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January 5, 2010

Commissioner Julia Levin, Presiding Member
Vice Chair James D. Boyd, Associate Member
Mr. Craig Hoffman, Project Manager
Abengoa Mojave Solar Project (09-AFC-5)
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Abengoa Mojave Solar Project (09-AFC-5): Supplemental Written Response to Data Request Set 1B (nos. 1-86) for Cultural Resources

Dear Commissioners Levin and Boyd:

Abengoa Solar Inc. (the "Applicant") hereby files these written responses to certain Data Requests in Set 1B promulgated by Staff on October 26, 2009. The Applicant requested additional time to respond to several Data Requests in Set 1B regarding Cultural Resources in a Notice filed on November 16, 2009. This supplemental response contains responses to those requests including: Data Requests 10, 11, 15, and 16.

The attached reports include the archeological testing plan and preliminary testing report. The Applicant will submit a final testing report and the requested DPR 523 forms as soon as final laboratory results are received and evaluated.

The Applicant appreciates Staff's time and efforts reviewing the enclosed materials. The Applicant looks forward to working with Staff to achieve complete and satisfactory resolution of all issues in a timely manner.

Thank you for your time and consideration of this matter.

Sincerely,

Christopher T. Ellison
Shane E. Conway
Ellison, Schneider & Harris, L.L.P.

Attorneys for Abengoa Solar Inc.

Attachment

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Memorandum

To	Melissa Jones, Executive Director, CEC
CC	Amanda Blosser, Michael D. McGuirt
Subject	09-AFC-5 Mojave Solar Project (Abengoa) Archaeological Testing Plan
From	Trina Meiser, AECOM
Date	December 10, 2009

Introduction

The archaeological survey of the Mojave Solar Project identified five sites and 25 isolated finds within the Project area. Three of the five sites within the Project area that could be impacted by the project were identified as being potentially significant cultural sites (Meiser and Cooley 2009)., Sites H-026, H-246, and P-250 were identified as possibly eligible for inclusion on the California Register of Historical Resources (CRHR) based on the potential for subsurface deposits and/or their likelihood to contribute additional data that may be important to history or prehistory. Of these three resources, one is a prehistoric lithic scatter and two are historic dump sites (Meiser and Cooley 2009).

To aid in the eligibility assessment of sites recommended possibly eligible an archaeological testing program will be conducted. These investigations will include the excavation of 30 cm diameter shovel test pits (STPs) at each of the three sites.. In addition, one to two 1 m by 1 m units will be excavated at site H-246, and one each at sites H-026 and P-250, depending on the results of the STPs. All excavated soil will be screened through 1/8-inch mesh. Also proposed is the collection of seven isolates containing potentially diagnostic information. Collected material will be cataloged, analyzed, and curated.

Research Design

Prehistoric Research Issues

In general, the research topics that might be addressed at a prehistoric sites in the project area include:

- the reliability of regional dating methods,
- issues regarding the earliest phases of human occupation of the region,
- problems related to the Archaic period occupation,

- lithic technology,
- site formation processes, and
- trade and travel.

Chronology Building

Chronology building continues to be a major research emphasis in the Mojave Desert. Consequently, one of the most important aspects of a prehistoric research program for the Mojave Desert should continue to be to aid in the refinement of the regional chronological framework. The occurrence of diagnostic artifacts, particularly artifacts made of obsidian, in the Project area and vicinity provides the opportunity to verify, and potentially expand, the known parameters of the various complexes defined for the Mojave Desert area. Harper Lake is one of the lesser known and archaeologically explored pluvial lakes in the Mojave Desert area, and so its potential for a contribution of new information could be considerable. While not currently verified by any known sites in the area, sites originally situated along ancient lake shores with the likely build-up of lacustrine sediments and sediments from the in-flow from the surrounding basin creates the potential for buried resources along ancient shorelines. Such sites more often contain materials suitable for radiometric dating. Any site that contains organic cultural remains suitable for radiocarbon dating could prove useful to aid in the refinement of the regional chronological framework.

