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May 18, 2011

Mr. Craig Hoffman, CPM
(09-AFC-3C)
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

SUBJECT: Mariposa Energy Project (09-AFC-3C)
CUL-3 Revised Cultural Resources Monitoring and Mitigation Plan (CRMMP)

Dear Mr. Hoffman:

Please find attached the revised Cultural Resources Monitoring and Mitigation Plan (CRMMP). The document incorporates CEC Staff's comments received on May 16, 2011, in accordance with Condition of Certification CUL-3.

If you have any questions regarding this submittal, please do not hesitate to contact me at (213) 346-2134 or Keith McGregor at (916) 286-0221.

Sincerely,

Chris Curry
Mariposa Energy, LLC
Senior Manager – Development

Attachment: Revised CRMMP for MEP – May 2011 (09-AFC-3C)

cc: Bo Buchynsky, Mariposa Energy, LLC
Keith McGregor, CH2M HILL

APPLICATION FOR CERTIFICATION
CULTURAL RESOURCES MONITORING AND MITIGATION PLAN
CUL-3

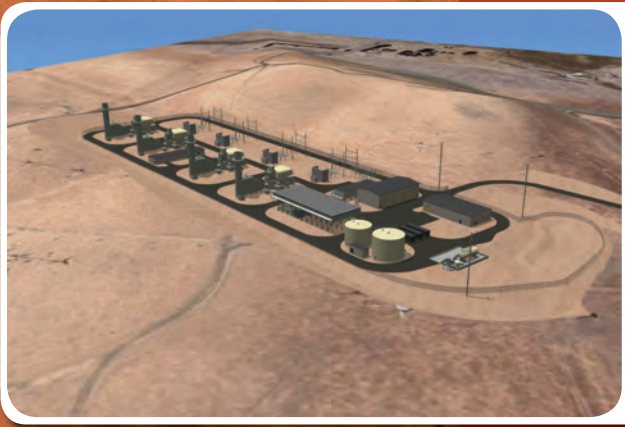
SUBMITTED TO THE

California Energy Commission

FOR THE

Mariposa Energy Project

(09-AFC-3C)



SUBMITTED BY

Mariposa Energy, LLC

TECHNICAL ASSISTANCE BY

CH2MHILL

MAY 2011

EY012009005SAC

CUL-3

Cultural Resources Monitoring and Mitigation Plan Mariposa Energy Project

Prepared for

Mariposa Energy, LLC

May 2011

Prepared by

Clint Helton, RPA,
Designated Cultural Resources Specialist

CH2MHILL

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Acronyms and Abbreviations

ARMR	Archaeological Resource Management Report
BBID	Byron Bethany Irrigation District
BP	before present
CCTS	Central California Taxonomic System
CEC	California Energy Commission
CHRIS	California Historical Resources Information System
COC	Condition of Certification
CPM	Compliance Project Manager
CRHR	California Register of Historical Resources
CRMMP	Cultural Resources Mitigation and Monitoring Plan
CRM	Cultural Resources Monitor
CRR	Cultural Resources Report
CRS	Cultural Resources Specialist
CTG	combustion turbine generator
DPR	Department of Parks and Recreation
HSC	Health and Safety Code
kV	kilovolt
LORS	laws, ordinances, regulations, and standards
MCR	monthly compliance report
MEP	Mariposa Energy Project
MLD	Most Likely Descendent
MW	megawatt
NAHC	Native American Heritage Commission
NRHP	National Register of Historic Places
NWIC	North West Information Center
PG&E	Pacific Gas and Electric Company
PRC	Public Resources Code

PRM	paleontological resources monitor
ROW	right-of-way
SA	staff assessment
SHPO	State Historic Preservation Officer
USGS	U.S. Geological Survey
WEAP	Worker Environmental Awareness Program

SECTION 1

Introduction

This Cultural Resources Mitigation and Monitoring Plan (CRMMP) explains how Mariposa Energy, LLC (Mariposa Energy) and the Cultural Resources Specialist (CRS) will comply with and implement the California Energy Commission's (CEC) cultural resources Conditions of Certification (COC) for the Mariposa Energy Project (MEP). The CRMMP provides procedures to be followed in the attempt to reduce to a less-than-significant level the impacts of the project on potential archaeological resources discovered during construction-related excavation activities. The measures to be implemented would include the following:

- Teaching workers to recognize cultural resources
- Specific measures to avoid or minimize impacts to cultural resources (flagging, monitoring, etc.)
- Prescribed actions to be taken in the event that unanticipated cultural materials are discovered during construction, or known resources are affected in an unanticipated manner
- Recommend treatment protocols for any cultural resources that may be exposed during project construction
- Treatment of any discovered human remains in accordance with state law

The CRMMP is prepared to fulfill CUL-3 of the CEC's cultural resources COCs, which are set forth in the Staff Assessment (SA) dated November 8, 2010, and are attached as Appendix A to this CRMMP. The purpose of the CRMMP is to lay out a detailed program of mitigation for direct and indirect impacts to cultural resources during all ground-disturbing phases (including but not limited to pre-construction site mobilization; construction ground disturbance; construction grading, boring, and trenching; construction; and landscaping and maintenance). The CRMMP's program provides for the identification, evaluation, treatment, and protection of any cultural resources that are affected by or may be discovered during the construction of the power plant and the associated linear facilities (Figure 1). Cultural resources are defined as anything made or affected by human beings or the remains thereof, as well as human remains. For the purposes of this CRMMP, the terms "finds," "cultural resource," "cultural material," "discovery," and "cultural resource materials" are used interchangeably. Types of cultural resources will be consistent with California Code of Regulations (CCR), Title 14, Chapter 11.5, section 4852(a), including archaeological and historical objects, sites and districts, historic buildings and structures, cultural landscapes, and sites and resources of concern to local Native American or other ethnic groups.

The CRMMP includes the following:

- Description of the project, associated linear routes, adjacent areas, and ancillary areas

- Summary of known cultural resources in and immediately adjacent to the project or cultural resources that might be affected by the project, including all cultural resources that CEC staff identified in the SA, and a map showing the cultural resources in relation to the project and appurtenant facilities
- Research design tailored to the local environment, prehistory, and history, pursuant to *Guidelines for Archaeological Research Designs* (California Office of Historic Preservation 1991).
- Monitoring plan to be employed throughout the subsurface construction of the project, including protocols to be followed during any routine monitoring and discovery situations, where and when Native American observers may be required, and agency reporting requirements (reductions in planned monitoring to be subject to Compliance Project Manager [CPM] approval)
- Description of all avoidance measures such as flagging or fencing and the timeframes during which these measures would be required to protect cultural resources
- Statement of recording procedures for newly discovered cultural resources
- Statement of policy for the collection, retention, and disposal of cultural materials and archaeological records
- Statement that all cultural materials retained will be prepared in accordance with the requirements of a qualified curatorial facility and that the project owner will encumber all associated expenses for the curation of the materials at Sonoma State University, David A. Fredrickson Archaeological Collections Facility (707-664-2381). An archeological curation services letter from Sonoma State University is provided with this document. A letter from the project owner to the CPM was submitted under separate cover on March 12, 2011, in accordance with Condition of Certification CUL-3. The letter included the following statement "Mariposa Energy, LLC (Mariposa Energy) will pay all curation fees for any materials collected as a result of the archaeological investigations at the Mariposa Energy Project (MEP), including, but not limited to, surveying, monitoring, testing, and data recovery."
- Statement that the CRS has access to or ability to provide equipment and supplies necessary for mapping, photography, and recovery of any cultural resources that may be discovered
- Reporting requirements, if cultural materials are discovered

Any discussion, summary, or paraphrasing of the COCs in this CRMMP is intended as general guidance and as an aid to the user in understanding the COCs and their implementation. The COCs, as written in the Final Decision, will supersede any summarization, description, or interpretation of the COCs in the CRMMP. The cultural resources COCs, set forth in the SA, are contained in Appendix A.

SECTION 2

Project and Area Description

MEP will be a nominal 200-megawatt (MW) peaking facility consisting of four General Electric LM6000 PC-Sprint natural gas-fired combustion turbine generators (CTGs) and associated equipment. The project consists of construction of new generation and connection to natural gas, water, and electrical transmission interties.

The project will be located southeast of the intersection of Bruns Road and Kelso Road on a 10-acre portion of a 158-acre parcel immediately south of the Pacific Gas and Electric Company (PG&E) Bethany Compressor Station and 230-kilovolt (kV) Kelso Substation. The proposed power plant site is located in the southern portion of the parcel, between two small hills. The project site is in northeastern Alameda County, in an unincorporated area designated for Large Parcel Agriculture by the *East County Area Plan*. The Assessor's parcel number is 099B-7050-001-10. The site is located in Township 2S, Range 3E, Section 1 (Mount Diablo Base and Meridian). Access is via an access road that runs east from Bruns Road to the project site.

The 6.5-MW Byron Power Cogen Plant currently occupies 2 acres of the 158-acre parcel. The remainder of the parcel is non-irrigated grazing land. There was prior wind turbine development on the project site and the southern portion of the parcel. Minor debris from that development remains onsite.

MEP will interconnect to the Kelso Substation via a new 0.7-mile, 230-kV transmission line that will run north on the parcel, then across Kelso Road to the existing Kelso Substation. The natural gas pipeline will consist of approximately 580 feet of new 8-inch-diameter pipe that will run directly northeast from the project site to interconnect with PG&E's existing high-pressure natural gas pipeline (Line 002). A new gas metering station will be constructed on the project site.

Service water will be provided from a new connection to the Byron Bethany Irrigation District (BBID) via a new pump station and a 10-inch-diameter, 1.8-mile-long pipeline placed along the eastern side of Bruns Road, from existing Canal 45 south to the MEP site. Approximately 1,000 feet of pipeline will be located adjacent to Bruns Road on BBID property from the pump station to the new BBID headquarters facility. South of the BBID headquarters, the route will be located within the Bruns Road right-of-way (ROW) immediately adjacent to or under the paved section of road. The pipeline route will follow the site access road from Bruns Road to the project site. Associated facilities will include a concrete turnout structure at the canal bank and a small pump station consisting of a pre-cast concrete manhole wet well, redundant vertical turbine pumps, pipe manifold and valving, electrical cabinet, and instrumentation.

Temporary construction facilities will include a 9.2-acre worker parking and laydown area immediately east of the project site and a 1-acre water supply pipeline parking and laydown area located at the BBID headquarters facility on Bruns Road.

LEGEND

- POWER POLE LOCATION
- PUMP STATION/TURNOUT STRUCTURE
- ACCESS ROAD
- NATURAL GAS PIPELINE ROUTE
- TRANSMISSION LINE ROUTE
- WATER SUPPLY PIPELINE ROUTE
- CONSTRUCTION LAYDOWN/PARKING AREA
- WATER SUPPLY PIPELINE LAYDOWN AREA
- PROJECT SITE

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

N

0 750 1,500
Feet

FIGURE 1
SITE AND LINEAR FACILITIES LOCATION MAP
MARIPOSA ENERGY PROJECT
ALAMEDA COUNTY, CALIFORNIA

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SECTION 3

Project Implementation Sequence and Schedule

This chapter describes the sequence of project-related tasks. Table 1 provides a schedule of all project-related tasks, including pre-construction, construction, and post-construction tasks. The tasks in Table 1 are listed in the approximate sequence in which they will occur and give approximate times needed to complete each task, where known. A discussion of construction sequences follows, and methods for accomplishing tasks are discussed further in subsequent sections.

The MEP site consists of a 10-acre area that will have excavations that range from 0.1 to 28.7 feet below modern ground surface; a 9.2-acre construction laydown area near the MEP will not be excavated. Additional excavations along a 0.7-mile-long transmission line will consist of several pole foundations requiring excavations to a depth of approximately 20 to 30 feet, a 580-foot-long natural gas pipeline with trench excavation to a depth of 4.5 feet, a 1.8-mile-long water pipeline corridor with trench excavation to a maximum depth of 4 feet, and an associated pump station excavation to a depth of 6 feet. The project area has been subject to agricultural activities and at one time contained a wind farm that has since been dismantled and removed; consequently, there is little potential for intact cultural deposits to be recovered.

Because of the project area's low sensitivity and low potential to contain buried archaeological deposits, staff is not recommending monitoring by a CRS as a COC, unless significant archaeological materials are unearthed during construction.

3.1 Pre-construction Phase Tasks

Pre-construction phase tasks included designating and obtaining approval of a CRS, approving the qualifications of construction monitors, submitting and obtaining CEC approval for a project CRMMP, and preparing and obtaining approval of the Worker Environmental Awareness Program (WEAP). A WEAP template training record is provided in Appendix B.

3.2 Construction Phase Tasks

Construction phase tasks include providing onsite cultural resources awareness training to all new employees during their first week of employment. Other tasks include keeping current with the project schedule, monitoring for cultural resources when necessary, evaluating any cultural resources discovered during construction, and mitigating any impacts on cultural resources, if avoidance is not possible. Additional construction phase tasks include providing daily statements to the CEC CPM that "no cultural resources over 50 years were discovered" during any periods of monitoring (assuming there were no

discoveries); notifying the CPM within 24 hours of any discoveries not subject to prescriptive treatment; and maintaining daily logs, weekly summaries, and monthly compliance reports (MCR) of all cultural resources monitoring and mitigation activities at the project site.

Because of the project's low sensitivity and low potential to contain buried archaeological deposits, staff is not recommending monitoring by a CRS as a condition of certification, *unless significant archaeological materials are unearthed during construction.*

3.3 Post-construction Phase Tasks

Post-construction phase tasks include the following:

- Completing test investigation or data recovery analysis and reports, if buried sites are discovered during construction
- Preparing artifacts and other cultural materials for curation
- Transferring these cultural materials to the approved curation facility
- Preparing the final Cultural Resources Report (CRR) on all cultural resources management activities for the project

After the completion of construction, non-routine ground-disturbing activities would trigger the construction requirements identified in Table 1. Routine ground-disturbing activities would include the excavation of an existing project feature (for the purpose of repair or replacement in-kind) where soils were previously disturbed. Non-routine ground-disturbing activities would require the project owner to request approval for these activities, consistent with COC COMPLIANCE-14, by submitting an amendment petition request. This request would require an analysis by CEC staff to determine impacts and the appropriateness of any proposed mitigation. Staff could also recommend additional mitigation. In the unlikely event that an amendment petition is required, Mariposa Energy would propose implementing the existing cultural resource COCs (CUL-1 to CUL-8) for any ground-disturbing activity that would occur in culturally sensitive soils.

