details on the product and personnel will be included in the formal draft Educational Website Plan. This effort is expected to begin following approval of the draft Educational Website Plan by BLM and the Energy Commission in the third quarter of 2012. It is anticipated that the educational website could be developed in 6 to 9 months, allowing for adequate time to consult with involved Tribes, with a completion date of a "Beta" version for BLM and Energy Commission review and comment of mid-2013.

Smart Phone Application/Virtual Kiosk

An augmented reality (AR) application should be developed as an educational and entertainment Smart Phone Application. AR applications are live views of physical, real-world environments augmented by computer-generated sensory input, such as video and graphics that would provide information for a public audience similar to what is typically included in a traditional kiosk. The augmentation happens in real-time. For an application such as this, the AR would need to be georeferenced to key viewsheds around Ford Dry Lake. Typically, AR applications are executable via smartphones, tablets, or computers with video capabilities. For information on AR in an archaeological context, please see Dahne and Karigiannis 2002. The AR application should be able to portray the Ford Dry Lake area at certain key points (up to five) and digitally render the inundated state of the lake and the type of sites and prehistoric activity that would be common along the edge of the lake, as well as information regarding the cultural relevance of the surrounding area for nearby Native American Tribes. While the production of the AR application would likely be conducted by AECOM software developers and/or a subconsultant with AR application development experience, the various Tribes should be consulted with regarding

content, detail, and location. AECOM ethnographers, visual simulation experts, and archaeologists should be involved in the development of the scenes and AR content. This will include the types of scenes that should be digitally created, including the depth of the Lake and the surrounding environment. This will also include the types of anthropogenic material to be included in the scenes, such as habitation structures, food processing materials (i.e., metates), or human actors portraying daily activities within the scene. This process will involve senior QA/QC. This will also involve AECOM graphic designers/visual simulation specialists/ animators or vendor AR application programmers to take the archaeologically/ethnographically accurate information and create visual simulations/animations that accurately portray the prehistoric record. Once the simulations are created, the phone/tablet application architecture must be created by AECOM programmers. It is anticipated that the website would involve three key core AECOM team members for the development and review of the content and of the AR application itself. Additional staff may be added as need for AR application programming. The AR application should be available for major smartphone operating systems (i.e., iPhone and Android) and would be subject to review by various "app store" operators for content.

Additional details on the product and personnel will be included in the formal draft Smart Phone Application/Virtual Kiosk Plan. This effort is expected to begin following approval of the draft Smart Phone Application/Virtual Kiosk Plan by BLM and the Energy Commission in the fourth quarter of 2012. It is anticipated that the "Beta" AR application could be developed in 4 to 7 months, allowing for adequate time to consult with involved Tribes, with a completion date for BLM and Energy Commission review and comment in mid-2013.

Instructional Module of Archaeology and Language

In consultation with Tribal representatives, an instructional module on archaeology and Native American languages will be developed at the 3rd grade level (in conjunction with the established "Continuity and Change" curriculum) that details some of the archaeology and ethnography at the project site, but expands to more general topics such as:

- What is archaeology?
- What are prehistoric sites?
- What Native Americans were living in the area?
- Do they live here still?
- How did they live?
- What are their beliefs (i.e., religious views)?
- What languages did/do they speak (e.g., common greetings and sayings)?

While the planning and organization of the instruction module would likely be conducted by AECOM staff in coordination with a subconsultant with educational materials development experience, the various Tribes should be consulted with regarding content, detail, and organization. AECOM ethnographers, public outreach staff, and archaeologists should be involved in the development of content of the educational materials, but it is likely that the

educational planning subconsultant would format the materials to be age appropriate. It is anticipated that the instruction module would involve five key core AECOM team members for the development and review of content and of the module itself, while an additional three members of an educational planning subconsultant would be involved. Additional staff may be added as needed for the development of various facets of the model (e.g., language).