Settlement and Subsistence Patterns during the Early and Middle Holocene

Archaeological research in the Mojave Desert has also not fully answered questions regarding early occupation and subsistence adaptations to fluctuating, and eventual disappearance of, lacustrine environments (Sutton et al. 2007). The differences in the Lake Mojave and Pinto complexes archaeological assemblages of the Early Holocene suggest a period of transition in subsistence strategies from a pluvial lake subsistence focus to a more diversified one encompassing vegetal resources to a greater degree. Warren (1991) proposed that the two complexes are a single cultural tradition with adaptation to changing conditions resulting in a shift to a more broad-based economy over time. The occurrence of artifacts in the Project area dating from the Early Holocene, if associated with these early complexes, could indicate a potential to contribute information to this area of on-going research.

The Project area is located in an area that has been categorized as not containing a substantial human presence during the late Middle Holocene. This period, from circa 6000 to 4000 B.P., was an extremely dry period during which human occupation of the Mojave Desert may have essentially ceased. The Deadman Lake Complex, the only one associated with the latter part of the Middle Holocene, is currently only known from the southeastern area of the desert (Sutton et al. 2007). Following this period, at the onset of the Late Holocene, approximately 4,000 years ago, a period of greater precipitation and elevated lake levels began (Sutton et al. 2007). The Gypsum Cave Complex, the complex most associated with this period, is represented at several sites in proximity to the Project area

(Sutton 1996). The proximity of these sites to the Project area suggests that additional information could potentially be gained from sites and artifacts from the Project area.

Settlement and Subsistence Patterns during the Late Holocene

Beginning approximately 2,000 years ago, according to Sutton et al. (2007), "cultural systems changed dramatically across the Mojave Desert, most notably in the western part of the region." The complex associated with this change is the Rose Spring Complex. Archaeological evidence from sites associated with this complex, especially in the western Mojave Desert area, include well-developed middens indicative of major population increases, and dramatic and distinctive changes in the artifact assemblages from previous complexes, indicating the presence of new technologies and tool inventories. Pre-eminent of these new technologies was the presence of small projectile points indicative of the use of the bow and arrow as a hunting tool. Recently, Sutton and others (Sutton et al. 2007) proposed a model for culture change in the western Mojave Desert during the Late Holocene. This model attempts to incorporate a number of variables, including "environmental data, linguistic prehistory, changing settlement patterns, and stylistic markers to argue for significant shifts in economic practices, mobility, and the distribution of cultural (i.e., linguistic) groups across the western Mojave between Late Gypsum and Late Prehistoric times" (Sutton et al. 2007). If resources associated with these Late Holocene complexes are discovered in the Project area, they could potentially contribute important information to this area of on-going research.

Prehistoric Research Potential at the Project Sites

Site P-250

If a site such as P-250 is determined to contain a subsurface deposit, then it could, potentially, contribute new information to many of the research topic areas enumerated above. If a deposit at the site contains organic materials suitable for radiometric dating, then it could contribute to improving the reliability of regional dating methods, possibly help address issues regarding the earliest phases of human occupation of the region, and problems related to Archaic period occupation in the area. If additional lithic tools and manufacturing debris are found in a deposit at the site, then topics concerning prehistoric lithic technology and can be addressed. Depending the nature of the deposit at the site, information from the site may be able to address questions concerning site formation processes. If exotic materials such as obsidian are found to be present at the site then trade and travel can be addressed. If the content of the site can possibly address some or all of these research areas then the results could contribute significantly to the broader areas of chronology building, and settlement and subsistence in the Mojave Desert.

Also contributing potentially important information to address some of these topics are several diagnostic isolated artifacts from the project area. While not within a site context, these items can certainly contribute information regarding reliability of regional dating methods, the earliest phases of human occupation of the region, Archaic period occupation, lithic technology, and trade and travel.

Historical Research Issues

Recorded history of the Project area begins with the first homesteaders who arrived in the 1910s, and agricultural development of the arid Harper Lake basin would necessarily be the focus of historical research. Within this context, key research themes would address:

- The early homesteading period, including the introduction and development of family farming and development of initial irrigation systems.
- Subsequent consolidation of landholdings into larger enterprises, supported by larger irrigation systems.
- The mid-20th century development of a small desert community based on significant capital investment in a large-scale cattle ranching enterprise during the Lockhart era.
- The post-Lockhart era of specialized alfalfa production.