At the end of MEP's useful life or for any plant closure (planned, unplanned, or temporary), Mariposa Energy would submit a closure plan consistent with COC COMPLIANCE-11, COMPLIANCE-12, or COMPLIANCE-13, as applicable. Mariposa Energy would propose to implement the existing cultural resource COCs (CUL-1 to CUL-8) for any closure ground-disturbing activity that would occur in culturally sensitive soils.

TABLE 1
Schedule of Pre-construction, Construction Phase, and Post-construction Tasks

Timing	Task
Pre-construction Phase Tasks	
45 days before ground disturbance	Designate a CRS and Alternate CRS and obtain CPM approval (CUL-1).
40 days before ground disturbance	Project owner to provide the Application for Certification, data responses, all confidential cultural resources documents, maps and drawings, and the SA to the CRS (CUL-2).
30 days before ground disturbance	Provide CRMMP to CPM for approval (CUL-3).
30 days before ground disturbance	Letter to the CPM indicating that the project will pay curation fees (CUL-3).
30 days before ground disturbance	CRS will provide training program text and graphics and the informational brochure to the CPM for review and approval (CUL-5).
30 days before ground disturbance	Provide CPM with documentation of CRS's and Cultural Resources Monitor's (CRM) authority to halt construction if previously unknown cultural resources are encountered during construction. Redirection of ground disturbance will be accomplished under the direction of the construction supervisor in consultation with the CRS (CUL-7).
30 days before ground disturbance	CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log (CUL-6).
20 days before ground disturbance	Designate the CRMs, document their qualifications, and provide a letter to the CPM signed by the CRS naming the CRMs and stating that they meet the qualifications stated by CUL-1. (CUL-1).
15 days before ground disturbance	Provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign (CUL-5).
10 days before ground disturbance	Confirm that CRS will be available for onsite work and will implement the conditions of certification (CUL-1).
Construction Phase Tasks	
15 days before ground disturbance for the phase	If the project is phased, provide maps and drawings for subsequent phases of work, if they have not already been provided, and written notification identifying the proposed schedule for each project phase to the CRS and CPMs (CUL-2).
15 days before ground disturbance for a change	Provide maps and drawings to the CRS and CRMs for changes to the project (CUL-1).
10 days before task	Provide the resume of additional technical specialists (as needed) to the CPM for review and approval (CUL-1).
10 days in advance	Designate a new CRS if replacement is necessary and submit qualifications to the CPM for approval (CUL-1).
5 days before a new CRM starts work	Identify replacement CRMs and provide their names and a letter signed by the CRS stating that the CRMs meet the qualifications identified in CUL-1 and send to the CPM (CUL-1).

TABLE 1
Schedule of Pre-construction, Construction Phase, and Post-construction Tasks

Timing	Task
Within 5 days of a schedule change	Provide information regarding changes to the project schedule to the CRS, CRMs, and CPM (CUL-2).
Monthly	In the MCR, provide the WEAP Training Acknowledgement forms of workers who have completed the training in the prior month and a running total of all persons who have completed the training to date (CUL-5).
Monthly	While construction monitoring is ongoing, include in the MCR any new California Department of Parks and Recreation (DPR) 523A forms completed for finds treated prescriptively (CUL-6).
Weekly	Provide a schedule of construction activity to the CRS and CPM (CUL-2).
Daily	Provide a statement via email to the CPM indicating that no cultural resources older than 50 years have been found that day (CUL-6).
Within 48 hours of a discovery of an archaeological or ethnographic resource	Notify all Native American groups that expressed a desire to be notified in the event of such a discovery (CUL-7).
24 hours before implementing a change in monitoring level	Provide documentation justifying any change in the monitoring level. No reduction in the monitoring level may occur without approval from the CPM (CUL-6).
24 hours before reducing or ending daily reporting	Submit documentation detailing the justification for reducing or ending daily reporting to the CPM for review and approval (CUL-6).
24 hours following an incident of non-compliance	CRS and/or project owner shall notify the CPM and recommend corrective action to resolve the problem. When resolved, CRS shall write a report for the next MCR (CUL-6).
24 hours following notification of a cultural resource find or 48 hours following the completion of data recording or data recovery, as determined by the CPM	Submit a DPR 523 primary form for a new cultural resource find to the CPM (CUL-7).

TABLE 1
Schedule of Pre-construction, Construction Phase, and Post-construction Tasks

Timing	Task
Post-construction Tasks	
90 days after completion of ground disturbance (including landscaping)	Prepare the CRR and submit to the CPM for approval (CUL-4).
90 days after completion of ground disturbance	Provide a copy of an agreement with a qualified curation facility to accept cultural materials from the project (CUL-4).
30 days after requesting suspension of construction activities, if construction is to be suspended	Submit the draft CRR to the CPM for review and approval (CUL-4).
10 days after CPM approval of CRR	Provide documentation to the CPM that copies of the CRR were provided to the California State Historic Preservation Officer (SHPO), California Historical Resources Information System (CHRIS), and curation facility (CUL-4).

SECTION 4

Previous Research and Cultural Resources Identified within the Project Area

CH2M HILL commissioned the California Historical Resources Information System (CHRIS) North West Information Center (NWIC) to perform a literature search of the project area, including a 1-mile buffer zone around the project site and associated laydown and parking areas, and a 0.25-mile buffer zone around the linear facilities. The CHRIS literature and records review included all recorded archaeological sites and all known cultural resource survey and excavation reports. The National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), California Historical Landmarks, and California Points of Historical Interest were searched. Also, historic maps were examined, including a General Land Office plat map for T2S, R3E (1857), the 1878 Thompson & West Historical Atlas map of Alameda County, California, and the 1916 Byron 7.5-minute U.S. Geological Survey (USGS) topographic map.

A Sacred Lands File search and a Native American contacts list were requested from the Native American Heritage Commission (NAHC) on January 7, 2009. The NAHC responded on February 5, 2009 with a list of Native Americans interested in consulting on development projects. At this time, no sacred sites are known to exist within the project area; however, consultation with Native American tribes and individuals provided by the NAHC was conducted. On March 27, 2009, letters describing the project and including maps of the project location were sent via email or fax as well as standard mail to all individuals or tribes provided by the NAHC, inviting comments and concerns regarding this project. As of the time of printing this document, no responses have been received. The NAHC record search of the Sacred Lands file did not indicate the presence of Native American cultural resources in the immediate project area. The record search conducted at the CHRIS center also did not indicate the presence of Native American traditional cultural properties.

Additionally, CH2M HILL contacted three local historical societies on April 10, 2009. No additional historical resources were identified. A summary of these contacts is provided as part of Appendix 5.3A of the MEP Application for Certification (CH2M HILL, 2009). The groups contacted are the East Contra Costa Historical Society and Museum, the Tracy Historical Museum, and the Alameda County Historical Society. Alameda County Historical Society responded on April 14, 2009, to indicate they had no information to provide and suggested contacting the Amador Livermore Valley Historical Society in Pleasanton and the Livermore Heritage Guild. A request for information was sent to the Amador Livermore Valley Historical Society on April 28, 2009. On April 26, 2009, the Tracy Genealogical Society responded that they had no information and said they would forward the request to the Tracy Historical Museum. No other responses have been received at the time of this printing.

4.1 Geoarchaeological Investigations

No subsurface investigations were conducted for the project; however, the applicant's consultant prepared a geoarchaeological assessment of the sensitivity for subsurface archaeological deposits within the project area (Meyers, 2009). The results of the study concluded that the potential for buried archaeological deposits to exist within the project area are low to very low. Other factors contributing to the low probability of encountering intact buried archaeological sites include the construction and demolition of a wind farm that once existed at the site of the project (remnants of which are still evident on the surface), the local topography, and lack of proximity to major stream drainages and other archaeologically sensitive features. Upon review of the geoarchaeological assessment and consideration of other factors affecting the overall archaeological sensitivity of the area (e.g., prior wind farm development), staff concluded that further geoarchaeological investigation (i.e., mechanical trenching) was unnecessary, given the low probability that buried archaeological deposits would be encountered during construction of the project.

4.2 Previously Known Resources

On January 30, 2009, CH2M HILL requested a literature search of the CHRIS from the staff of the NWIC for the MEP area of analysis, including a 1-mile buffer area around the project site and a 0.25-mile buffer area around its linear components. The CHRIS research included checking listings in the NRHP, the CRHR, and all other state and local listings for the presence of historic buildings, structures, landmarks, points of historical interest, or other cultural resources.

The results of the records search revealed that 23 previous cultural resources investigations had been conducted within the 1-mile search radius of the project site. The entire 1-mile search radius has received full survey coverage by one or more of the previous investigations. Four of these prior surveys occurred within the limits of the project's area of analysis, resulting in complete prior survey coverage of all components of the project area.

No previously recorded cultural resources were identified within the project's area of analysis as a result of the past surveys. Seven previously recorded cultural resources are present within the 1-mile search radius of the project facility, all of which are historic built-environment resources, including the following:

1. Delta-Mendota Canal (P-01-010435)
2. Jess Property (P-01-10436)
3. Clark Ranch (P-01-10437)
4. Griffith Property (P-01-10438)
5. Peterson Ranch (P-01-10439)
6. Tracy Pumping Plant (P-01-10442)
7. BBID Main Canal (P-01-10445)

The literature search did not identify significant cultural constraints for the project because there are no known NRHP-eligible or CRHR-eligible cultural resources in the project area. According to the CHRIS center, all areas for the project have been previously surveyed for cultural resources.

The cultural resources within 1 mile of the project area are described in further detail in the following subsections.

4.3 Newly Recorded or Updated Resources

4.3.1 Archaeological Field Survey

An archaeological survey of the MEP site was conducted on March 18, 2009, by Aaron Fergusson, M.A., RPA, who meets the qualifications for Principal Investigator as stated in the Secretary of the Interior's standards and guidelines for archaeology and historic preservation (USNPS, 1983).

Using pedestrian transects spaced no more than 10 meters apart, Mr. Fergusson surveyed the project facilities, laydown areas, the access road, the gas line corridor, and the transmission line corridor. According to the latest CEC *Rules of Practice and Procedure & Power Plant Site Certification Regulations* (CEC, 2007), the survey included a 200-foot minimum buffer around the project facilities and laydown areas and a 50-foot buffer on either side of the centerline along each linear corridor, resulting in a 100-foot wide buffer for the linear corridors. The waterline corridor will be located along the edge of the pavement and within the right-of-way of Bruns Road. From the BBID facilities south to the project area, the right-of-way is only 5 to 10 feet wide from the edge of the pavement to the edge of the right-of-way and is entirely road fill. Outside of the right-of-way is a privately owned, inaccessible, agricultural field. The only portions of the waterline corridor that were surveyed are the 1,000-foot section from the northern terminus south to the BBID facilities, and the southern section where it leaves Bruns Road and follows the access road into the project area. Some areas were not surveyed: the section along Bruns Road because of the high level of disturbance, the road base that completely covers the original ground surface, and the inaccessible agricultural field outside the right-of-way.

The ground visibility within the plant location and all project facilities south of Kelso Road was poor, with less than 10 percent visibility throughout most of the area because of thick vegetation. This area is currently a cattle pasture, although a modern wind farm was located here previously, but it was demolished. Visible evidence of the former wind farm includes concrete tower foundations, concrete electrical box foundations with PVC conduit, and debris from broken and removed windmills. The PVC conduit in particular points to the degree of previous ground disturbance because these underground conduits connected the various windmills.

The transmission line north of Kelso Road had much better ground visibility, at least 70 percent. This area contains a dense cattle population, and grazing and trampling of the area has cleared most of the vegetation. The water pipeline laydown area is within the fenced perimeter of the new BBID pump control center and maintenance yard. The laydown area is in the southeastern corner in an area that has been graded, which is now used for storage and parking. Just to the north is a stormwater retention basin. The 1,000-foot water pipeline is within a corridor recently disturbed by the installation of another waterline that currently serves the BBID facility.

Given the local topography, distance to major stream drainages or other archaeologically sensitive features, and the scale and scope of previous ground disturbance in the area,

archaeological sensitivity of the surface soils of the MEP site and appurtenant facilities is considered low. The sensitivity of the underlying soils is considered moderate to low, given that the possibility exists for intact cultural deposits to be present beneath the plow zone. The archaeological sensitivity is low to moderate because the site is located in an area that has been previously disturbed by agricultural use and construction and demolition of a wind farm, and because of the low density of finds in this general area, despite multiple previous surveys.

The project site has been subject to intensive agricultural and ranching activities that have impacted the ground surface. Additionally, MEP will be located at the site of a previous wind farm development that has since been removed. Evidence of the wind farm is visible in the form of concrete foundations with PVC electrical conduit indicating the presence of buried electrical conduit that connected the individual windmills.

No new archaeological resources were observed during the pedestrian field survey of the MEP facilities and laydown areas, the access road, the gas line corridor, and the transmission line corridor.

4.3.2 Architectural Survey

The present built environment in the vicinity of MEP is a mix of residential and agricultural properties, dominated by a variety of utility facilities, including the Tracy Substation, the Tracy Pumping Station, the Delta-Mendota Canal, the California Aqueduct, and the Delta Substation and Pumping Station. In addition, a number of transmission lines pass through or around the project area, and several wind farms exist in the nearby hills.

The Byron Power Cogen Plant, which was constructed in 1990, is located on the same parcel as MEP. To the north, across Kelso Road, is the PG&E Kelso Substation, which was constructed between 1982 and 1993. Within the survey area are several properties with residential buildings, particularly along Kelso Road to either side of Bruns Road. The remaining parcels are generally open fields, most undeveloped or fallow.