Additional details on the product and personnel will be included in the formal Instructional Module Plan. This effort is expected to begin following approval of the Instructional Module Plan by BLM and the Energy Commission in the third quarter of 2012. It is anticipated that the draft module could be developed in no more than 6 months, allowing for adequate time to consult with involved Tribes, with a completion date, for BLM and Energy Commission review and comment, in the second quarter of 2013.

Establishment of Green Energy/NEPA Scholarship

A trust fund shall be established for tuition, books, and living expenses for undergraduate or graduate scholarships for Native Americans accepted at an accredited institution in fields of study involving the sciences, technologies, and engineering of alternative energy development and/or the technical and legal aspects of environmental impact assessment, management, remediation, cultural resource management, and communication.

Additional details on the product and personnel will be included in the formal draft Green Energy/NEPA Scholarship Plan, which will propose, after consultation among the Tribes, the BLM, the Energy Commission, and Genesis Solar, scholarship eligibility requirements, criteria for selecting scholarship recipients, the format of scholarship applications, protocols for awarding the scholarships, etc. This effort is expected to begin following approval of the draft Green Energy/NEPA Scholarship Plan by BLM and the Energy Commission early in the third quarter of 2012. It is anticipated that the scholarship program would take 3 months to establish), with a completion date for BLM and Energy Commission review and comment by year end of 2012.

Section 106 Training, Basic and Advanced

Training shall be provided for Tribal members to participate in Section 106 training so that they can participate more fully in the Tribal consultation process. Training will be provided to members of each involved Tribe and training will be held at the basic and advanced level. While many entities can provide this training, it is recommended that the training be provided by a third-party professional organization such as the National Preservation Institute which provides introductory and advanced training on project review under Section 106 of the National Historic Preservation Act, recent changes in regulations and procedures, and an emphasis on coordination with the National Environmental Policy Act and other laws. NPI offers seminars as customized, on-site training and can be tailored to create single- or multiple-day workshops at a location and time convenient to the interested Tribal parties. Genesis Solar will fund (registration fees and travel costs) one participant from each Tribe to attend each of the seminars at a time and location in Southern California convenient for the individual Tribal participants. It is anticipated that the seminars would take 2 months to establish, allowing for (1) coordination with Tribal representatives to select dates and locations and (2) coordination with NPI (or other selected

training organization) to establish the training sessions. It is expected that both the introductory and advanced seminars would be completed by year end of 2012.

Reporting of Phase II Mitigation Results

Off-site activities to mitigate impacts to the GSEP resource vary in duration and type. Upon completion of each specific ethnographic and public outreach task, a draft product will be submitted for BLM and Energy Commission review and comment. A memo confirming completion of each task will accompany submittal of the final product to BLM and Energy Commission. Within 40 days of completion of all of the archaeological tasks described above, a single report will be provided detailing the methods, results, and interpretations arising from the archaeological mitigation. Timing and management of these submittals are discussed in detail in Appendix B.

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APPENDIX A

BUDGET

GSEP Mitigation Plan for Unit 1 Buried Resource - Budget

A contingency factor of 17.6 percent will apply to the cost estimates for labor for most of the tasks below. The contingency factor will assure adequate funding for additional labor necessitated by the following:

1. Report revisions required by BLM, Energy Commission, and SHPO
2. Response to input from interested parties
3. Treatment for unanticipated resources
4. Additional external specialized analyses
5. Product revisions per tribal or other review

Mitigation Phase I		Cost
Preliminary Ethnographic Framework		$22,438.00
Geoarchaeological Trenching		$24,084.00
Artifact Analysis		$27,086.00
LIDAR		$14,138.00
Ground Penetrating Radar - 1 acre test only		$17,300.00
TOTAL COST FOR MITIGATION PHASE I		$105,046.00

Mitigation Phase II		Cost
Ethnographic Study		$951,544.00
Archaeological Studies		
	Geoarchaeological Trenching	$48,596.00
	Special Studies - Lake Sediment Cores	$125,000.00
	Pedestrian Survey 800 acres @$250/acre	$200,000.00
	Artifact Special Studies	$20,000.00
	Artifact Analysis	$27,086.00
	Assessment of Archaeological District	$101,280.00
Public Outreach		
	Educational Website	$188,400.00
	Phone App and Virtual Kiosk	$143,976.00
	Instructional Module	$139,260.00
	College Scholarship	$524,000.00
	Section 106 Training	$15,000.00
Mitigation Phase II		$2,484,142.00