Material culture from the early homesteads permeates the landscape. A wave of settlement occurred in the 1910s and 1920s. Remains of historic residential and farm complexes have been previously documented in varying states of integrity. The materials used in construction inform the means by which settlers built and managed their homesteads. Methods of subsistence were an important factor in the success of the early homesteads, and the remains of ploughed fields, irrigation systems, animal pens, and corrals are indicative of historical farming methods. Historic debris and refuse deposits associated with the homesteads are also abundant in the area, and may indicate the availability of goods and the relative wealth of residents at particular dates.

The introduction of farming and ranching in this desert climate area required effective wells and irrigation systems. The technology used by early homesteaders that evolved to eventually accommodate a large-scale ranching and agricultural operation has not been comprehensively defined, and irrigation systems are a significant research issue. When the consolidation of properties under the York, Lockhart, and Most ranches dominated water sources, smaller farms suffered and many folded as a result of the reduction in water levels. Groundwater depletion has been a constant issue, particularly for the area surrounding Harper Lake. The remains of several wells, standpipes, and various related objects have the potential to yield information about the exploitation of limited water resources.

The graduated development of ranching into a hegemonic enterprise by the 1950s affected settlement patterns in the area. It also altered the types of buildings and activities located within the Project area. Material culture from that era informs the past community development associated with the Lockhart Ranch, its predecessors, and its successors. It also indicates the relative wealth and preferences of community members during a prosperous era.

Historic Research Potential at the Project Sites

Sites H-026 and H-246

Sites such as H-026 and H-246 can, potentially, elucidate occupation in the Harper Lake/Lockhart area during early mid and mid 20th century. Analysis of refuse can identify various groups according to gender, vocation and status, as well as by settlement type and settlement function. Ranch/farm owners versus workers, and domestic versus work-related activities can be defined for the inhabitants with a possible association to particular time periods. Such information can serve to add to the historic record of the first homesteaders who arrived in the 1910s, to the subsequent agricultural and ranching development of the arid Harper Lake basin, the town of Lockhart, and the post-Lockhart era during the mid 20th century.

Testing Plan Proposed Field Methods

Site H-026

Site H-026 was recorded in 2009 as a large, historic dump and refuse scatter, containing both historic artifacts and modern refuse materials, in a 160 m (east-west) (520 ft) by 110 m (north-south) (360 ft) area along Lockhart Road and Lockhart Ranch Road. Within the dump area, seven concentrations were noted with a less dense scatter of materials in the surrounding area (Meiser and Cooley 2009). Based on survey observations, most of the site lies outside of the direct impact area.

Site H-246 consists of an extensive historic dump deposit that was in use mostly during and after the 1950s. The materials found in site H-026 may well be associated with one or more of four mid-20th century homestead sites along Lockhart Road (CA-SBR-6552H, CA-SBR-6555H, CA-SBR-6557H, and CA-SBR-6558H). Based on surface observations, nearly all of the site is outside of the Project area.. Therefore, the goals of testing site H-026 are as follow:

- To determine the presence or absence of a historic refuse deposit within the Project area.

- If a deposit is present, then to determine the content, age, extent, affiliation and significance of the dump deposit within the project area.

Testing at H-026 will include the excavation of four STPs at 10 m intervals, within the area of possible deposit within the project area. If these STPs indicate a subsurface deposit or features are present, a 1m by 1m unit will be excavated . The site's constituents and stratigraphy will be mapped, documented, and photographed.

Site H-246

Site H-246 was recorded in 2009 as a small, but dense, historic refuse dump and the remnants of a possible adjacent wooden structure and corral, in a 60 m (east-west) (195 ft) by 35 m (north-south) (120 ft) area. The site is situated approximately 170 m east of Edie Rd. Several in-place posts and a scatter of milled, wooden structure debris were also present to the west of the dump (Meiser and Cooley 2009).

The deposit at site H-246 appears to pre date the 1960s. Adjacent wood materials (boards) and posts appeared to have possibly derived from a wooden shed or small residence building(s). Some of the posts may also represent the remnants of a livestock corral. Most, if not all, of the historic materials appear to date to the mid-20th century with the earliest possibly dating to circa 1925 to1940, and the latest to circa 1950 to 1960. Therefore, the goals of testing site H-246 are as follow:

- To determine the content, age, extent, and affiliation of the dump deposit at site H-246

- To determine if an associated residence structure is present and whether it has a subsurface component.