A historic architecture field survey of a 0.5-mile radius of the MEP site and linear facilities was conducted by CH2M HILL staff on March 23, 2009. Based on the field survey and an examination of historic maps and aerial photos, it was determined that four properties within the 0.5-mile built-environment area of analysis met the age criteria for consideration as potential historical resources, as follows:

1. Jess Property (P-01-10436)
2. Clark Ranch (P-01-10437)
3. BBID Main Canal (P-01-010445, referred to as Canal 70 by CH2M HILL)
4. Former Reese Property (no primary number)

Updated California Department of Parks and Recreation (DPR) forms were prepared for the Jess Property and the Clark Ranch, and new DPR forms were prepared for the Reese Property and the BBID Main Canal. A description of each property is provided below.

None of these resources have been identified within any of the areas to be directly impacted by MEP.

Jess Property (P-01-10436)

The Jess Property is a residential/agricultural property located at 15547 Kelso Road, more than 2,000 feet to the east and northeast of the project site and between 1,500 and 3,000 feet from the proposed transmission line. This property was first documented in 2001 by PAR Environmental Services, Inc. (PAR); however, restricted access did not allow entry to the property at that time. Based on CHM HILL's review of historic maps (USGS, 1911, 1952, 1978), it appears there were no buildings on the property in 1911, but by 1952, there were two structures (barns or storage buildings), and by 1978, there was one building (possibly a house) and one barn. CH2M HILL suggested that the property may have included at least two more buildings (probably a house and a barn) that were depicted on the 1978 Clifton Court Forebay 7.5-minute USGS map. In 2001, the property included at least one building (which appeared to be a shed) that could be viewed from Kelso Road. Dense groupings of trees obstructed any other buildings from view. During the current recordation effort, access to the property was denied; however, CH2M HILL's communication with the property owners indicated that the buildings on the property have burned down or have fallen down because of neglect.

Clark Ranch (P-01-10437)

The Clark Ranch is a residential/agricultural property located at 15685 Kelso Road, more than 3,000 feet northeast of the project site and 2,000 feet east of the proposed transmission line. This property was initially documented by PAR in 2001. Because of restricted access, CH2M HILL viewed and photographed the property from Kelso Road only. The structures on the property consist of at least four buildings, including a house, a heavily renovated barn, and two storage buildings. According to PAR, construction of the extant structures on the property began in 1942. Modern post-and-rail fencing borders the northern boundary of the property. The western side of the property includes a fenced pasture for horses. BBID Canal 70 forms the southern and western boundaries. CH2M HILL's current recordation effort observed no changes to the property or buildings since first documented by PAR in 2001.

BBID Main Canal (P-01-010445)

The BBID Main Canal is a linear facility located within 1,750 to 3,000 feet of the MEP site and transmission line. The MEP underground water pipeline will terminate just south of the BBID Canal. For the current project, CH2M HILL indicated that previous surveys did not note the presence of this canal; however, this segment of the BBID canal was, in fact, previously recorded by PAR in 2001. The NWIC has assigned it three primary numbers (P-01-010445, P-39-004312, and P-07-002547) and two trinomials (CA-ALA-594H and CA-CCO-738H). As recorded by PAR in 2001, the northern end of the canal segment begins at the California Aqueduct in southeastern Contra Costa County; it then meanders through the northeastern corner of Alameda County and terminates at Mountain House Creek in San Joaquin County. According to the Primary Record and Linear Feature Record prepared by PAR in 2001, the BBID Canal was first constructed in 1919 as an earthen ditch and subsequently modified in 1968 as part of a system-wide renovation program, whereby all original pumps and turnout gates were replaced and sections of the canal were improved or lined with concrete. For the current project, CH2M HILL prepared a new Primary Record, and Building, Structure, and Object Record for a smaller segment of the resource, referring

to it as Canal 70. The southern portion of the canal (near the MEP site) is known as Canal 70 (70 feet above mean sea level). The northern portion of the canal, separated by the southern portion by a pumping lift station, is known as Canal 45 (45 feet above mean sea level).

Former Reese Property (no primary number)

The former Reese Property is a residential/agricultural property located northwest of the intersection of Christensen and Bruns roads, approximately 2,500 feet southwest of the project site, laydown area, and linear features. This property had not been recorded previously; however, it was briefly described in a letter report (Holman, 1984) for an archaeological field reconnaissance conducted in 1984 by Holman and Associates. The 1984 letter report stated that the property contained a turn-of-the-century farmhouse that had been extensively stripped of siding and interior walls; also water tanks and the remains of several other small farm-related buildings were present. As a part of the current inventory effort, CH2M HILL prepared a new Primary Record, and a Building, Structure, and Object Record. The two water towers, several varieties of mature vegetation, and the remains of the house were noted by CH2M HILL; however, no evidence of the associated farm buildings was visible during the current recordation effort. The 1916, 1948, and 1978 Clifton Court Forebay USGS maps all show the presence of a building at this location. Based on the Official Historical Atlas Map of Alameda County (1878), CH2M HILL suggests that the property may have been owned by H. Reese.

4.3.3 Results of Built-Environment Resources Archival Research

Jess Property (P-01-10436)

The literature research conducted at the NWIC and the Tracy Branch of Stockton-San Joaquin County Library revealed no information linking the Jess property to any events that have made a significant contribution to local, state, or national history. Similarly, the property was not found to be associated with any known person considered significant in local, California, or national history. Therefore, the applicant concludes that the property does not appear eligible for the CRHR under Criterion 1 or 2.

Although access to the Jess Property was denied, communications with the property owners revealed that the other buildings on the property have burned down or have fallen down because of neglect since the property was last documented in 2001. Assuming this is correct, no buildings remain on the property or the buildings are in a state of deterioration and have no integrity. Therefore, the property does not appear to be eligible under Criterion 3 of the CRHR. The applicant also concludes that the Jess Property does not meet the parameters for consideration under Criterion 4 of the CRHR.

The Clark Ranch (P-01-10437)

The Clark Ranch was previously recorded in 2001 but was not evaluated at the time for CRHR eligibility. During the physical and visual inspection of the property for the current project, there were no apparent significant changes to the buildings since the 2001 recordation. The literature research at the NWIC and the Tracy Branch of Stockton-San Joaquin County Library for MEP revealed no information linking the Clark Ranch to any events that have made a significant contribution to local, state, or national history. Similarly, the applicant found the property was not associated with any known person considered

significant in local, state, or national history. Therefore, the property does not appear to be eligible for the CRHR under Criterion 1 or 2.

The house appears to be a minimal traditional style residence with an irregular footprint and varying roof styles, suggesting that it has been added to over the years. The barn appears to have been converted from agricultural use. The house does not embody the distinctive characteristics of a type, period, region, or method of construction. It does not possess high artistic value, and there is no evidence that this is the work of a master; therefore, the house does not meet Criterion 3 for inclusion in the CRHR. The applicant also concludes that the Clark Ranch does not meet the parameters for consideration under Criterion 4 of the CRHR.

BBID Canal 45 (P-01-010445)

Based on PAR's 2001 Linear Feature Record, the integrity of BBID Canal 45 has been compromised, with respect to setting, feeling, design, workmanship, and materials. The setting and feeling have changed because the rural, undeveloped farmland surrounding the canal is dominated by utility developments related to the Central Valley Project, including the Delta-Mendota Canal, the Tracy Pumping Plant and Switching Stations, and numerous high-profile electric transmission towers and lines, all of which have significantly altered the historic landscape. The design, materials, and workmanship have been altered by the major reconstruction of the system in 1968. Only the canal's integrity of location remains intact. The canal was not found to be associated with any significant persons, technology, or historic trends in local, state, or national history. While it is associated with the early development of irrigated farming in the region, the nearby Westside Irrigation District system retains a far higher degree of integrity and predates the Byron Bethany system by 3 years. As a result, BBID Canal 45 does not meet Criterion 1, 2, or 3 for eligibility in the CRHR. In addition, it does not meet the parameters for consideration under Criterion 4 of the CRHR.

Former Reese Property (No primary number)

During the recordation effort for MEP, CH2M HILL discovered that the buildings and structures associated with the Reese property no longer exist, and only the ruins of a building and two tanks remain. The literature research at the NWIC and the Tracy Branch of Stockton-San Joaquin County Library for the project revealed no information linking the former Reese Property to any events that have made a significant contribution to local, state, or national history. Similarly, the applicant found the property was not associated with any known person considered significant in local, state, or national history. Therefore, this property does not meet Criterion 1, 2, or 3 for eligibility in the CRHR. The applicant also concludes that the Reese Property does not meet the parameters for consideration under Criterion 4.

4.3.4 All CRHR-Eligible Resources Subject to Potential Project Impacts

No historic or prehistoric archaeological resources and no ethnographic resources were identified within the MEP area of analysis. Staff concurs with the applicant's recommendation that the four built-environment resources identified within the 0.5-mile built-environment area of analysis do not meet the eligibility criteria for inclusion in the

CRHR. Therefore, no impacts to CRHR-eligible cultural resources, as defined under CEQA, would occur as a result of the construction and operation of the MEP.

Four properties are within the 0.5-mile built-environment area of analysis containing structures more than 45 years of age. Table 2 lists these properties, the resource type, description, and the NRHP status of each property.

TABLE 2
Summary of Buildings and Structures over 45 Years of Age

Structure/Site	Description	Resource Description	NRHP/CRHR Status
P-01-10436	Jess Property	Circa 1940s residential/ agricultural property	Not Eligible
P-01-10437	Clark Ranch	1942 residential/ agricultural property	Not Eligible
P-01-10445	BBID Main Canal	Irrigation Canal, constructed in 1919	Not Eligible
No Primary Number	Former Reese Property	Late 19th century residential/ agricultural property	Not Eligible

4.4 Post-certification, Pre-construction Surveys

Not applicable.

SECTION 5

Research Design

This chapter proposes a research design for archaeological cultural resources that could be found in the project area of analysis during project construction. The research design's purpose is to provide prehistoric and historic-period contexts and an explicit theoretical framework so that the project owner may analyze and evaluate the CRHR (or NRHP) eligibility of any discovered cultural resources, and, where warranted, begin to develop resource-specific data recovery plans. CRHR or NRHP evaluation is best facilitated by an explicit theoretical orientation and a series of related research domains or larger questions by which to assess an archaeological site's information value. Because the project area of analysis has been surveyed for cultural resources, it is likely that any cultural resources to be found during construction would be buried archaeological sites. However, recent geoarchaeological studies have assessed the MEP area as containing a low potential for buried intact deposits (Meyer, 2009).

Archaeological sites most often achieve significance for the potential they have to produce valuable information about the past, rather than other significance criteria associated with historical events, persons, or styles (e.g., trends, example of a type, or the work of a master). Any archaeological deposits found during the course of project construction would be likely eligible under NRHP Criterion D for properties that "have yielded, or may be likely to yield, information important in prehistory or history" (36 Code of Federal Regulations [CFR] 60), if they are found eligible. Similarly, a site found to qualify for CRHR listing would likely be significant under Criterion 4 for a property that has "yielded, or has the potential to yield, information important in prehistory or history of the local area, California, or the nation" (California Public Resource Code 5024.1). If buried archaeological sites are most likely to be found significant for their information value, an explicit theoretical framework would provide for more lucid assessments and interpretations of that information. Lacking such a framework, determinations as to whether information is important and whether a particular site is significant and worthy of protection become arbitrary and difficult to defend.

Because the precise nature of the sites that might be encountered during project construction is not yet known, the specific research potential of such sites is not known because it is only possible to approximate based on known site types and integrity. However, based on ample research of previously known cultural resources in the project region and geoarchaeological studies (Meyer, 2009; CH2M HILL, 2009), it is possible to establish a framework to consider the value of any sites that might be encountered. The known resources allow for creating models of predictability of site types and distribution. Archaeological records indicate that California's prehistoric occupation began, at a minimum, 12,000 years ago (CEC, 2010a; Earle et al., 1998; Moratto, 1984). The project region alone has received continued archaeological interest since extensive fieldwork and research were first performed in the 1930s, cataloguing an abundance of data not equaled in other regions of California (Peak and Associates, 1999). Preliminary research designs for prehistoric and historic sites that might be encountered at the project site can help in planning archaeological test investigations; if testing does not exhaust the site's research potential, then the research

design can help plan data recovery excavations. The research design can also help plan the analysis of materials recovered from test investigations or data recovery excavations. A more focused research design with additional research questions may also be appropriate based on the testing and excavation of an unanticipated site.

This research design would be implemented if an archaeological site were discovered during construction, or if a newly discovered significant site needed evaluation to determine significance or data recovery as a mitigation measure. Making a judgment about the need for additional testing or full-scale data recovery requires collecting certain basic information about the site's contents and structure and evaluating the contents in the context of our present knowledge about the regional prehistory of the project area. Answers to the following (and other) questions would provide the basic facts needed to determine whether a site should be considered for evaluation:

- Are there temporally diagnostic artifacts associated with the site?
- Are the temporally diagnostic artifacts consistent in age with other datable materials such as organics?
- What is the potential for preserved bone and other organic materials?
- What is the extent of the site (boundaries, depth of deposit, and depth below surface)?
- Are the cultural deposits relatively intact?
- Does the artifact assemblage indicate site function?
- Is this a single-component or multi-component site?
- Does this site provide evidence for temporary or long-term occupation?
- Can cultural affiliation be gleaned from the archaeological record?
- Is the cultural affiliation consistent with known traditional use areas for regional tribal groups? Is there evidence in the record for cultural exchange or multi-group affiliation?

Once information is gathered to address these questions, it would be possible to examine the site's potential to contribute to regional and local archaeological research. This would be done by assessing the value of the site's materials and artifacts in relation to basic questions, problems, or research domains outlined in a research design. A research design would identify topics or questions that could be addressed, given the kinds of data that a particular property type is likely to contain; then, an evaluation would determine whether that information can yield or is likely to yield additional important knowledge of the prehistory and history of the local areas, California, or the nation. The research design would first establish a structure of inquiry and identify data requirements for answering important research questions within that structure and then assess the potential of identified sites to provide the required data.

5.1 Context Statement for Archaeological Resources

In the Coastal Range and central California, cultural resources minimally represent 12,000 years of prehistory. Although written historical sources tell the story of only the past 200 years, archaeologists have reconstructed general trends of prehistory in the project region, specifically the Diablo Range and Central Valley of California.