Total Cost	$2,589,188.00
Contingency (17.6% on estimated labor)	$455,697.00
Total Cost with Contingency	$3,044,885.09

APPENDIX B

AGENCY OVERSIGHT OF GENESIS SOLAR'S IMPLEMENTATION AND MANAGEMENT OF THE UNIT 1 BURIED RESOURCE MITIGATION PROGRAM

GENESIS SOLAR ENERGY PROJECT UNIT 1
BURIED RESOURCE PHASE I AND PHASE II MITIGATION PLAN
RIVERSIDE COUNTY, CALIFORNIA

Appendix B

Agency Oversight of Genesis Solar's Implementation and Management of the Unit 1 Buried Resource Mitigation Program

The California Energy Commission (Energy Commission) is the lead state agency ensuring the Genesis Solar Energy Project's (hereafter, the project owner) compliance with the California Environmental Quality Act (CEQA) during its construction and operation. To that end, the Energy Commission imposed a number of cultural resources conditions of certification (COCs). Among these is CUL-9, which specifies how cultural resources discovered during construction will be treated. CUL-9 requires GSEP to halt construction in the vicinity of a cultural resources discovery until the Energy Commission's Compliance Project Manager (CPM) has determined whether the discovered resource is eligible for the California Register of Historical Resources (CRHR), and, if the CPM determines that the discovered resource is eligible, and if significant impacts to the eligible resource cannot be avoided, as determined by the CPM, CUL-9 prohibits the resumption of construction until the CPM has approved the project owner's data recovery or other mitigation plan, and the on-site mitigation has been completed.

The GSEP's significant impacts to the assumed NRHP- and CRHR-eligible Unit 1 buried resource are being mitigated pursuant to CUL-9 by the activities set forth in the Unit 1 Buried Resource Phase I and Phase II Mitigation Plan (hereafter, the Plan). The mitigation for impacts to the Unit 1 buried resource is of such a scope that CUL-9's verifications are not adequate for the Energy Commission CPM to monitor and verify the implementation of this complex Plan. So it seems prudent and reasonable for staff to develop additional verification language to ensure that the mitigation required pursuant to CUL-9 is effectively carried out.

This development of alternate verification language is consistent with the General Conditions for the GSEP, which include Condition of Certification (CoC) Compliance-3:

> Each condition of certification is followed by a means of verification. The verification describes the Energy Commission's procedure(s) to ensure post-certification compliance with adopted conditions. The verification procedures, unlike the conditions, may be modified as necessary by the CPM.

The General Conditions section (p. 15) states that "A verification may be modified by the CPM without requesting an amendment to the decision if the change does not conflict with the Conditions of Certification and provides an effective alternate means of verification."

The project owner will inform the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist in a letter that the project owner will implement the Unit 1 Buried Resource Phase I and Phase II Mitigation Plan in accordance with the Budget Management stipulations and the Research Implementation Management verifications provided in Appendix B.

Budget Management

1. The project owner shall not expend more than the total budgeted amount for the program, including up to the 17.6 percent contingency amount applied to the total for the Master Budget, which shall not exceed $3,044,885.00.

2. The project owner may propose a change in the total for the Master Budget to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, both of whom must approve any such change.

3. The project owner shall expend up to the budgeted amount in the Master Budget, plus the up to 17.6 percent contingency overrun of the budgeted amount, on each product included in the program, if the full amount is required to complete each product.

4. The project owner shall apply funds that were not expended up to the budgeted amount for completed products in the Master Budget to complete uncompleted products.

5. The project owner shall not expend funds budgeted in the Master Budget for uncompleted products to complete a product the costs of which have exceeded its budgeted amount in the Master Budget, including the 17.6 percent contingency overrun amount for that product.