Testing at site H-246 will include the excavation of up to four STPs to verifiy the vertical and horizontal extent of the deposit. Up to four STPs will also be excavated within the area of the possible structure to ascertain if any subsurface evidence of a structure is present. If these STPs indicate subsurface deposit or features are present, a 1m by 1m unit, will be excavated to provide a controlled exposure and/or profile of the vertical (stratigraphic) nature of the deposit or features.

Site P-250

This site was recorded in 2009 as a lithic scatter that consists of four cryptocrystalline silicate (CCS) flakes in an area 37 m (east-west) by 36 m (north-south) area (Meiser and Cooley 2009). The flakes are present in an alluvial/lacustrine setting adjacent to the Palen Dry Lake shoreline. Two of the flakes appeared to be in rodent extrusions suggesting a possible subsurface deposit origin. The flakes range in size from 2.5 cm by 2 cm to 10 cm by 7 cm.

Site P-250 has the potential to yield information important to history or prehistory because little is known about the prehistory of Palen Lake, especially along its western shoreline. Therefore, the goals of testing site P-250 are as follow:

- To determine if an intact subsurface deposit exists at Site P-250

- If an intact subsurface deposit exists at P-250, to determine its vertical and horizontal extent and to collect a sample of the deposit assemblage to determine, if possible, the age, and cultural affiliation of the site.

Testing at P-250 would involve placing four STPs throughout the site based on observed surface artifact occurrence and other surface conditions. If the STPs indicate that a subsurface deposit exists, up to six additional STPs would be placed to determine the limits of the site deposit, and a 1 by 1-meter test unit will be excavated.

If subsurface obsidian is recovered from the site, it will be sent for obsidian hydration and sourcing to determine its origin and age. If organic materials suitable for radiometric dating are recovered, a sample will be collected and submitted for dating. If the site is determined to have a subsurface deposit, then surface artifacts will be mapped in and collected. All surface materials collected, and all STPs and units excavated, will be mapped-in using a sub-meter, Trimble GPS instrument. All artifacts collected from will taken to EDAW's San Diego office for cataloging and curation.

Diagnostic Isolate Recovery

Also incorporated in the testing plan is the recovery, for laboratory analyses, of seven of the isolated prehistoric artifacts identified during the field survey. These artifacts, while isolated (i.e., lacking any other prehistoric cultural materials within 30 m), still have potentially important information that can contribute incrementally to the archaeological record.,. The lithic material of four of these artifacts is obsidian. Two types of laboratory studies can be performed on the obsidian. Hydration analysis that can yield important chronological information and trace element analysis that can provide quarry source and trade network information. Two of these obsidian artifacts also have potentially diagnostic, stylistic features that can provide important chronological and/or cultural information. The three other prehistoric artifacts are ground stone tools, which are relatively rare in the local archeological record and might yield information regarding use based on residue anlaysis.

The seven artifacts recommended for collection and analysis are: MI-P-006 (obsidian biface fragment), MI-P-019 (bifacial mano), MI-M-202 (two metate fragments), MI-P-205 (milling slab metate), MI-P-222 (obsidian flake), MS-M-225 (obsidian flake), and MI-P-232 (obsidian biface fragment).

Report

A technical report docuementing the field investigations and the results of the cataloging and analyses will be prepared. The report will address the ability of the sites to meet the criteria for inclusion in the CRHR.

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Memorandum

To	Melissa Jones, Executive Director, CEC
CC	Amanda Blosser, Michael D. McGuirt
Subject	09-AFC-5 Mojave Solar Project (Abengoa) Archaeological Testing Plan
From	Trina Meiser, AECOM
Date	December 23, 2009

Introduction

This memo presents the preliminary results of an archaeological testing program conducted at three sites located within the Mojave Solar Project. A previous archaeological survey, conducted by AECOM for the Project identified five sites and 25 isolated finds within the Project area. Three of the five sites within the Project area that could be impacted by the project were identified as being potentially significant cultural sites (Meiser and Cooley 2009). These three sites, MS-H-026, MS-H-246, and MS-P-250, were identified as possibly eligible for inclusion on the California Register of Historical Resources (CRHR) based on the potential for subsurface deposits and/or their likelihood to contribute additional data that may be important to history or prehistory. Of these three resources, one is a prehistoric lithic scatter and two are historic dump sites (Meiser and Cooley 2009).