Since the first inquiry of Native American cultural groups began, numerous classifications and chronological models have been created for California. For central California alone, several chronologies have been proposed, and generally, these chronologies have been variations on a wide-ranging California chronology. In the 1930s, excavations of the Central Valley provided materials that prompted the development of the first major Central California sequence. This new chronological schema was proposed by Lillard, Heizer, and Fenenga, and became known as the Central California Taxonomic System (CCTS). The CCTS consists of three broad prehistoric cultural eras: an Early Horizon, a Middle Horizon, and a Late Horizon (CEC, 2010b; Fredrickson, 1974; Elsasser, 1978). However, wide regional differences in central California and significant temporal overlap between site types classified into these three horizons prevented clear distinctions between horizons.

In the 1970s, attempts to create an established chronological model based on the archaeological record for the region and hard temporal markers (such as carbon dated materials) produced a specific and meaningful model. Fredrickson revised the CCTS and incorporated numerous changes, including adding three temporal zones with cultural patterns solely based on regional observations in the archaeological record. The three additions to the chronological model of the CCTS were Windmiller, Berkeley, and Augustine (Fredrickson, 1974; Moratto, 1984)

Further refinements have been made to the CCTS, with additional epochs incorporated in the chronological schema for Central California. However, for the purpose of relating predictive models of site types and distribution based on archaeological resources in the project area, models such as those suggested by Rosenthal that include extensive Paleo-Indian subdivisions will not be incorporated in this design.

5.1.1 Project Description

The project site is located in northeastern Alameda County and southeastern Contra Costa County, between Mount Diablo of the Coast Range in the west and just above the Central Valley floor in the east. To the north lies the Sacramento-San Joaquin River Delta and to the west the San Francisco Bay.

MEP is to be constructed on a 10-acre area on the Lee Property and will consist of four natural gas fired CTGs. A 0.7-mile transmission line corridor will connect to the existing Kelso Substation and a new 580-foot-long natural gas pipeline will connect to Line 002, operated by PG&E. A new gas metering station will be constructed on the project site.

Service water will be provided from a new connection to the BBID via a new pump station and a 10-inch-diameter, 1.8-mile-long pipeline placed in or along the eastern side of Bruns Road, from existing Canal 45 south to the MEP site. Approximately 1,000 feet of pipeline will be located adjacent to Bruns Road on BBID property, from the pump station to the new

BBID headquarters facility. South of the BBID headquarters, the route will be located within the Bruns Road ROW under the paved section of road.

The MEP site will be excavated to depths that range from 0.1 to 28.7 feet below modern ground surface; a 9.2-acre construction laydown area adjacent to the MEP site will not be excavated. Additional excavations along a 0.7-mile long transmission line will consist of several pole foundations requiring excavations to a depth of approximately 20 to 30 feet, a 580-foot-long natural gas pipeline with trench excavation to a depth of 4.5 feet, a 1.8-mile-long water pipeline with trench excavation to a maximum depth of 4 feet, and an associated pump station excavation to a depth of 6 feet. The project area has been subject to agricultural activities and at one time contained a wind farm that has since been dismantled and removed; consequently, there is little potential for intact cultural deposits to be recovered.

5.1.2 Project Site Geoarchaeological Study

The November 2009 geoarchaeological study of the project was conducted to assess known buried cultural resources and to provide information about the land formations in the project area, with the purpose of reporting potential sites for buried deposits. The potential for buried cultural resources exists in Holocene-era depositional land formations situated in alluvial sediment formations in lowland areas. Because population densities increased with time, Holocene-era landforms are generally atop older landforms, and the newer soils covering older means that exposure to occupation periods for those older surfaces were longer and more available than surfaces with older deposits covering them; as a result, depositional layers with younger Holocene-era sediments atop older soils are more likely to yield buried cultural deposits than already exposed Pleistocene-age landforms.

Cultural materials have not been reliably recorded from Pleistocene-era deposits, while important archaeological records have come from younger, Holocene geomorphic features. Holocene-era deposits range from 10,000 years old to the present era, while Pleistocene-age sediments are older than 10,000 years old.

The MEP geoarchaeological study found that only early Holocene Rincon phase formations could sustain buried deposits. Since Rincon soils are minimally found intact in the project area, the project area has low potential for buried cultural resources (Meyer, 2009: 9), and older sections of the project can be excluded with confidence from consideration of cultural sensitivity for buried deposits (CEC, 2010a).

5.1.3 Prehistory

Paleo-Indian Period (12,000 to 5,000 years ago)

The Paleo-Indian Period covers the interval from the first accepted presence of humans in California in the late Pleistocene until approximately 5,000 years ago. Artifacts and cultural activities from this period represent a predominantly hunting culture; diagnostic artifacts include extremely large, often fluted bifaces associated with use of the spear and the atlatl. Populations appeared to have been relatively small and highly mobile, living in temporary camps near readily available water. Abundant evidence exists that humans were present in North America for at least the past 11,500 years. Also fragmentary but growing evidence exists that humans were present long before that date. Linguistic and genetic studies

suggest that human colonization of North America may have occurred 20,000 to 40,000 years ago. Evidence of this earlier occupation is not yet conclusive but is beginning to be accepted by archaeologists. The Meadowcroft Rockshelter in Pennsylvania and Monte Verde in Chile, for instance, are two sites that have produced apparently reliable dates as early as 12,500 years BP. These earliest known remains indicate very small, mobile populations that were apparently dependent on hunting large game animals as the primary subsistence strategy.

The earliest sites in the San Joaquin and Central Valley are Fluted Point Tradition and Western Pluvial Lakes Tradition sites found at Tracy, Tulare, and Buena Vista lakes. These sites are few in number and remain undated by scientific means, but the assemblage types indicate probable ages of 11,500 to 7,500 years (Moratto, 1984). For the entire Central Valley region, there are only three known sites that date from the early Paleo-Indian period (CEC, 2010a: 5.3-7). Overall, evidence for Paleo-Indian occupation in the Central Valley is currently limited, containing many gaps. The archaeological record requires additional data for researchers to better understand this chronological sequence.

Windmiller Pattern (5,000 to 3,000 years ago)

For the project region, the cultural sequence begins with the Windmiller Pattern. The majority of the known Windmiller Pattern sites date to approximately 5,000 to 2,250 years ago; a small number of Windmiller sites dates as late as 1,250 to 750 years ago. Windmiller populations moved seasonally between the valleys in the winter and the Sierra Nevada foothills in the summer. Fishing and hunting were the primary subsistence strategies. Windmiller sites are characterized by tools related to hunting, fishing, and milling and include mortars, baked clay balls, trident fish spears, two types of angling hooks, pecan-sized baked clay fish line sinkers, bone awls and needles, polished charmstones, shell working and shell appliqué, and flaked tools, including projectile points (Moratto, 1984). Mortuary practices frequently consist of fully extended burials oriented toward the west, with abundant funerary paraphernalia. It is suggested by various California archaeologists that Windmiller sites are evidence for outside influences in the form of migration into California by groups from the East (Coleman, 2008; Moratto, 1984). The suggested influences deal with riverine adaptations and wetland exploitation of resources, evidenced by this period's site distributions, which tend to be in river environments. This cultural sequence is well established in wetland environs, valley floors, and seasonal flood plains, all containing Holocene-epoch sediments (CEC, 2010a).

Berkeley Pattern (3,000 to 1,250 years ago)

The Berkeley Pattern coincides roughly with the Middle Horizon, and most known Berkeley Pattern sites date to approximately 2,500 to 1,250 years ago. A few Berkeley sites extend outside this timeframe and date as early as 3,200 years ago and as late as 500 years ago. Current evidence suggests that the Berkley and Windmiller Patterns occurred concomitantly in separate areas of the San Joaquin Valley (CEC, 2010b). In response to environmental technological factors, economies became more diversified, and sedentary lifestyles developed further, while population growth and expansion occurred. The Berkeley Pattern subsistence relied less on hunting and fishing than did the Windmiller Pattern, although riverine exploitation and occupation continued. Sites were diversely distributed throughout various environments. Increasing dependence on plant goods defined the artifact

assemblage encountered in the Berkeley sites, in the form of milling stones. Mortars and pestles were present in far greater numbers than in preceding cultural periods. Other artifacts characterizing Berkeley sites include shell and steatite beads, slate pendants, ear ornaments, distinctive diagonal flaking of large concave base points, and greater numbers of bone tools of superior manufacture. Mortuary practices also differed from the previous pattern. There was a marked preference for a flexed versus an extended interment, orientation was not always to the west, and the number of burial goods found in cemeteries decreased noticeably.

Augustine Pattern (1,250 to 250 years ago)

The Augustine Pattern coincided approximately with the Late Horizon and generally dates from 1,250 to 250 years ago. Augustine Pattern sites are much more widespread than Berkeley Pattern sites and are characterized by intensive fishing, hunting, and acorn gathering. Population densities were much higher and exchange systems were more sophisticated and included the advent of clamshell disk beads for goods exchange. The period was marked by intensive fishing, hunting, and gathering, specifically with an increase in acorn use. High variability in funerary artifacts seems to indicate more social stratification. Cremations and flexed burials were common. Artifacts associated with the Augustine Pattern include the bow and arrow, shaped mortars and pestles, and pottery in some parts of the central San Joaquin Valley (Moratto, 1984). Elaborate trade networking, a decrease in previous technologies, an increase in the use of the bow and arrow, and cremations were hallmarks of this pattern. This period provides the greatest amounts of archaeological data because it is the most well-defined in the Delta (CEC, 2010b).

5.1.4 Ethnography

MEP is in the territory associated with the ethnographic and historic boundaries of the Julpun tribelet of the Bay Miwok and the Jalalon, Nochochomne, and Asirin tribelets of the Northern Valley Yokuts (Bennyhoff, 1977: Map 2; Kroeber, 1925; Schenck, 1926: 137; Levy, 1978a, 1978b; and Wallace, 1978). The MEP area appears to have been within the territory of the Northern Valley Yokuts – a group that entered the San Joaquin drainage to displace Costanoans or Miwok groups (Wallace, 1978: 463).

Each Bay Miwok tribelet occupied a specific territory, using several permanently inhabited settlements and a larger number of seasonal campsites at various times during their annual subsistence round (Levy, 1978a: 398). The Northern Valley Yokuts relied on fishing and fowling and the harvesting of wild plant foods, including tule roots (Wallace, 1978: 464). In historic-period times, the Yokuts trekked to Monterey Bay in Costanoan territory (Pilling, 1950; Wallace, 1978: 465) and also traded with the Miwok and Costanoan (Davis, 1961: 33, after Barrett and Gifford, 1933: 270 and Pilling, 1950: 438).

Most of the main settlements occupied the tops of low mounds on or near the banks of large watercourses (Wallace, 1978: 466; Schenck, 1926: 132; Schenck and Dawson, 1929: 308). The village of Pescadero, located on the southwestern side of Union Island just 2 miles from Bethany, is the closest known village to the project (Wallace, 1978: 469).

The indigenous lifeway apparently disappeared by the early 1800s because of the disruption by new diseases, a declining birth rate, the impact of the mission system, depredation by prospectors on their way to the gold country, and later displacement by Euro-American

farming. As with other native California groups, the Bay Miwok and Yokuts were transformed from hunters and gatherers into agricultural laborers who lived at the missions and worked with former neighboring groups such as the Costanoan and Esselen (Levy, 1978b: 460). Thus, multi-ethnic Native American communities grew up in and around former Yokuts and Bay Miwok territory. The Native Americans that resided in these communities provided much of the ethnological data, along with the detailed accounts by contact explorers, which form the basis of the descriptions of the ethnographic inhabitants of the San Francisco Bay Area and central California (Garaventa et al., 1991: 14).

5.1.5 History

In 1542, Juan Rodriguez Cabrillo explored the California coast by ship. Much of the early exploration of California was conducted this way. California's interior, including the San Joaquin Valley, remained unexplored by Europeans until the beginning of the Spanish Period.

The Spanish period spans 1769 to 1822, beginning with the founding of the first mission, the Mission San Diego de Alcala in 1769. It was not until March 1772 that the first formal European expedition, led by Pedro Fages, entered the northern San Joaquin Valley. Fages searched for the first Europeans to enter the San Joaquin Valley, the Spanish deserters. The other purpose of the Fages expedition was to find an overland route to Point Reyes. The company kept to the shoreline until they reached the mouth of the San Joaquin River and first observed the valley (Smith, 2004). Shortly after the Fages expedition returned to Monterey, Father Francisco Garcés entered the San Joaquin Valley and made the first observations of the valley. His observations included native villages, wide rivers, large tule swamps, and huge herds of tule elk.

In 1821, Mexico gained independence from Spain, and in 1848 the United States formally obtained California in the Treaty of Guadalupe Hidalgo (Cleland 1941: xiii). The period from 1821 to 1848 is referred to as the Mexican Rancho Period. It was then that large tracts of land, termed ranchos, were granted by the various Mexican governors of Alta California, usually to individuals who had worked in the service of the Mexican government.

In 1833, 11 years after gaining independence from Spain, the Mexican government's Secularization Act changed missions into civil parishes, and those natives who had inhabited regions adjacent to a Spanish Period mission were to obtain half of all mission possessions, including land. However, in most instances this did not occur, and the Secularization Act resulted in transferring large mission tracts to politically prominent individuals.

The closest rancho to the project area is the Rancho de los Franceses situated on and around present day Stockton. Rancho de los Franceses was granted by Governor Micheltorena to William Gulnac, a native of New York, on June 13, 1844. The rancho consisted of 11 square leagues, or 48,747.03 acres. In 1845, shortly before the homestead deadline and after constructing several houses and corrals, planting a peach orchard, and raising several hundred cattle on the land, Gulnac sold the rancho to Captain Charles M. Weber for a $60.00 grocery bill Gulnac owed the Weber Grocery Store in San Jose (Smith, 2004: 153-154).

Following the end of hostilities between Mexico and the United States in January 1847, the United States officially obtained California from Mexico through the Treaty of Guadalupe

Hidalgo on February 2, 1848 (Cleland 1941: xiii). Thus, the American Period begins in 1848. In 1850, California was accepted into the Union of the United States, primarily resulting from the population increase created by the Gold Rush of 1849. In April 1848, gold was first discovered in the Sacramento Valley at Captain Sutter's now-famous saw mill near present-day Sacramento.