Research Implementation Management

Phase I Mitigation

<u>On-Site Geoarchaeological Trenching</u>
The project owner shall continue to suspend project construction in the Unit 1 exclusion area until this task is completed.

The project owner shall obtain the services of a geoarchaeological trenching team and may initiate this task as soon as BLM and the Energy Commission issue the relevant Notices to Proceed.

As soon as possible, the project owner shall submit the resumes (as required by Energy Commission Condition of Certification (CoC) Cul-3), of the geoarchaeological team members to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval. Such review and approval shall not hold up the commencement of construction activities.

The Phase I geoarchaeological trenching research design presented in the plan and the Phase I geoarchaeological trenching budget presented in Appendix A are considered acceptable by the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist.

No later than 30 calendar days after the completion of the geoarchaeological trenching and the analyses of samples by the geoarchaeological team, the project owner shall submit a draft report

of the results to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and comment.

No later than 30 calendar days after receipt of the agencies' comments on the draft on-site geoarchaeological trenching report, the project owner shall submit the final on-site geoarchaeological trenching report to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

No later than 60 calendar days after the agencies' approval of the final report on the on-site geoarchaeological trenching, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) of the final, total cost of this task.

On-Site Ground Penetrating Radar (GPR) One-acre Test

The project owner shall continue to suspend project construction in the Unit 1 exclusion area until this task is completed.

The project owner shall obtain the services of a GPR team and may initiate this task as soon as the BLM and Energy Commission issue the relevant Notices to Proceed.

As soon as possible, the project owner shall submit the resumes (as required by Energy Commission CoC Cul-3) of the GPR team members to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval. Such review and approval shall not hold up the commencement of construction activities.

The Phase I GPR research design presented in the plan and the Phase I GPR budget presented in Appendix A are considered acceptable by the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist.

No later than 30 calendar days after the completion of the GPR survey, ground-truthing of anomalies, and analysis of the results by the approved GPR team, the project owner shall submit a draft report of the results to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and comment.

No later than 30 days after receipt of the agencies' comments on the draft GPR testing report, the project owner shall submit the final GPR testing report to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

No later than 60 calendar days after the agencies' approval of the final report on the GPR testing, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) of the final, total cost of this task.

Preliminary Ethnographic Framework

The project owner may resume and continue project construction in the Unit 1 exclusion area while this task is initiated and completed.

The project owner shall obtain the services of an ethnographic team and may initiate this task as soon as the BLM and Energy Commission issue the relevant Notices to Proceed.

As soon as possible, the project owner shall submit the resumes (as required by Energy Commission CoC Cul-3), of the ethnographic team members to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval. Such review and approval shall not hold up the commencement of construction activities.

The Phase I ethnographic framework research design presented in the plan and the Phase I ethnographic framework budget presented in Appendix A are considered acceptable by the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist.

No later than 30 calendar days after the completion of field and archival research by the ethnographic team, the project owner shall submit a draft ethnographic framework to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and comment.

No later than 30 calendar days after receipt of the agencies' comments on the draft ethnographic framework, the project owner shall submit the final ethnographic framework to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

No later than 60 calendar days after the agencies' approval of the final report on the ethnographic framework, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) of the final, total cost of this task.

Exclusion Zone Artifact Analysis

The project owner may resume and continue project construction in the Unit 1 exclusion area while this task is initiated and completed.

The project owner shall obtain the services of an artifact analysis team and may initiate this task as soon as the BLM and the Energy Commission issue the relevant Notices to Proceed.

As soon as possible, the project owner shall submit the resumes (as required by Energy Commission CoC Cul-3), of the artifact analysis team to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval. Such review and approval shall not hold up the commencement of construction activities.

The Phase I artifact analysis research design presented in the plan and the Phase I artifact analysis budget presented in Appendix A are considered acceptable by the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist.

No later than 30 calendar days after the completion of the artifact analyses by the approved artifact analysis team, the project owner shall submit a draft report of the results to the Energy

Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and comment.