To aid in the eligibility assessment of these sites, an archaeological testing program was conducted. This included the excavation of a total of 16 30-cm-diameter shovel test pits (STPs) at the three sites, and a 1 m by 1 m unit excavated at site MS-H-246. All excavated soil was dry-screened through 1/8-inch mesh. Also included in the testing program was the collection of seven potentially diagnostic isolates, MI-P-006 (obsidian biface fragment), MI-P-019 (bifacial mano), MI-M-202 (two metate fragments), MI-P-205 (milling slab metate), MI-P-222 (obsidian flake), MS-M-225 (obsidian flake), and MI-P-232 (obsidian biface fragment). Collected materials are currently being cataloged, and analyzed in the AECOM laboratory.

Prehistoric Resources

Prior to conducting this testing program, research issues and topics potentially pertinent to the sites to be evaluated both prehistoric and historic, were identified.

Research Design

In general, the research topics that might be addressed at a prehistoric site, or by prehistoric isolates in the project area include:

- the reliability of regional dating methods,
- issues regarding the earliest phases of human occupation of the region,
- problems related to the Archaic period occupation,
- lithic technology,
- site formation processes, and
- trade and travel.

More specifically, the topics of chronology building, and settlement and subsistence patterns during the Early, Middle, and Late Holocene were considered to be of particular interest for the area.

Chronology Building

Chronology building continues to be a major research emphasis in the Mojave Desert. Consequently, one of the most important aspects of a prehistoric research program for the Mojave Desert should continue to be to aid in the refinement of the regional chronological framework. The occurrence of diagnostic artifacts, particularly artifacts made of obsidian, in the Project area and vicinity provides the opportunity to verify, and potentially expand, the known parameters of the various complexes defined for the Mojave Desert area. Harper Lake is one of the lesser known and archaeologically explored pluvial lakes in the Mojave Desert area, and so its potential for a contribution of new information could be considerable. While not currently verified by any known sites in the area, sites originally situated along ancient lake shores with the likely build-up of lacustrine sediments and sediments from the in-flow from the surrounding basin creates the potential for buried resources along ancient shorelines. Such sites more often contain materials suitable for radiometric dating. Any site that contains organic cultural remains suitable for radiocarbon dating could prove useful to aid in the refinement of the regional chronological framework.

Settlement and Subsistence Patterns during the Early and Middle Holocene

Archaeological research in the Mojave Desert has also not fully answered questions regarding early occupation and subsistence adaptations to fluctuating, and eventual disappearance of, lacustrine environments (Sutton et al. 2007). The differences in the Lake Mojave and Pinto complexes archaeological assemblages of the Early Holocene suggest a period of transition in subsistence strategies from a pluvial lake subsistence focus to a more diversified one encompassing vegetal resources to a greater degree. Warren (1991) proposed that the two complexes are a single cultural tradition with adaptation to changing conditions resulting in a shift to a more broad-based economy over time. The occurrence of artifacts in the Project area dating from the Early Holocene, if associated with these early complexes, could indicate a potential to contribute information to this area of on-going research.

The Project area is located in an area that has been categorized as not containing a substantial human presence during the late Middle Holocene. This period, from circa 6000 to 4000 B.P., was an extremely dry period during which human occupation of the Mojave Desert may have essentially ceased. The Deadman Lake Complex, the only one associated with the latter part of the Middle Holocene, is currently only known from the southeastern area of the desert (Sutton et al. 2007). Following this period, at the onset of the Late Holocene, approximately 4,000 years ago, a period of greater precipitation and elevated lake levels began (Sutton et al. 2007). The Gypsum Cave Complex, the complex most associated with this period, is represented at several sites in proximity to the Project area (Sutton 1996). The proximity of these sites to the Project area suggests that additional information could potentially be gained from sites and artifacts from the Project area.