Gold was never found in great quantities in the San Joaquin Valley, although mining in the adjacent foothills was prolific. The southern mines stretched from the Mokelumne River to the Kern River, and Stockton became the main supply city for miners headed to these southern mines (Smith, 2004: 179).

The California cattle industry reached its greatest prosperity during the first years of the American Period. Mexican-Period land grants had created large, pastoral estates in California. A high demand for beef during the Gold Rush led to a cattle boom that lasted from 1849 to 1855. In 1855, however, the demand for California beef began to decline as a result of sheep imports from New Mexico, cattle imports from the Mississippi and Missouri valleys, and the development of stock breeding farms. When the beef market collapsed, the California ranchers were unprepared. Many had borrowed heavily during the boom, mortgaging their land at interest rates as high as 10 percent per month. The collapse of the cattle market meant that many ranchos were lost through foreclosure, while others were sold to pay debts and taxes (Cleland 1941: 108-114).

During the American period, in addition to cattle and sheep ranches, a growing number of farms appeared. A rural community cultural pattern existed in the study area from approximately 1870 to 1930. This pattern consisted of communities consisting of population aggregates that lived within well-defined geographic boundaries, shared common bonds, and solved shared problems. They lived on farmsteads tied together by a common school district, church, post office, and country store. These farmsteads and dispersed farming communities gave way to horse ranches, dairies, and nurseries, which in turn were replaced by the newly established roadside service complex. The roadside service industry thrived in the highly mobile, mechanized, pre- and post-war society, which was linked by state and federal roadways.

5.1.6 Tracy Area and MEP

The project is located south of the Central Valley community of Byron, California, and roughly 10 miles north of Tracy, California. Byron is a small community that was once a shipping center for apricot orchards (Federal Writers' Project, 1984) and the location of Byron Hot Springs, a small resort that touted the beneficial waters of thermal pools located at the property. The warm salt water springs had been popular since the mid-nineteenth century, with informal camps set up in the area, but the property was not developed until the 1870s, when the Risdon/Mead family began constructing permanent buildings. Byron Hot Springs operated as a resort until it was selected by the United States Army as a temporary internment camp for Japanese and German prisoners of war. The camp closed in 1945 and a year later, the property was sold to a Greek Orthodox diocese from New York State (Byron Hot Springs, 2009).

The City of Tracy, California was founded in 1878 when the Central Pacific Railroad located a station at this site. Tracy is south of the project area. The railroad later moved its

headquarters to Tracy from Lathrop, which is roughly 8 miles to the northeast. Tracy was incorporated in 1910 and an irrigation district was formed a few years later (City of Tracy, 2010)

The Central Valley is defined historically by agriculture and transportation. In addition to railroads such as the Central Pacific and the Western Pacific, ferries serviced the area via several ferry landings on the Tuolumne and San Joaquin rivers. The road that would eventually become State Route 99 was planned and permitted in the late 1800s, although the paved highway was not completed until 1968.

Hot, dry summers and over-cultivated lands made wheat-growing less and less prosperous as the 19th century drew to a close. In 1887, the Wright Bill, which proposed creating irrigation districts in California, passed the California Senate and Assembly and was signed into law by then-Governor Washington Bartlett. Local irrigation districts, including BBID, created water conveyance systems in the early 1900s and initiated the flow of water into the area. Farmers began to diversify their crops and experimented with fruit and nut trees that did not require as much water as wheat.

In 1900, the area was still a grain-farming region. However, irrigation allowed the planting of orchards, vineyards, and row crops. These were better suited to farmers able to devote a few acres and put considerable effort into them rather than putting effort into the large grain fields planted and harvested by transient hired hands. Small farms meant more people, more towns, and more trade. This vision of irrigation propelled the local crusade for the Wright Act and became a part of the national reclamation movement for a federal irrigation program.

5.2 Research Questions and Data Sources for Prehistoric Resources

5.2.1 Cultural Chronology

The general trend throughout California prehistory has been an increase in population density, coupled with less activity and a greater diversity of food resources. Chartkoff and Chartkoff (1984) identified three major periods of California prehistory: Pre-Archaic, Archaic, and Pacific. Regionally refined chronologies such as the CCTS and its evolutions through various cultural schemas have aided investigators in better understanding local cultural patterns and defining local chronologies, thus enabling scholars to move away from addressing cultural data in broad terminologies and classifications. Table 3 summarizes the cultural patterns for the project region.

Temporal placement of prehistoric sites is essential for developing a chronological sequence pattern for regional archaeology. If an unanticipated archaeological site is identified as a result of MEP construction, information from that site when compared with other sites within the project region, may contribute to additional local understanding. Data recovered from the archaeological site (e.g., diagnostic artifacts, features, and organic debris) would assist in establishing an interpretation of the occupational time period and the chronological sequence of the site for comparison to regional information. Standard approaches to stratigraphic interpretation include radiocarbon assay, source-specific obsidian hydration,

and cross-dating temporally diagnostic artifacts with those recovered from surrounding areas. These stratigraphic interpretations determine the site's habitation era and functionality, and allow the site to be compared with regional sequences.

TABLE 3
Chronological Summary

Time Period	Site Type	Chronological Markers
Paleo-Indian, 10,000 to 3,000 BC	Small mobile populations hunting big game.	Large, fluted lanceolate projectile points or spear/atlatl/dart points.
Windmiller Pattern 3,000 to 1,000 BC	Increase in population densities, with sedentism and diversified use of ecological zones. Cultural presence is established for the project area in this period.	Use of milling stones, fishing and hunting technologies, exploitation, and extended burials oriented to the west.
Berkeley Pattern 1,000 BC to AD 750	Continuity of site types from earlier and later periods, with addition of mortar and pestle and smaller arrow projectile points.	Change in projectile point typology with introduction of bow and arrow, mortar and pestle, and circular shell fish hooks, a marked preference for flexed burials versus extended burials.
Augustine Pattern AD 750 to AD 1769	Increase in sedentary populations, permanent settlements, and full exploitation of natural resources, stored staple foods, long trade networks, and complex political systems.	Bow and arrow replaced atlatal, small projectile points, well-developed midden deposits, cremated and intact human burials, residential features, bedrock mortar milling stations, smaller milling stone use, olivella and clamshell disc beads.

Generally, chronological research questions for California concern similarities and differences between the ethnohistoric cultural groups and their use of the many environmental and ecological regions. For the MEP region, chronological research questions are concerned with defining data that clearly establish the first occupation of this territory. Of particular interest to researchers are site types and chronological patterns, based on lithic technology and other artifact typologies, and chronologies and assemblages. Key research questions applicable to sites potentially discovered in the project area might include the following:

- Do the diagnostic artifacts fit the chronological pattern set forth in the CCTS? Do diagnostic artifacts fit chronologically with outside prehistoric territories?
- Does the artifact assemblage establish site type or function?
- Were the site and its loci occupied for one short or long episode, or were they occupied episodically during multiple habitation episodes?
- Does the site occupancy era relate to the cultural sequences developed for the region, or to that seen in other sites in the area?
- What significant changes in subsistence patterns and patterns of technological use validate the chronological schemes that archaeologists have devised for the local prehistory?

- Can predictive models for site formation be formulated for the cultural groups in the Central Valley or Coastal Range based on known site distributions and use of resources?

Data Sources

Data requirements for defining a cultural chronological sequence and temporal dating would include recovering diagnostic formed tools such as projectile points established within specific cultural patterns, shell or stone beads and ornaments, and artifacts that qualify for cross-dating typologies and radiocarbon dating of archaeologically organic remains (i.e., shell, bone, or charcoal) associated with the archaeological deposits. Data that would define a specific cultural pattern would include flexed burials, cremations, fishing technology, and carbon dating to AD 700, all markers and cross-dating typologies of the Augustine Pattern.

If a discovery occurs, site treatment and mitigation will proceed as directed by the CPM pursuant to CUL-7. Formed tools will be collected for analysis from the surface and subsurface matrix and will be placed in clear polyethylene zip-lock bags. Charcoal and soil samples will be taken from subsurface hearth features, charcoal and ash lenses, or other in situ contexts. Sample materials will be collected with clean metal tools and will be wrapped in aluminum foil and placed in clean zip-lock polyethylene bags. Shell and bone will be collected from the surface and subsurface matrix and will be placed in clean plastic vials; large or wet bones will be placed in clean paper bags, if necessary. Delicate items, such as obsidian artifacts or shell beads, will be carefully collected and wrapped in non-acidic tissue paper, if necessary, to prevent damage.

All items recovered from an excavation will be clearly labeled with the site number, unit number, level, associated feature, date, and collector's initials. Perishable artifacts, if found and recovered from wet contexts, will be kept wet until appropriate long-term conservation measures are applied to ensure their stability in a repository or museum collection.

If a discovery occurs, the following field methods are recommended. No fieldwork will be allowed to proceed without direction from the CPM pursuant to COC CUL-7.

Field methods for collecting artifacts from a newly discovered prehistoric archaeological deposit will include the excavation of 1-meter-by-1-meter units or expanded unit blocks (see below). Matrix will be dry or wet screened, as appropriate, through 1/4-inch and 1/8-inch screen inserts when deemed necessary (to recover fish bone and very small lithic material and to recover shell beads in areas where these items are likely to occur). Shell, lithics, ground stone, bone fragments, and fire broken or affected rock will be sorted, bagged, and labeled. If required, residue material located in the 1/8-inch mesh screen will be double-bagged, labeled, and retained for water screening. From water screens, all lithics, bone, modified shell, the hinges of bivalve mollusks, and the apices of gastropod shells will be saved. Each material type from dry or water screening will be bagged and labeled separately in clear zip-lock polyurethane bags.

A unit level record form that includes features, in situ cultural materials, tallies of recovered items, a sketch of the surface at the base of the level, and a description of sediments and other items of interest will be filled out for each 10-centimeter level of each 1-meter-by-1-meter unit. The types of features that may be excavated include hearths, house floors, cache pits, and artifact concentrations. Excavation and recordation of these features

will follow industry standards, including documenting and recording data such as provenience, description, depth, and collecting soil and charcoal samples. Each feature encountered in a site will be given a feature designation sequential number. Feature forms will also be used for recording data and observations, and for mapping each feature. Photographs will be taken throughout the excavation process. Field methods are discussed further in Section 6.

Artifacts and ecofacts to be collected and curated will provide information regarding a cultural chronological sequence and temporal dating. The collection will include, if present, formal tools, beads and ornaments, and organic remains such as shell, bone, and charcoal. Obsidian will be collected, if found, as it can be used to develop hydration chronologies. Charcoal and soil samples will be taken from any subsurface hearth features, charcoal and ash lenses, or other in situ contexts, if possible; such samples can be used to temporally place site occupation in local or regional chronologies. Some proposed analyses are destructive; however, when possible, artifacts and ecofacts that are analyzed will be curated after analysis is complete. Many dating techniques continue to improve in precision and accuracy, and new developments and improvements in these techniques and technologies could provide additional information at a later time. Curation methods are discussed further in Section 6.12.

5.2.2 Subsistence Economics and Prehistoric Settlement Patterns

Archaeology in the western United States has become, to a large extent, the study of settlement systems and subsistence economics (land use) of hunter-gatherer peoples. Although many topics of archaeological interest exist that do not touch directly on these areas, the most compelling research problems and issues are directly or indirectly related to them. Archaeologists have addressed these issues through what may be called the bipolar models of settlement systems and subsistence economics. These models develop and correlate postulates on hunter-gatherer residential mobility, subsistence logistics and foraging patterns, the energetics and temporal costs and benefits of getting food, seasonality, and food storage patterns. The models are based on global and local analyses of ecological energetics, resource distribution, and resource accessibility. The models include postulates of the archaeological correlates of various economic and settlement patterns and approach a general theory of hunter-gatherer settlement systems and subsistence economics. The models can also provide a framework for any work done on prehistoric sites discovered at the MEP site.

Bipolar models of settlement systems have a long history in archaeological theory. Archaeologists have often thought of hunter-gatherer settlement and subsistence systems as capable of being placed on a bipolar continuum with “intensive” systems or strategies on one end and “extensive” ones on the other (Cleland, 1966 and 1976). More recently, archaeologists have used the terms “traveler” and “processor” (Bettinger and Baumhoff, 1982) or “forager” and “collector” (Binford, 1980; Kelly, 1983) to refer to different versions of the same general continuum. The terms forager and collector are the most commonly used. In the simplest form of this dichotomy, foragers move their residential bases frequently to track resources that are evenly dispersed in time and space. Collectors move to special activity camps on logistical trips from more stable residential bases to resources whose production is patchy in space and seasonally restricted in time.

Bettinger and Baumhoff's (1982) traveler-processor dichotomy contrasts subsistence-settlement strategies under which people spend time to travel to high-quality resources, versus those under which they spend time processing a broader spectrum of resources, including lower-quality resources. They explain the spread of Numic-speaking peoples in the Great Basin as the displacement of a traveler society by a processor one.

In his ethnographic study of hunter-gatherer mobility worldwide, Kelly (1983) focuses on the spatial and temporal structure of resources in determining a settlement and land use pattern. He found that a hunter-gatherer band's number of residential moves per year is correlated to its territory's effective temperature (a measure of seasonality that takes into account the amount and annual distribution of solar radiation). Also, he found that the average distance of residential moves is inversely correlated to effective temperature. In other words, tropical hunters move residential bases more often but at less distance. This pattern holds because in tropical forests, food resources are evenly distributed and poorly accessible (most resources are in the tree canopy or are well protected by adaptation from predation). Conversely, Binford (1980) nominated the Nunamiut Eskimo as a quintessential collector society. The Nunamiut response to high seasonal and spatial variation in resource productivity in the arctic environment was to take logistical forays to special activity sites from residential bases that were infrequently (< 10 times per year) moved. Binford (1982) also found that the Nunamiut rotated their annual range every 5 years or so, between five subranges within a very large extended territory, which they continually monitored on forays from the currently active range.