No later than 30 calendar days after receipt of the agencies' comments on the draft report on the artifact analysis, the project owner shall submit the final report on the artifact analysis to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

No later than 60 calendar days after the agencies' approval of the final report on the artifact analysis, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) of the final, total cost of this task.

LIDAR Analysis

The project owner may resume and continue project construction in the Unit 1 exclusion area while this task is initiated and completed.

The project owner shall obtain the services of a LIDAR analysis team and may initiate this task as soon as BLM and the Energy Commission issue their respective Notices to Proceed. .

As soon as possible, the project owner shall submit the resumes (as required by Energy Commission CoC Cul-3), of the LIDAR analysis team to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval. Such review and approval shall not hold up the commencement of construction activities.

The Phase I LIDAR analysis research design presented in the plan and the Phase I artifact analysis budget presented in Appendix A are considered acceptable by the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist.

No later than 60 calendar days after the completion of the LIDAR analysis by the LIDAR analysis team, the project owner shall submit a draft LIDAR analysis report to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and comment.

No later than 30 calendar days after receipt of the agencies' comments on the draft LIDAR analysis report, the project owner shall submit the final LIDAR analysis report to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

No later than 60 calendar days after the agencies' approval of the final LIDAR analysis report, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) of the final, total cost of this task.

Phase II Mitigation

Ethnographic Study
The project owner continues project construction while this task is initiated and completed.

The project owner shall initiate this task within 90 calendar days of resuming construction in the Unit 1 exclusion area.

The project owner shall obtain the services of an ethnographic team consisting of two senior ethnographers and two junior ethnographers (assistants), unless otherwise agreed to by the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist.

At least 45 calendar days prior to the initiation of this task, the project owner shall submit the resumes (as required by Energy Commission CoC Cul-3), of the ethnographic team to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

At least 30 calendar days prior to the initiation of this task, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, a detailed ethnographic study plan and final report outline prepared by the ethnographic team and a budget approved by the project owner showing a total cost for the ethnographic study, including honoraria for Native American participants/interviewees, less than or equal to the amount allocated in the Master Budget for this task.

On the first day of each quarter after the initiation of this task, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, a detailed progress report and an accounting (labor and other direct costs) of the funds expended that quarter and to date, and of funds remaining in the Master Budget for this task. The project owner shall discontinue quarterly reports with the first quarter this task is completed.

No later than 365 calendar days after the completion of literature review and field work by the ethnographic team, the project owner shall submit a draft ethnographic study to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and comment.

No later than 30 calendar days after receipt of the agencies' comments on the draft ethnographic study, the project owner shall submit the final ethnographic study to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

No later than 60 calendar days after the agencies' approval of the final ethnographic study, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) of the final, total cost of this task.

Off-Site Geoarchaeological Trenching

The project owner continues project construction while this task is initiated and completed.

The project owner shall initiate this task within 60 calendar days of resuming construction in the Unit 1 exclusion area.

The project owner shall obtain the services of a geoarchaeological team.

At least 45 calendar days prior to the initiation of this task, the project owner shall submit the resume (as required by Energy Commission CoC Cul-3), of the geoarchaeological team to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

At least 30 calendar days prior to the initiation of this task, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, a detailed geoarchaeological research design and final report outline prepared by the geoarchaeological team and a budget approved by the project owner showing a total cost for the off-site geoarchaeological trenching less than or equal to the amount allocated in the Master Budget for this task.

No later than 60 calendar days after the completion of the off-site geoarchaeological field work by the geoarchaeological team, the project owner shall submit a draft off-site geoarchaeological trenching report to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and comment.

No later than 30 calendar days after receipt of the agencies' comments on the draft off-site geoarchaeological trenching report, the project owner shall submit the final off-site geoarchaeological trenching report to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

No later than 60 calendar days after the agencies' approval of the final off-site geoarchaeological trenching report, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) accounting of the final, total cost of this task.

Off-Site Sediment Coring

The project owner continues project construction while this task is initiated and completed.