Settlement and Subsistence Patterns during the Late Holocene

Beginning approximately 2,000 years ago, according to Sutton et al. (2007), "cultural systems changed dramatically across the Mojave Desert, most notably in the western part of the region." The complex associated with this change is the Rose Spring Complex. Archaeological evidence from sites associated with this complex, especially in the western Mojave Desert area, include well-developed middens indicative of major population increases, and dramatic and distinctive changes in the artifact assemblages from previous complexes, indicating the presence of new technologies and tool inventories. Pre-eminent of these new technologies was the presence of small projectile points indicative of the use of the bow and arrow as a hunting tool. Recently, Sutton and others (Sutton et al. 2007) proposed a model for culture change in the western Mojave Desert during the Late Holocene. This model attempts to incorporate a number of variables, including "environmental data, linguistic prehistory, changing settlement patterns, and stylistic markers to argue for significant shifts in economic practices, mobility, and the distribution of cultural (i.e., linguistic) groups across the western Mojave between Late Gypsum and Late Prehistoric times" (Sutton et al. 2007). If resources associated with these Late Holocene complexes are discovered in the Project area, they could potentially contribute important information to this area of on-going research.

Prehistoric Research Potential at Project Site MS-P-250

This site was recorded in 2009 as a lithic scatter consisting of four cryptocrystalline silicate (CCS) flakes in an area 37 m (east-west) by 36 m (north-south) area (Meiser and Cooley 2009). The flakes are present in an alluvial/lacustrine setting adjacent to the Palen Dry Lake shoreline. Two of the flakes appeared to be in rodent extrusions suggesting a possible subsurface deposit origin. The flakes range in size from 2.5 cm by 2 cm to 10 cm by 7 cm. The presence of these materials suggested that site MS-P-250 had the potential to yield information important to history or prehistory because little is known about the prehistory of Palen Lake, especially along its western shoreline. Therefore, the goals of testing site MS-P-250 were as follows:

- To determine if an intact subsurface deposit exists at Site MS-P-250

- If an intact subsurface deposit exists at MS-P-250, to determine its vertical and horizontal extent and to collect a sample of the deposit assemblage to determine, if possible, the age and cultural affiliation of the site.

Initial testing program at site MS-P-250, then, was intended to determined whether the site contained a subsurface deposit, and, then, if so, whether it could, potentially, contribute new information to any of the research topic areas enumerated above.

Testing Methods and Preliminary Results from Prehistoric Site MS-P-250

Testing proposed at MS-P-250 involved initially placing four STPs throughout the site based on observed surface artifact occurrence and other surface conditions. If these STPs indicated that a subsurface deposit existed, then up to six additional STPs would be placed to determine the limits of the site deposit, a 1 by 1-meter test unit would be excavated to gain a controlled sample of the deposit, and the surface artifacts would to be mapped in and collected. Surface materials collected, and STPs and units excavated, were to be mapped-in using a sub-meter Trimble GPS instrument. All artifacts collected were to be taken to AECOM's San Diego office for cataloging and curation.

The four STPS initially excavated at the site, and additional scrutiny of the surface of the site, produced negative results. Each STP was excavated to a depth of 80 cm and none were found to contain cultural materials. Soils from the STPs consistently contained non-organic, sandy, silty alluvium. Because no evidence for a deposit was detected in the STPS, and no additional surface artifacts were discovered, no other investigations were conducted at the site.

Preliminary testing results indicate that site MS-P-250 does not contain prehistoric deposits or cultural materials that meet any of the criteria for eligibility to the CRHR or NRHP.

Preliminary Results from the Collection of Diagnostic Prehistoric Isolated Atifacts

Diagnostic Isolate Recovery

Also contributing potentially important information to address some of these prehistoric topics were seven diagnostic isolated prehistoric artifacts in the project area, including four made of obsidian. While not within a site context (i.e., lacking any other prehistoric cultural materials within 30 m), these seven items had potential to contribute important information regarding reliability of regional dating methods, the earliest phases of human occupation of the region, Archaic or earlier period occupation, lithic technology, and trade and travel. These artifacts, therefore, while isolated can still contribute incrementally to the archaeological record. Consequently, collection of these materials for laboratory analyses was incorporated in the testing plan.