Population density and food production intensity are also important variables that determine some aspects of hunter-gatherer residential mobility. According to foraging theory, people will add additional resources to their diet as population densities increase (Christenson, 1980). These additional resources are usually less preferred because they offer lower return on labor. Certain kinds of subsistence economic transformations, such as agriculture, involve very large labor commitments but cause a sudden jump in productivity. People have no choice but to reduce mobility when more densely packed in a given land area. This mobility reduction lessens their access to a wide diversity of resources, particularly scarce ones such as lithic raw material, as well as some food resources. One response to this lessened access is increased intergroup trading.

The archaeological correlates of residential mobility and land use patterns are also considered in the bipolar model. Binford (1980) proposed a simple standard typology of site types based on assemblage diversity. For example, assemblage diversity should be high at residential bases, particularly those that are occupied for a long duration (such as during winter), because a variety of tasks are carried out there (Shott, 1986). Logistical camps, special extraction locations such as wood gathering spots, and information gathering stations such as lookouts (Binford, 1980) should have low assemblage diversity or be archaeologically invisible. Also, tool use becomes more expedient in general as mobility decreases and there is less need to care for specialized tool kits used on long-distance task forays for specialized resource procurement purposes. Kelly (1983) suggested that tool technology under these conditions (particularly with agricultural societies) becomes less dependent upon bifacial reduction techniques. Archaeological assemblages should show a lower frequency of bifacial reduction and thinning flakes, a higher percentage of unprepared percussion cores, and cortical flakes.

Property types important to research within the MEP study area include the following: (1) the long-term residential base; (2) the short-term occupation site; (3) the resource procurement site; and (4) the resource processing site. The archaeological resources of the MEP study area will be analyzed relative to these property types. Important factors include the frequency of each property type by chronological period, the size of each property, and the location of the property type on the landscape. The four primary property types are discussed in some detail in the subsequent paragraphs.

Long-term Residential Base

The long-term residential base is the main residence for a specific portion of the aboriginal population, similar in concept to the hamlet, town, or village in Euro-American history. People residing in these property types tend to form communities with considerable face-to-face interaction over an appreciable span of years.

In general, this property type is expected to contain a broad range of tool types because more activities are undertaken at the property, and some of the leisure time available at the home base would be used for tool finishing and rejuvenation activities. Projectile point bases diagnostic of culture and chronology are likely to be present in higher frequencies in the residential base than at other sites because hunters have removed them from the kill and brought them home for repair or alternate use. Artifacts reflecting status and prestige are expected to be present if status and prestige segregation are operant in the society. Sites of this type are expected to be large and deep, to contain more features, and to reflect the internal organization of specific activities (Binford 1980).

In summary, the long-term residential base property type displays a greater range and quantity of research values than other site types characteristic of the cultural system (Andrefsky, 1998). Features and diagnostic artifacts are more abundant. Site depth and midden deposits are characteristic and property visibility on the landscape is likely to be high because considerable "living," and the residue that such activity produces, has been undertaken at these locales. Cemeteries or isolated burials are likely to be located nearby. These properties are integral in research schemes because they form the basis for integrating other, more focused-purpose sites into a single operating cultural system.

Short-term Occupation Site

The short-term occupation site is the second property type important for understanding human adaptations in the project area. This property type is a key element because these sites have the potential for demonstrating a subsistence behavior shift with definable chronological limits because aboriginal Americans exploited available riparian communities. In other words, field camps or seasonal camps and resource processing sites would proliferate near the riparian resources, and these sites would cluster temporarily because increased exploitation would occur when the wetland was present (Binford, 1980).

The short-term occupation site is especially useful for investigating human adaptation to riparian and upland communities because the site possesses the classic characteristics of "small sites" with the potential for chronological control. These sites are discrete, relatively easy-to-define reflections of human behavior that are not confused by subsequent occupation for different purposes. The sites are expected to be relatively shallow and to contain a narrow range of tool types that reflect the specific activity undertaken at the site.

Short-term occupation sites are smaller than long-term residential bases and have less abundant and more uniform types of features because the camps were formed by one segment of the residential base population as a specific task was undertaken at a specific time. A narrower range of floral and faunal remains is also expected and may reflect subsistence focus and seasonality of use. As Murdock (1968) has stated, "it has long been recognized that the form, size and fixity of human settlement bear a direct relationship to the modes of exploiting the natural environment to provide subsistence."

Resource Procurement and Resource Processing Sites

The last two property types important in understanding and researching historic contexts are the resource procurement site and the resource processing site. These site types are generated with respect to specific types of target resources. Task groups seek specific foods or other economic resources in specific contexts (Binford, 1980). The use, exhaustion, and abandonment of tools at resource procurement and, secondarily, at resource processing sites would occur at a very low rate, yielding property types characterized by diffuse, low-density remains. Tools, if present, are expected to represent only a single function or a narrow range of functions reflecting the specific activity undertaken at the site. In addition, a narrow range of artifact classes is expected. These property types tend to have low visibility on the archaeological landscape and also tend to be classified as "isolated finds." One exception to this trend is bedrock milling stations. These stations remain visible on the landscape because of their typical association with bedrock exposures, which stand out from the surrounding areas by their starkness.

Key research questions concerning resource procurement and resource processing are presented and discussed below:

- What was the relative importance of various food resources through time? Early subsistence may have focused mainly on large terrestrial game animals, which might be indicated by lack of ground stone and assemblages of low diversity, whereas later subsistence regimes may have focused mainly on fishing, collecting shellfish, and hunting sea mammals.
- Were site occupants foragers or collectors? Did settlement patterns change through time? Property type along with tool, feature, and faunal assemblages are the important data categories needed for addressing these questions. If a foraging subsistence strategy is employed, sites have much the same content because the full range of activities is undertaken by the population base. If a collecting strategy is active, the settlement system comprises residential bases and smaller specialized collection sites where specific tasks are undertaken by a subgroup of the residential base, possibly by only adults of one gender. The tool and feature assemblages should specifically reflect the collection task and should not contain a full range of tools and features, as would assemblages of a residential base. Information is needed on subsurface cultural assemblages, including buried cultural components and features.
- Was diversification in the subsistence base evident between different occupation periods within the project area? Taxonomic and statistical analyses of archaeobotanical and faunal data are the primary sources for defining diet breadth and the importance of

vegetal foods, marine resources, and small and large game in the aboriginal diet. Another source of information is an analysis of formal and informal tools.

- Did changes in the technological subsystems occur that would indicate subsistence diversification? For example, an increased frequency of milling equipment could indicate an increased reliance on plant or small mammal resources. Conversely, a decrease in milling equipment could indicate a reliance on other food sources.

Data Sources

Data requirements for these questions would include preserved food remains (fish bone and other faunal remains) in stratified sites. Equally important would be an extensive representation of artifacts used in the hunting, gathering, and fishing for important local food resources and evidence of their manufacture. The surfaces of projectile points and knives could yield identifiable blood residues of sea or land mammals.

Artifacts and ecofacts to be collected and curated will provide information about settlement patterns and subsistence strategies and will include representative samples of all major artifact types, such as flaked and ground stone, animal bone, shell, beads, charcoal, and seeds. Shell remains and fish bones can provide information related to seasonal occupation. Other faunal remains can provide information about subsistence strategies; these remains would be curated after analysis. Charcoal and soil samples taken from subsurface hearth features, charcoal and ash lenses, or other in situ contexts can be used to establish ranges of site occupation. One-liter samples of midden and soil samples from subsurface hearth features, charcoal and ash lenses, or other in situ contexts will be collected. Fire-modified rocks will be weighed, counted, and discarded in the field and will not be collected or curated. Some proposed analyses are destructive; however, when possible, artifacts and ecofacts that are analyzed for information about this research question will be curated after analysis is complete. Many techniques continue to improve in precision and accuracy, and new developments and improvements in these technologies could provide additional information at a later time. Curation methods are discussed further in Section 6.12.

5.2.3 Technology

Interesting questions concern associations between technology (lithic and bone) and mobility patterns, the association between lithic and bone tool assemblage diversity, and the distribution of stone tool or bone tool waste by type and the site's function. Questions to determine the technology level for a given period include the following:

- What was the timing of the advent of the bow and arrow? Was it a sudden introduction (ca. 1500 BP) or was it used concurrently with the atlatl and dart before the introduction of the bow and arrow? How did bow–and-arrow hunting change hunting patterns and hunting tactics?

- What raw materials were selected for use in biface tool trajectories and uniface tool trajectories during the chronological periods represented in the MEP study area? Are differences noted in the archaeological assemblages across cultural periods? Can raw material selection be used as a blunt instrument for chronological and cultural implications? How does the pattern defined for the MEP study area compare with other documented assemblages in the region? Biface and uniface tools, implements broken

during production, and debitage are the appropriate data classes for addressing these questions. Quantitative and statistical analyses can be used to provide summary data and reliability of conclusions.

- Do the tools reflect a core-based strategy, a flake-based strategy, or a split cobble-based technology? The introduction of the bow and arrow around A.D. 500 may have favored a flake-based tool production strategy for arrow points as compared with the larger, earlier dart points.

Data Sources

Data requirements for these questions would include large samples of debitage, stone tools, and bone or wood tools. Such samples might consist of more than 500 pieces of debitage and more than 50 bone or wood tools—all well dated and correlated with other key cultural traits.

Artifacts and ecofacts to be collected and curated will provide information about technology and will include formal and informal tools, cores, and the waste produced during manufacture, maintenance, and use of the aforementioned tools. If the sample of debitage is large (i.e., more than 500 pieces), all formal tools and a representative sample of informal tools, waste flakes, and shatter will be curated. Smaller collections will be curated in their entirety. Additionally, beads and worked shell, if found, would provide information regarding technological strategies. Some proposed analyses are destructive; however, when possible, artifacts and ecofacts that are analyzed to provide information for this research question will be curated after analysis is complete. Many techniques continue to improve in precision and accuracy, and new developments and improvements in these technologies could provide additional information. Curation methods are discussed further in Section 6.12.

5.2.4 Cultural Affiliation and Exchange

Regional and inter-regional trade patterns have at least two primary levels of influence on native cultures. First is the exchange of commodities necessary for subsistence, such as food items and toolstone materials, among others. Also to be considered are the societal effects engendered by face-to-face contact and intermarriage. Settlements within a networked exchange system retain greater flexibility for withstanding local shortages in food or other supplies through the redistribution of locally abundant commodities along the network. In addition, an overabundance of resources such as acorns, pinyon nuts, fish, or domesticated crops in one area could be used to ameliorate food shortages in another locale, facilitating stability in settlement systems, with the exchange to be repaid at some other time when circumstances are different. The societal value of this type of exchange system, therefore, is to optimize the environment's productivity across an ethnic region. This system would provide stability in settlements and other cultural units and maintain access to critical subsistence resources that may not be consistently available annually and to other resources or locales of importance to the ethnic group (Chartkoff, 1987).

A second influence of trade on native cultures focuses on the exchange of exotic items and the concomitant interfacing of peoples of different ethnic backgrounds, traditions, and religious beliefs. Peoples or settlements brokering exchange on the perimeters of ethnic

regions are more likely to be influenced by intercultural contact and to be the source of influence in their separate ethnic spheres.

Items of inter-regional trade may be valuable because of their limited quantities and the investments of time and labor involved in delivery. They may be more likely found in specialized contexts associated with long-term residence. Burial or cemetery locales, ceremonial and religious sites (e.g., rock art), and occupation or burial sites are the property types most likely to contain items important to the resolution of research questions in this context. Key research questions concerning cultural affiliation and exchange are as follows:

- How did trade patterns of lithics, beads, and other non-perishable materials change during the transition from one prehistoric period to another?
- Ethnographic accounts tell of long-distance trade between coastal groups and inland peoples of California's central valleys. Coastal shell-bead money was traded as far inland as the Great Basin of Nevada and Utah. Items of Sierra Nevada or Great Basin origin (obsidian) may have ended their exchange travels at coastal sites. Does material evidence of these contacts exist in archaeological sites?

Data Sources

Trade items found in a datable context can be indicators of trade periods, while analysis of artifacts such as obsidian can identify most sources of origin, which typically are from California, Oregon, and Nevada. Shell artifacts and ecofacts can be speciated and traced to specific freshwater and saltwater sources.

Artifacts, if found, will be collected and curated to provide information about cultural affiliation and trade, and will include items such as those listed above. Shell beads and other ornaments will be collected and curated. Obsidian will be collected and sourced to determine its point of origin. Some proposed analyses are destructive; however, when possible, artifacts that are analyzed to provide information about this research question will be curated after analysis is complete. Many techniques continue to improve in precision and accuracy, and new developments and improvements in these technologies could provide additional information. Curation methods are discussed further in Section 6.12.

5.3 Research Questions and Data Sources for Historic Archaeological Resources

Previous historical archaeological work has contributed to developing a series of research issues that provide a context for evaluating historic-period sites and reflect current trends for regional prehistory. Research issues pertinent to the project area include early exploration and Euro-American contacts with the Yokuts; early natural resource exploitation including fishing, mining, and logging; early household structures, consumer behavior, and social and economic status; and early development and economic market of local small-scale subsistence agricultural and dairy communities. If an unanticipated historic-period site is identified during construction, the following general research questions and methods can guide the final research design.

5.3.1 Household Structure, Consumer Behavior, Socioeconomic Status

This section discusses the study of individual households and the response of each to economic and social conditions of the time. Concepts relevant to household studies include household composition, life cycle, income strategy, and status. Consumer behavior and social and economic status at domestic sites can be studied through examining refuse and refuse deposits associated with specific households.

Research questions related to household structures, consumer behavior, and social and economic status include the following:

- How does domestic debris from Historic Era sites help us understand rural lifeways that may have been associated with small-scale agriculture in the middle 19th, late 19th, and early 20th centuries?
- What do the remains of the historic-period household structure or outbuildings reveal about the inhabitants' economic status? What does the domestic refuse reveal about the inhabitants' consumerism and economic status?
- Does recovery of artifacts or structural remains from the historic-period site provide information on a specific ethnic group's social and economic status?