The project owner shall initiate this task within 90 calendar days of resuming construction in the Unit 1 exclusion area. Contracting for the services of the appropriate team shall be considered initiating this task, although the actual research may not begin for some indefinite time after finalizing the contract.

The project owner shall obtain the services of a team to collect and analyze sediment cores from Ford Dry Lake.

At least 45 calendar days prior to the initiation of this task, the project owner shall submit the resumes (as required by Energy Commission CoC Cul-3), of the sediment core analysis team to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

At least 30 calendar days prior to the initiation of this task, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, a detailed sediment core research design and final report outline prepared by the sediment core analysis team and a budget approved by the project owner showing a total cost for the sediment core study less than or equal to the amount allocated in the Master Budget for this task.

No later than 60 calendar days after the completion of the sediment core study by the sediment core analysis team, the project owner shall submit a draft sediment core analysis report to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and comment.

No later than 30 calendar days after receipt of the agencies' comments on the draft sediment core analysis report, the project owner shall submit the final sediment core analysis report to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

No later than 60 calendar days after the agencies' approval of the final sediment core analysis report, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) accounting of the final, total cost of this task.

Off-Site Pedestrian Survey and Artifact Analysis

The project owner continues project construction while this task is initiated and completed.

The project owner shall initiate this task within 120 calendar days of resuming construction in the Unit 1 exclusion area.

The project owner shall obtain the services of an archaeological team to conduct pedestrian survey and artifact analysis.

At least 45 calendar days prior to the initiation of this task, the project owner shall submit the resumes (as required by Energy Commission CoC Cul-3), of the team members to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

At least 30 calendar days prior to the initiation of this task, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, a detailed, Off-Site Pedestrian Survey and Artifact Analysis Plan and Research Design and final report outline prepared by the team and a budget approved by the

project owner showing a total cost for the off-site 800-acre pedestrian archaeological survey and artifact analysis less than or equal to the amount allocated in the Master Budget for this task.

On the first day of each quarter after the initiation of this task, the project owner shall submit for review and approval to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, a detailed progress report and an accounting (labor and other direct costs) of the funds expended that quarter and to date, and funds remaining in the Master Budget for this task. The project owner shall discontinue quarterly reports with the first quarter after the task is completed.

No later than 90 calendar days after the completion of the off-site 800-acre pedestrian archaeological, the project owner shall submit a draft Class II report to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and comment.

No later than 30 calendar days after receipt of the agencies' comments on the draft Class II report, the project owner shall submit the final Class II report to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

No later than 60 calendar days after the agencies' approval of the final Class II report, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) of the final, total cost of this task.

Assessment of Archaeological District

The project owner continues project construction while this task is initiated and completed.

The project owner shall initiate this task within 30 calendar days after receiving the agencies' approvals of all of the off-site archaeological mitigation reports.

The project owner shall obtain the services of an archaeological district assessment team.

At least 45 calendar days prior to the initiation of this task, the project owner shall submit the resumes (as required by Energy Commission CoC Cul-3), of the archaeological district assessment steam members to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

At least 30 calendar days prior to the initiation of this task, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, a draft NRHP nomination form or negative conclusion report outline prepared by the approved archaeological district assessment team and a budget approved by the project owner showing a total cost for the archaeological district assessment less than or equal to the amount allocated in the Master Budget for this task.

No later than 150 calendar days after the reports of the findings of the off-site mitigation archaeological investigations are approved by the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, the project owner shall submit a draft archaeological district

nomination form or a negative conclusions report to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and comment.

No later than 30 calendar days after receipt of the agencies' comments on the draft nomination form or negative conclusions report, the project owner shall submit the final nomination/negative conclusions report to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

No later than 60 calendar days after the agencies' approval of the final nomination form or negative conclusions report, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) of the final, total cost of this task.

Educational Website

The project owner continues project construction while this task is initiated and completed.

The project owner shall initiate this task within 120 calendar days of resuming construction in the Unit 1 exclusion area.