The seven prehistoric isolates consisting of two obsidian biface fragments, two obsidian flakes, and three ground stone tools, including a mano, a metate and a metate fragment were recovered during the testing program. Two types of laboratory studies can be performed on the obsidian: hydration analysis that can yield important chronological

information and trace element analysis that can provide quarry source and trade network information. Two of these obsidian artifacts also have potentially diagnostic stylistic features that can provide important chronological and/or cultural information. The three other prehistoric artifacts are ground stone tools, which are relatively rare in the local archeological record and might yield information regarding use based on residue anlaysis.

Historic Resources

Historical Research Issues

Recorded history of the Project area begins with the first homesteaders who arrived in the 1910s, and agricultural development of the arid Harper Lake basin would necessarily be the focus of historical research. Within this context, key research themes would address:

- The early homesteading period, including the introduction and development of family farming and development of initial irrigation systems.
- Subsequent consolidation of landholdings into larger enterprises, supported by larger irrigation systems.
- The mid-20th century development of a small desert community based on significant capital investment in a large-scale cattle ranching enterprise during the Lockhart era.
- The post-Lockhart era of specialized alfalfa production.

A wave of settlement occurred in the 1910s and 1920s and material culture from the early homesteads permeates the landscape. Remains of historic residential and farm complexes have been previously documented in varying states of integrity. The materials used in construction inform the means by which settlers built and managed their homesteads. Methods of subsistence were an important factor in the success of the early homesteads, and the remains of ploughed fields, irrigation systems, animal pens, and corrals are indicative of historical farming methods. Historic debris and refuse deposits associated with the homesteads are also abundant in the area, and may indicate the availability of goods and the relative wealth of residents at particular dates.

The introduction of farming and ranching in this desert climate area required effective wells and irrigation systems. The technology used by early homesteaders that evolved to eventually accommodate a large-scale ranching and agricultural operation has not been comprehensively defined, and irrigation systems are a significant research issue. When the consolidation of properties under the York, Lockhart, and Most ranches dominated water sources, smaller farms suffered and many folded as a result of the reduction in water levels. Groundwater depletion has been a constant issue, particularly for the area surrounding Harper Lake. The remains of several wells, standpipes, and various related objects have the potential to yield information about the exploitation of limited water resources.

The graduated development of ranching into a hegemonic enterprise by the 1950s affected settlement patterns in the area. It also altered the types of buildings and activities located within the Project area. Material culture from that era informs the past community

development associated with the Lockhart Ranch, its predecessors, and its successors. It also indicates the relative wealth and preferences of community members during a prosperous era.

Historic Research Potential at the Project Sites

Sites MS-H-026 and MS-H-246

Sites such as MS-H-026 and MS-H-246 can potentially elucidate occupation in the Harper Lake/Lockhart area during early mid and mid 20th century. Analysis of refuse can identify various groups according to gender, vocation and status, as well as by settlement type and settlement function. Ranch/farm owners versus workers' occupations, and domestic versus work-related activities can be defined for the inhabitants with a possible association to particular time periods. Such information can serve to add to the historic record of the first homesteaders who arrived in the 1910s to the subsequent agricultural and ranching development of the arid Harper Lake basin, the town of Lockhart, and the post-Lockhart era during the mid 20th century.

Testing Methods and Preliminary Results from Historic Site MS-H-026

Site MS-H-026

Site MS-H-026 consists of an extensive historic dump deposit that was apparently in use mostly during and after the 1950s. It was recorded in 2009 as a large, historic dump and refuse scatter, containing both historic artifacts and modern refuse materials, in a 160 m (520 ft) east-west by 110 m (360 ft) north-south area along Lockhart Road and Lockhart Ranch Road. Within the dump area, seven concentrations were noted with a less dense scatter of materials in the surrounding area (Meiser and Cooley 2009). The materials found in site MS-H-026 may be associated with one or more of four mid-20th century homestead sites along Lockhart Road (CA-SBR-6552H, CA-SBR-6555H, CA-SBR-6557H, and CA-SBR-6558H). Based on surface observations, nearly all of the site is outside of the Project area. Therefore, the goals of testing at site MS-H-026 were as follows:

- To determine the presence or absence of a historic refuse deposit within the Project area.

- If a deposit is present, then to determine the content, age, extent, affiliation and significance of the dump deposit within the project area.