Data Sources

Useful indicators of consumer behavior and economic status include materials amenable to subsistence-related activities such as faunal remains, ceramics, and glass that indicate procuring and consuming food. Furthermore, domestic items such as ceramics, utensils, personal items, and luxury items may indicate economic status. Analyzing Historic Era artifacts can allow the archaeologist to draw conclusions about site inhabitants' social class, ethnicity, and quality of life compared with the remains from other sites. Other data sources include structural remains and historic records.

If a discovery occurs, the following field methods are recommended. No field work will proceed without direction from the CPM pursuant to COC CUL-7.

Site sampling plans will include the recovery and analysis of historic-period materials such as subsistence-related artifacts, including glass, ceramics, metal, and faunal remains. If structures or features are identified during test unit excavations, units will be expanded to expose the collected artifact material's feature and when it was recorded, mapped, and photographed. Field method procedures are discussed above and in Section 6.

5.3.2 Early Development of Agricultural and Dairy Communities

Small-scale agriculture, dairy farming, and ranching were important in the development and support of local populations. Research questions related to early agricultural and ranching communities include the following:

- What were the ethnic, social, and class makeup of agricultural and ranching communities within Alameda County?
- How did ranching and agricultural technology and practices change through time?

Analysis of Historic Era artifacts (faunal remains, ceramics, glass, metal, and cans) can allow the archaeologist to draw conclusions about the site inhabitants' social class, ethnicity, and quality of life, compared with the remains from other sites. Agricultural and ranching technologies can be identified from features or artifact material, such as machinery remnants, structures, or windmill remains. Other data sources would include historic-period records.

Data Sources

If a discovery occurs, the following field methods are recommended. No field work will proceed without direction from the CPM pursuant to COC CUL-7. Site sampling plans will include the recovery and analysis of historic-period materials such as subsistence-related glass, ceramics, metal, and faunal remains. If features or structures are identified during test unit excavations, units will be expanded to expose the extent of the feature, and it will be recorded, mapped, photographed, and the artifact material collected (domestic refuse). Field method procedures are discussed above and in Section 6.

Artifacts and ecofacts, if found, will be collected and curated to provide information about early agriculture and historic-period dairies, and will include historic-period artifacts such as glass, ceramics, metal, and faunal remains. Artifacts such as undifferentiated metal or glass fragments will be collected but may be discarded after analysis is complete. Specifically, unknown metal fragments that do not contain rivets, other fasteners, or any defining features will not be curated. Glass fragments that do not exhibit seams, embossing, or other features and are not bases or rims will not be curated. Some proposed analyses are destructive, but when possible, artifacts analyzed to provide information for this research question will be curated after analysis is complete. Many techniques continue to improve in precision and accuracy, and new developments and improvements in these technologies could provide additional information at a later time. Curation methods are discussed further in Section 6.12.

5.4 Data Collection Procedures

If a discovery occurs, the following data collection procedures and field methods are recommended. The CPM will assess significance and identify mitigation pursuant to CUL-7. Necessary field work will proceed only after direction from the CPM. Prehistoric stone tools will be collected for analysis from the surface and subsurface matrix and will be placed in clear polyethylene zip-lock bags. Shell and bone will be collected from the surface and subsurface matrix and will be placed in clean plastic vials; large or wet bones will be placed in clean paper bags, if necessary. All items recovered from an excavation will be clearly labeled with the site number, unit number, level, associated feature, date, and collector's initials.

Recommended field methods for collecting artifacts from a newly discovered prehistoric archaeological deposit will include the excavation of 1-meter-by-1-meter units or expanded unit blocks. Matrix will be simultaneously screened through 1/4-inch inserts (and 1/8-inch screen inserts when deemed necessary to recover shell beads, fish bone, and pressure flakes). Shell, lithics, ground stone, bone fragments, and fire broken or affected rock will be sorted, bagged, and labeled. Residue material in the 1/8-inch mesh screen will be double-bagged, labeled, and retained for water screening. From water screens, all lithics, bone,

modified shell, the hinges of bivalve mollusks, and the apices of gastropod shells will be saved. Each material type from dry or water screening will be bagged and labeled separately in clear zip-lock polyurethane bags.

Soil samples will be collected for pollen and phytolith analysis. Column samples will be collected in 10-by-10-centimeter samples from each unit. Each 1,000 cubic centimeters of matrix will be placed in a clean, clear, zip-lock polyethylene bag and labeled. The samples will be transported to a laboratory for processing. A subset of these samples will be evaluated in the laboratory as part of the site analytical reporting process to determine whether they produce charcoal that can be used for macrobotanical analysis. If the sample contains preserved charred seeds, then additional soil samples will be analyzed to obtain a representative sample of charred seeds from the site. Specific sample sizes and analytical procedures will depend on the site-specific testing or mitigation plan developed at the time of site discovery.

The types of features to be excavated include hearths, house floors, cache pits, and artifact concentrations. Excavation and recordation of these features will follow industry standards, including documenting and recording data such as provenience, description, depth, and collecting soil and charcoal samples. Each feature encountered in a site will be given a feature designation sequential number. Feature forms will be used for recording data and observations and for mapping each feature. Photographs will be taken throughout the excavation process. Field methods are discussed further in Section 6.

Generally, artifacts and ecofacts to be collected and curated will provide information about each dataset discussed above. The majority of the collected artifacts and ecofacts will be curated. Fire-modified rock will be weighed, counted, and discarded in the field and will not be collected or curated. Historic artifacts such as undifferentiated metal and glass fragments will be collected but may be discarded after analysis and will not be curated. A representative sample of collections of debitage, which consist of more than 500 artifacts, may be curated rather than the entire collection. Smaller collections will be curated in their entirety. Artifacts or ecofacts submitted for non-destructive analyses will be curated when the analysis is completed; artifacts or ecofacts submitted for destructive analyses will, by definition, not be curated. Many techniques continue to improve in precision and accuracy, and new developments and improvements in these technologies could provide additional information at a later time.

SECTION 6

Avoidance, Monitoring, and Mitigation

Monitoring and mitigation of any significant effects to cultural resources will require a number of activities that may (1) prescribe measures to ensure avoidance of resources, or (2) compensate for the loss of significant cultural resources because of unavoidable impacts resulting from the exigencies of a project's construction, operation, or decommissioning. Mitigation measures are imposed by means of COCs and are designed to minimize impacts on any kind of significant cultural resource, whether it is an element of the built environment, an ethnographic property, or an archaeological site. Projects whose design cannot be changed to avoid known significant cultural resources will have COCs that specify detailed mitigation activities. Mitigation measures for discoveries will be addressed under CUL-7.

6.1 Avoidance

No known cultural resources exist within the project area; therefore, no sensitive areas exist that should be avoided during construction or operation.

6.2 Monitoring

The objectives of monitoring are the following:

- Protect extant significant historic buildings, structures, sites, or objects from construction impacts
- Identify, at the time of discovery, archaeological materials exposed during ground disturbance
- Protect resources from damage while the CRS makes and provides eligibility review and approval recommendations for the CRHR to the CPM

Because of the low sensitivity of the project area and the low probability it will contain buried archaeological deposits, staff is not recommending monitoring by a CRS as a COC, unless significant archaeological materials are unearthed during construction.

For the purposes of this CRMMP, archaeological construction monitoring is defined as on-the-ground, close-up observation by a CRS, alternate CRS, or Cultural Resources Monitor (CRM) meeting the qualifications prescribed in CUL-1, who watches for any kind of archaeological remains that might be exposed by machines during ground-disturbing construction activities. These activities include, but are not limited to, mechanical boring, grubbing, scraping, grading, and excavating. The CRS, alternate CRS, or CRM attempts to define and identify any discovered archaeological find, halts construction in the vicinity of a find to evaluate it, and keeps a daily log of construction activities observed and archaeological finds made. The CRS, alternate CRS, or CRM sets out flagging or fencing to create a buffer zone around known or discovered cultural resources signifying that ground-disturbing activities are not allowed in

those locations. The monitor checks that the flagging and fencing remain a visible and effective barrier until project activities have been completed near the resource. Full-time archaeological monitoring is defined as careful observation of the ground-disturbing activities of all machines on a construction site for as long as the machines are being operated. Full-time archaeological monitoring may require more than one monitor working at a time, depending on how many machines are working and how far apart they are. If one monitor cannot observe all ground disturbances at the same time, then additional monitors will be assigned so that all ground disturbance can be observed.

Cultural resources discovered during mobilization or construction may include, but are not limited to, the following types of physical remains:

- Prehistoric cultural resources are defined as isolated occurrences or clusters of artifacts, features, and human burials that are evidence of the activities of Native American peoples in the past. Indicators of prehistoric and proto-historic occupation by Native Americans include, but are not limited to, artifacts of various natural materials, areas of soil discoloration, shell, animal bone, manuports, heat-altered stone, and human bone. Occurrences of prehistoric materials may include, but are not limited to, the following:
  - Artifacts (projectile points, shell beads)
  - Habitations (house pit depressions, shell and midden deposits, fire-affected rock, heat-treated rock, manuports)
  - Features (hearths, stone features, artifact caches)
  - Human remains (burials or isolated bone fragments)
- Historic cultural resources are defined as isolated occurrences or clusters of artifacts, features, and structures or their remains, at least 50 years of age (or exceptional, or having Native American religious significance), which are evidence of the activities of peoples of all ethnicities of the American Historic Era. Historic-period materials may include, but are not limited to, the following:
  - Buildings and structures or their remains
  - Native American sacred sites or other significant ethnic sites of any age
  - Trash pits, privies, wells, and associated artifacts, surface dumps, and artifact scatters
  - Isolated artifacts or isolated clusters of artifacts (metal cans, glass bottles, ceramic vessels)

The various resource specialists and onsite monitors, including the Paleontological Resources Specialist, the Designated Biologist, all Paleontological Resources Monitors (PRMs), and all Biological Monitors, will be informed of the procedures to be followed if they observe cultural material while monitoring ground disturbance, as follows:

- PRMs and Biological Monitors should not pick up items that may be cultural.
- If PRMs and biological monitors observe cultural material, they should secure the area and inform the CRM immediately.

The CRMs will be instructed to reciprocate. If a CRM observes potential resources PRM or Biological Monitor should see, then the CRM should secure the area and inform the PRM or the Biological Monitor.

6.3 Native American Participation

Pursuant to COC CUL-6, provisions will be made for the participation of a Native American monitor during ground-disturbing activities, if Native American artifacts are encountered during ground disturbance. The Native American monitor will act as a liaison between Native Americans and archaeologists, developers, contractors, and public agencies to ensure that cultural features are treated appropriately from the Native American point of view. This provision will help others involved in the project to coordinate mitigation measures.

If human remains are discovered during the course of monitoring or mitigation activities, then the specific protocol, guidelines, and channels of communication outlined by the NAHC (1991) and accordance with Health and Safety Code (HSC) Section 7050.5 and Public Resources Code (PRC) Section 5097.98 apply. Section 7050.5(c) will guide the potential Native American involvement as follows:

> If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she will contact by telephone within 24 hours the Native American Heritage Commission.

Under typical circumstances, the NAHC will then notify the Most Likely Descendent(s) (MLD) of the discovered remains. The MLD has 48 hours after being granted access to the construction site to make recommendations to the project owner regarding treatment and disposition of the identified remains. The project owner will notify the CPM of the recommendations made by the MLD and the proposed actions to mitigate the impact in accordance with CUL-7.

6.4 Pre-construction Mitigation of Known Cultural Resources

Not applicable.

6.5 Monitoring Requirements for Project Components with No Known Cultural Resources

Because of the low sensitivity of the project area and the low probability that it will contain buried archaeological deposits, staff is not recommending monitoring by a CRS as a COC, unless significant archaeological materials are unearthed during construction. At the direction of the CPM, the applicant will ensure that full-time cultural resources monitoring is conducted for ground-disturbing activities in the project where CRHP- or NRHP-eligible cultural resources have been discovered. Eligibility will be determined by the CPM.

If necessary, full-time archaeological monitoring will be performed for all earth-moving activities. Full-time archaeological monitoring will require one monitor per active earth-moving machine working in archaeologically sensitive areas, as determined by the CRS in consultation with the CPM. If an excavation area is too large for one monitor to effectively observe the soil removal, one or more additional monitors will be retained to observe the area.

6.5.1 Procedures for Inadvertent Discoveries of Archaeological Materials

Although no cultural resources have been identified within or immediately adjacent to any other project impact area, in the event that there is an inadvertent discovery of archaeological materials, pursuant to CUL-7, the CRM will notify the CRS, who, in turn, will notify the project owner and the CPM within 24 hours of discovery or by Monday morning, if the cultural resources discovery occurs between 8:00 a.m. on Friday and 8:00 a.m. on Sunday. The project owner will ensure that work is halted should there be a discovery on the project site or linear facilities. Redirection of ground disturbance will be accomplished under the direction of the CRM, in a manner agreed to by the CRS.

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

Archaeological materials may include, but are not limited to, items such as whole or fragmentary, flaked or ground stone tools; stone flaking debris; discolored, fire-altered rock; animal bone; charcoal; ash; discolored, burned earth; rocks and minerals not common to the project site; and fragments of ceramic, glass, or metal. If cultural resources more than 50 years of age or that may be considered NRHP- or CRHR-eligible are found, or impacts on such resources can be anticipated, construction will be halted or redirected in the immediate vicinity of the discovery such that the resource is protected from further impacts. The halting or redirection of construction shall remain in effect until the CRS, a CRM, or appropriate cultural resources technical specialist has made evaluations of the historical significance of the discovery (CUL-7). The recommendations of significance will be substantiated and reported to the CPM by the CRS.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS will constitute non-compliance with the COC for this project.

6.6 Monitoring Personnel and Project Communications Procedures

Pursuant to COC CUL-1, the CPM has approved the resume(s) of the designated CRS, Clint Helton, RPA, and the CRS alternate, Aaron Fergusson. Replacement of the CRS will be conducted according to COC CUL-1. If the CPM rescinds approval of a CRS, the project owner will replace the CRS in accordance with COC CUL-1.