The project owner shall obtain the services of a website development team, consisting of:

- A website developer;
- Ethnographers;
- Archaeologists
- Public outreach specialists;
- Tribal Elders and other Tribal representatives;
- A graphic design team; and
- Video production staff.

At least 45 calendar days prior to the initiation of this task, the project owner shall submit the resumes (as required by Energy Commission CoC Cul-3), of the website development team to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

At least 30 calendar days prior to the initiation of this task, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, a detailed educational website plan and content list prepared by the website development team and a budget approved by the project owner showing a total cost for the website development less than or equal to the amount allocated in the Master Budget for this task.

On the first day of each quarter after the initiation of this task, the project owner shall submit for review and approval to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, a detailed progress report and an accounting (labor and other direct costs) of the funds expended that quarter and to date, and funds remaining in the Master Budget for this task. The project owner shall discontinue quarterly reports with the first quarter after the task is completed.

No later than 15 calendar days after the completion of the website by the website development team, the project owner shall make available a Beta version of the website to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and comment.

No later than 30 calendar days after receipt of the agencies' comments on the Beta version of the website, the project owner shall make available to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist the final version of the website for review and approval.

No later than 15 calendar days after receipt of the agencies' approval of the finalized website, the project owner shall launch the website on the internet.

No later than 60 calendar days after the launch of the finalized website, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) of the final, total cost of this task.

Smart Phone Application/Virtual Kiosk

The project owner continues project construction while this task is initiated and completed.

The project owner shall initiate this task within 120 calendar days of resuming construction in the Unit 1 exclusion area.

The project owner shall obtain the services of a smart phone application/virtual kiosk team, consisting of:

- A software developer with augmented reality (AR) application development experience;
- AR application programmers;
- Ethnographers;
- Archaeologists;
- Tribal representatives;
- Graphic designers;
- Animators; and
- Visual simulation specialists.

At least 45 calendar days prior to the initiation of this task, the project owner shall submit the resumes (as required by Energy Commission CoC Cul-3), of the smart phone application/virtual kiosk development team to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

At least 30 calendar days prior to the initiation of this task, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, a detailed smart phone application/virtual kiosk plan and content list prepared by the smart phone application/virtual kiosk development team and a budget approved

by the project owner showing a total cost for the smart phone application/virtual kiosk less than or equal to the amount allocated in the Master Budget for this task.

On the first day of each quarter after the initiation of this task, the project owner shall submit for review and approval to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, a detailed progress report and an accounting (labor and other direct costs) of the funds expended that quarter and to date, and funds remaining in the Master Budget for this task. The project owner shall discontinue quarterly reports with the first quarter after the task is completed.

No later than 15 calendar days after the completion of the smart phone application/virtual kiosk development by the application development team, the project owner shall make available a Beta version of the smart phone application/virtual kiosk to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and comment.

No later than 30 calendar days after receipt of the agencies' comments on the Beta version of the smart phone application/virtual kiosk, the project owner shall make available to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist the final version of the smart phone application/virtual kiosk for review and approval.

No later than 15 calendar days after receipt of the agencies' approval of the finalized smart phone application/virtual kiosk, the project owner shall launch the smart phone application/virtual kiosk on the internet, subject to review by "app store" operators for content.

No later than 60 calendar days after the launch of the finalized smart phone application/virtual kiosk, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) of the final, total cost of this task.

Instructional Module

The project owner continues project construction while this task is initiated and completed.

The project owner shall initiate this task within 120 calendar days of resuming construction in the Unit 1 exclusion area.

The project owner shall obtain the services of a third-grade educational module development team, consisting of:

- A specialist with primary-grades educational materials development experience;
- Ethnographers;
- Archaeologists;
- Tribal representatives;
- Public outreach staff; and
- Additional staff as needed for the development of various facets, such as language.

At least 45 calendar days prior to the initiation of this task, the project owner shall submit the resumes (as required by Energy Commission CoC Cul-3), of the educational materials

development team to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

At least 30 calendar days prior to the initiation of this task, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, a detailed instruction module development plan and content outline prepared by the educational materials development team and a budget approved by the project owner showing a total cost for the instructional module less than or equal to the amount allocated in the Master Budget for this task.