Testing proposed at MS-H-026 included the excavation of four STPs at 10 m intervals within the area of possible deposit. If these STPs indicated a subsurface deposit or features, a 1 m by 1 m unit would be excavated. The site's constituents and stratigraphy would be mapped, documented, and photographed.

Results from the four STPS initially excavated at the site, and from additional scrutiny of the surface of the site, were negative. Each STP was excavated to a depth of 30 cm and none were found to contain cultural materials. Soils from the STPs consistently contained non-organic, sandy, silty alluvium. Because no evidence for a deposit was detected in the

STPS, and no additional historic surface artifacts were discovered, no other investigations were conducted at the site.

Preliminary testing results indicate that the portion of site MS-H-026 located within the Project property does not contain historic deposits or cultural materials that meet any of the criteria for eligibility to the CRHR or NRHP.

Testing Methods and Preliminary Results from Historic Site MS-H-246

Site MS-H-246

Site MS-H-246 was recorded in 2009 as a small, but dense, historic refuse dump and the remnants of a possible adjacent wooden structure and corral, in a 60 m (195 ft) east-west by 35 m (120 ft) north-south area. The site is situated approximately 170 m east of Edie Rd. Several in-place posts and a scatter of milled, wooden structure debris were also present to the west of the dump (Meiser and Cooley 2009). The deposit at site MS-H-246 appeared to pre-date the 1960s. Adjacent wood materials (boards) and posts appeared to have possibly derived from a wooden shed or small residence building(s). Some of the posts may also represent the remnants of a livestock corral. Adjacent to this possible corral were several piles of butchered domestic animal bone, including cow and possibly sheep. Most, if not all, of the historic materials appear to date to the mid-20th century with the earliest possibly dating to circa 1925 to 1940, and the latest to circa 1950 to 1960. Therefore, the goals of testing site MS-H-246 were as follows:

- To determine the content, age, extent, and affiliation of the dump deposit at site MS-H-246

- To determine if an associated residence structure is present and whether it has a subsurface component.

Testing at site MS-H-246 was to include the excavation of up to four STPs to verifiy the vertical and horizontal extent of the deposit. Up to four STPs were also to be excavated within the area of the possible structure to ascertain if any subsurface evidence of a structure is present. If these STPs indicated subsurface deposit or features, a 1 m by 1 m unit, would be excavated to provide a controlled exposure and/or profile of the vertical (stratigraphic) nature of the deposit or features.

Four STPs were excavated within the area of the possible structures. They ranged in depth from 35 to 80 cm. While containing small quantities of historic refuse, they did not indicate the presence of a subsurface deposit or features. Consequently, no additional excavation was conducted within this area of the site. In the area of the refuse dump deposit, four STPS were excavated to ascertain the horizontal extent of the subsurface deposit. These STPs, which ranged in depth from 30 to 50 cm, indicated that the deposit did not extend much beyond the visible extent on the surface of the site. A 1 m by 1 m unit was excavated within the visible dump deposit. This unit indicated a dense deposit of a variety of refuse that extended to a depth of approximately 40 cm. Historic materials recovered included a variety of tin cans and glass bottles, crockery, automotive parts, domesticated animal bone, and miscellaneous pieces of iron. Burning in the deposit was also evident.

During the testing program, it was noted that all of the site elements were substantially disturbed and the trash dump deposit, in particular, had several large pits created by looters, apparently looking for bottles. Consequently, it appeared that the retained limited integrity and no clear association for the site materials could be discerned.

Preliminary testing results indicate that, given it's location, site MS-H-246 appears likely to represent a convenient location for trash disposal for local ranchers/farmers during the mid-20th century, circa 1940 to 1960. However, with it's limited integrity and no clear associations for the historic debris at the site it does not appear to meet any of the criteria for eligibility to the CRHR or NRHP.

STATE OF CALIFORNIA

Energy Resources Conservation
and Development Commission

Application for Certification for the ABENGOA MOJAVE SOLAR POWER PLANT	)	Docket No. 09-AFC-5

PROOF OF SERVICE

I, Karen A. Mitchell, declare that on January 5, 2010, I served the attached *Supplemental Written Response to Data Request Set 1B (nos. 1-86) for Cultural Resources* via electronic and U.S. mail to all parties on the attached service list.

I declare under the penalty of perjury that the foregoing is true and correct.

Karen A. Mitchell

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