On the first day of each quarter after the initiation of this task, the project owner shall submit for review and approval to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, a detailed progress report and an accounting (labor and other direct costs) of the funds expended that quarter and to date, and funds remaining in the Master Budget for this task. The project owner shall discontinue quarterly reports with the first quarter after the project is completed.

No later than 15 calendar days after the completion of the instructional module development by the development team, the project owner shall make available a draft instructional module to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and comment.

No later than 30 calendar days after receipt of the agencies' comments on the draft instructional module, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist the final instructional module for review and approval.

No later than 15 calendar days after receipt of the agencies' approval of the final instructional module, the project owner shall offer the module at no cost to all school districts serving populations in and adjacent to the Mojave and Colorado Deserts.

No later than 60 calendar days after the agencies' approval of the final instructional module, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) of the final, total cost of this task.

Green Energy/NEPA Scholarship

The project owner continues project construction while this task is initiated and completed.

The project owner shall initiate this task within 60 calendar days of resuming construction in the Unit 1 exclusion area.

The project owner shall establish a fund at a financial institution acceptable to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist in the amount agreed to in the Master Budget. The total in the Master Budget shall include the costs of managing/maintaining the fund at the financial institution, and the remainder shall be disbursed for scholarships.

The BLM and the Energy Commission shall form a Genesis Solar Green Energy/NEPA Scholarship Program Committee, to which Genesis Solar has the option of assigning a representative, and which shall also include volunteer representatives of the Tribes, the BLM, and the Energy Commission. The Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist shall have final decision-making power in the committee.

No more than 30 calendar days after the project owner establishes the Genesis Solar Green Energy/NEPA Scholarship fund, the committee shall initiate research on existing scholarship programs and, based on known, successful models, formulate a draft scholarship program for the Genesis Solar Green Energy/NEPA Scholarship Program.

No more than 60 calendar days after the committee initiates research on other scholarship programs, the BLM and Energy Commission members of the committee shall submit the draft of the Genesis Solar Green Energy/NEPA Scholarship Program to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for review and approval.

No later than 15 days after receipt of the agencies' approval of the final Genesis Solar Green Energy/NEPA Scholarship Program, the BLM and Energy Commission members of the Genesis Solar Green Energy/NEPA Scholarship Program Committee shall distribute information on the program to all Tribal governments and to high school guidance counselors in all the school districts serving populations in and adjacent to the Mojave and Colorado Deserts.

On the first day of each quarter after the initiation of this task, the BLM and Energy Commission members of the committee shall submit for review and approval to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, their detailed progress report on the Genesis Solar Green Energy/NEPA Scholarship Program and an accounting (labor and other direct costs) of the funds expended that quarter and to date, and funds remaining in the Master Budget for this task.

No later than 60 calendar days after the last scholarship funds have been disbursed, the BLM and Energy Commission members of the committee shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) of the final, total cost of this task.

Section 106 Training

The project owner continues project construction while this task is initiated and completed.

The project owner shall initiate this task within 60 calendar days of resuming construction in the Unit 1 exclusion area. Contracting for the services of the appropriate team shall be considered initiating this task, although the actual training may not take place for some indefinite time after finalizing the contract.

The project owner shall fund registration fees and travel costs for one participant chosen by each Tribe that signed the GSEP Programmatic Agreement to attend the basic and advanced level National Preservation Institute (NPI) seminars at a time and location in Southern California

convenient for the individual Tribal participants.

No later than 30 calendar days after all Tribal participants have completed the seminars, the project owner shall submit copies of the NPI completion certificates of the participants to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist for their review and approval.

No later than 60 calendar days after receipt of the agencies' approval of the NPI completion certificates for all participants, the project owner shall submit to the Energy Commission CPM and the BLM Palm Springs Field Office Archaeologist, for their review and approval, an accounting (labor and other direct costs) of the final, total cost of this task.