The CRS has verified that the following designated CRMs meet the requirements of COC CUL-1. The designated CRMs for MEP are Mr. Phillip Reid, Ms. Sonia Sifuentes, and Mr. Daniel Ewers. Resumes are provided in Appendix C. The names of additional monitors, verified by the CRS pursuant to COC CUL-1, may be submitted during the course of the project with a statement that the additionally proposed CRM meets the qualifications in CUL-1. The CRS will submit the resume of any necessary specialist to the CPM for approval pursuant to COC CUL-1. If the CRS is replaced, the project owner will submit an addendum to this CRMMP, indicating the name of the new CPM-approved CRS.

The CRS will be responsible for overall implementation of the construction monitoring program. Pursuant to COC CUL-5**,** the CRS, or CRMs will conduct onsite worker cultural resources awareness programs. Pursuant to COC CUL-1, the CRS will obtain appropriate specialists, as needed, to guide the evaluation of cultural resources that are discovered. Pursuant to COC CUL-1, the CRS may monitor construction and make periodic field inspections, but the CRS's primary functions will be as follows:

- Direct and coordinate the field activities of the CRMs.
- Provide recommendations of eligibility for discovered resources.
- Ensure that applicable laws, ordinances, regulations, and standards (LORS) are met.
- Serve as a conduit between project principals (the project owner and the construction supervisors) and the project cultural resources regulators (the CPM and the representatives of other interested parties, such as federal agencies and Native American tribes).

Under CUL-6, each day that no discoveries are made, the CRS, under authority of the project owner, will provide a statement that "no cultural resources more than 50 years of age were discovered" to the CPM as an email or in some other form acceptable to the CPM. This notification will not be necessary during suspensions of construction or after the conclusion of construction. The CRS will also provide a weekly monitoring summary to the project owner, who will include this information in the MCR to the CPM, pursuant to COC CUL-6.

Pursuant to COC CUL-6, the CPM will be notified by telephone or email within 24 hours of incidents of non-compliance with cultural resources COCs. The CRS will then recommend corrective action to resolve the problem or achieve compliance with the COCs. When the issue is resolved, the CRS will write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report will be provided in the next MCR for the review of the CPM.

Cultural resources activities related to MEP will meet applicable standards and guidelines established by the California State Office of Historic Preservation. The CRS will complete and submit to the CMP a CRR, which will follow contemporary archaeological standards as identified in the Archaeological Resource Management Report (ARMR) guidelines and the COC standards identified in CUL-6. Daily monitoring logs, daily status reports, weekly summary reports of the daily logs, interim monthly status reports, and final reports will be submitted as required by CUL-4 and CUL-6. A sample monitoring log is provided in Appendix D. Site location information forwarded to the CPM must be sent under separate cover with a formal request (pursuant to CEC Regulations) for confidentiality.

Pursuant to COC CUL-7, in the event of an archaeological discovery made during monitoring, the CRS or CRM will halt construction. The CRS will visit and evaluate the find, and the CRS will make a recommendation to the CPM regarding the significance of the find and, if it is recommended as significant, propose mitigation measures. If the CPM agrees that a find is not significant, the CRS will have the discovery recorded on a DPR 523 form (except for materials less than 50 years old) and will allow construction to resume. If the CPM agrees that the find is significant or rejects the CRS's recommendation that the find is not significant, the CRS and project owner will then submit a treatment plan for the find to the CPM for review and approval (see Section 6.8).

6.7 Workforce Education

Pursuant to COC CUL-5, prior to the beginning of ground disturbance and during all periods of ground disturbance thereafter, the CRS, the alternate CRS, or the CRMs will provide cultural resources training to all new employees within their first week of employment on the proper procedures to follow if cultural resources are uncovered during project excavations. Employees working in ground-disturbing activities will not begin job-related tasks until they have received this training. Training by CPM-approved video is acceptable. Employee education will focus on the following issues:

- Rationale for cultural resources monitoring
- Regulatory policies and laws protecting resources and penalties for violations
- Basic identification of cultural resources
- Procedures to follow in case such resources are discovered

6.8 Work Curtailment Authority and Discovery Treatment Procedures

Pursuant to COC CUL-7, the project owner has granted the CRS, the alternate CRS, and the CRMs the authority to halt ground-disturbing and construction activities near newly discovered cultural resource materials. (For the purposes of this CRMMP, the terms "finds," "cultural resource," "cultural material," "discovery," and "cultural resource materials" are used interchangeably.) Pursuant to COC CUL-7, ground-disturbing activities and construction activities will be halted or redirected if there is a discovery of exceptional cultural material or cultural materials more than 50 years of age, or if a known cultural resource would be affected in an unanticipated manner by the ground-disturbing or construction activities. Ground disturbance will be halted or redirected in the immediate vicinity of the discovery to ensure that the resource is protected from further impacts. If construction workers discover cultural materials, they will immediately halt work in the area and inform the construction foreman or manager, who will immediately halt ground-disturbing activities in the area of the discovery and notify the CRS and CRM, if a CRM is present on the site. A 100-foot buffer zone will be maintained, if possible, until the CRS has been able to evaluate the discovered cultural material.

The CRS acts as the responsible party for cultural resources issues. CRMs will report directly to the CRS. Pursuant to COC CUL-7, the halting or redirection of construction will remain in effect until the CRS and the project owner or construction supervisor have

conferred with the CPM, and the CPM has determined the eligibility of the discovery and approved mitigation, if necessary. If mitigation is necessary, ground-disturbing activities and construction activities will remain halted near the discovery until the CPM-approved mitigation has been completed.

6.8.1 Treatment of Cultural Materials Considered Less Than 50 Years of Age

All materials listed below are less than 50 years of age and, unless of exceptional significance, will not be considered cultural resources that merit consideration for recordation or mitigation. If any doubt exists about the age of a historic-period find, the project owner and CRS will discuss this with the CPM when giving notice of the find. The following materials will not be reported unless exceptional:

- Plastic products limited to Styrofoam® and other foamed polystyrene products, Velcro®, Teflon®-coated cookware, polyvinylchloride pipe, high-density polyethylene, polypropylene, polyimide, thermoplastic polyester, linear low-density polyethylene, liquid crystal polymers, and products marked with resin codes
- Cans made from aluminum or bi-metal, or those with pull-tab or push-tab (metal or plastic) openings
- Aluminum foil containers
- Synthetic tires or car parts
- Modern electronics (i.e., CD players, VCRs, electronic appliances, personal electronics, computers, and printers)
- Compact disks, floppy computer disks, and magnetic tape media
- Unidentifiable metal fragments
- Rubberized metal
- Clothing or shoes made of plastic or synthetic materials

Monitors or other staff who are examining historic-period materials, especially plastic materials, should have sufficient familiarity to differentiate materials that are more than 50 years old from more recent materials. Although a perception exists that all plastics are of recent production, many plastics were invented and produced in the late 19th and early 20th centuries.

Materials less than 50 years old that are found with materials more than 50 years old will be reported.

6.8.2 Prescribed Treatment of Archaeological Discoveries 50 Years of Age or Older

All cultural resources more than 50 years old will be recorded on DPR 523 forms and will be mapped and photographed. Not all cultural resources more than 50 years old discovered during construction are significant historical resources under CEQA. Non-significant cultural resources, ineligible for nomination to the CRHR because of lack of integrity or

information potential, may be treated prescriptively. The following section lists prescribed treatments for resources that are limited in value. Resources not on this list cannot be so treated.

Prescribed treatment for the classes of resources more than 50 years old listed in Sections 6.8.2.1 and 6.8.2.2 consists of the following:

- Construction is halted in the immediate vicinity of the find.
- CRS or CRM records the find on a DPR 523A form, including a location map and a photograph. Artifacts do not have to be collected or curated, but a rough inventory of the resource assemblage will be taken.
- The CRS or the project owner notifies the CPM of the find within 24 hours. The notification includes a description of the resource, a statement that it qualifies for prescribed treatment, and the information that the treatment has been completed.
- Construction can resume when the CPM acknowledges notification of the discovery and approves prescriptive treatment and when the information required for the DPR 523A form has been collected.
- The CRS submits the required DPR 523A form completed for the find to the CPM as an attachment to the next Cultural Resources Monthly Summary Report, required under CUL-6.

Classes of Prehistoric Archaeological Resources Eligible for Prescribed Treatment

- Small midden remnants (less than 1 meter by 1 meter) that lack depth (less than 10 centimeters). If charcoal, bone, or other diagnostic elements are found in the midden, or if the deposit is exceptional (greater than 3,000 years old) as determined from associated artifacts, the midden and associated diagnostic elements will be treated under protocols in Section 6.8.4.
- Small clusters (less than 1 meter by 1 meter) of unidentifiable shell (whole or fragmented). If artifacts, manuports, or other materials are found, the shell and associated deposit will be treated under protocols in Section 6.8.4.
- Non-diagnostic isolated (spatially and temporally) prehistoric artifacts (see Section 6.8.3 for treatment of certain isolated prehistoric finds).

Classes of Historic-period Archaeological Resources Eligible for Prescribed Treatment

- Concrete, brick, or other building materials that lack structural integrity and are part of a documented, disturbed (redeposited) context
- Metal, concrete, or ceramic pipes, conduits, or culverts that lack structural integrity
- Non-diagnostic isolated historic artifacts (see Section 6.8.3 for treatment of certain isolated historic-period finds)

Cultural resources deposits containing human remains cannot be treated prescriptively (see Section 6.8.5).

6.8.3 Treatment of Diagnostic and Exceptional Isolated Finds

Certain isolated finds are subject to special treatment. These finds include diagnostic prehistoric artifacts; intact, unusual historic-period artifacts more than 50 years old; and other exceptional artifacts (high quality, unique, or labeled examples such as mortars, pestles, projectile points, ornaments, embossed bottles, decorated or maker-marked ceramic vessels, or dated/inscribed metal objects). Diagnostic artifacts are items indicative of a particular time or cultural group.

Diagnostic artifacts will be treated as follows:

- Construction is halted in the immediate vicinity, while the CRS or CRM records the find on a DPR 523A form, including a location map and a photograph.
- The isolate will be collected and curated.
- The CRS notifies the CPM of the find within 24 hours. Notice to the CPM includes a description of the resource and a description of the steps taken to determine that it was truly spatially isolated.
- Construction can resume when the CPM receives notification of the discovery and the accompanying information required in item No. 3.
- A copy of the completed DPR 523A form is submitted to the CPM within the time period specified in CUL-7.
- All isolates will be listed and described in the CRR.

Examples of diagnostic artifacts include the following:

- Prehistoric:
  - Ceramics—decorated, rim, or basal sherds; lugs; figurines; ear spools; complete vessels
  - Lithics—points, scrapers, drills, ground stone, and blanks; exotic (imported) raw material; worked bone
- Historic:
  - Ceramics—decorated, rim, or basal sherds; maker's marks; complete vessels
  - Glass—cut, pressed, or decorated; vessel bases and lips; labels; complete vessels
  - Buttons, marbles, pipes, figurines, doll parts
  - Identifiable metal—coins, tools, gun parts, machine parts, hinges, nails, buckles, flatware, wagon hardware, horse tack
  - Identifiable plastic or rubber and worked bone

6.8.4 Treatment of Archaeological Resources Not Eligible for Prescribed Treatment and Not Human Remains

Whether treated categorically, individually, or as special isolated finds, DPR 523 forms must be completed for all cultural resources more than 50 years old or of exceptional significance, if younger, when discovered during construction. Unless the discovery can be treated prescriptively, as specified in the CRMMP, completed DPR 523 forms for resources newly discovered during ground disturbance will be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation or recovery, whichever the CRS decides is more appropriate for the subject cultural resource (CUL-7). Copies of all completed DPR 523 forms are also to be submitted to the CHRIS and will be included as an appendix to the final CRR.

Except for the materials listed in Sections 6.8.1, 6.8.2, 6.8.3, and 6.8.5, all other discovered archaeological resources 50 years old or older, or resources of exceptional significance if younger, must be treated individually as significant or potentially significant discoveries. Individual treatment consists of the following steps:

1. The CRS or CRM halts construction near the find. If there is no CRS or CRM onsite, the workmen stop work in the area and notify the CRS and the site foreman or construction manager. Excavation work or any other earth-moving activities within 100 feet or more will be halted or redirected, if deemed necessary by the CRS to protect the resource.
2. If the CRS is not onsite, the CRM notifies the CRS and the site foreman or construction manager of the find.
3. If the CRS determines that the discovery qualifies for prescribed treatment, then the CRS or CRM follows the procedures outlined in Section 6.8.2.
4. If the discovery does not qualify for prescribed treatment, then the CRS or the project owner notifies the CPM of the find within 24 hours, according to CUL-7.
5. The CRS provides the owner and the CPM with a recommendation on the eligibility of the find for the CRHR. The project owner, the CRS, and the CPM confer, and the CPM determines whether the find is eligible.
6. If the find is not eligible for the CRHR, the CRS or CPM completes a DPR 523 primary form, and the project owner submits the completed form to the CPM within the time period specified in CUL-7. After reviewing and approving the form, the CPM approves the resumption of construction in the area of the find.
7. If the find is eligible, the CRS submits an avoidance plan or an appropriate data recovery plan to the CPM. If the CRS or a specialist in human osteology determines that the find includes human remains, those remains are to be treated under the protocol for treatment of human remains (see Section 6.8.5). The CRS will continue to treat the portion of the find not subject to HSC 7050.5 and PRC 5097.98 under this section (6.8.4).
8. The CPM approves the data recovery plan, and data recovery is carried out. The previously prepared research design, in the CRMMP or the data recovery plan, specifies what artifacts are collected and curated. Excavations where cultural material has been discovered will not be back-filled until the CPM approves the back-filling. If the area

needs to be secured, the project owner arranges for plating, fencing, or other temporary measures approved by the CPM.

9. When data recovery is completed, the CRS completes the appropriate DPR 523 detail form, and the project owner provides it to the CPM within the time period specified in CUL-7.

10. After reviewing and approving the form, the CPM approves backfilling the data recovery excavations and the resumption of construction in the area of the find.

6.8.5 Treatment of Human Remains

If the CRS or a specialist in human osteology determines that a discovery includes human remains, the following will be done:

1. All excavation activities within 100 feet of the remains will immediately stop, and the area will be protected with flagging or by posting a monitor or construction worker to ensure that no additional disturbance occurs. If the discovery occurs at the end of the work day, the area must be secured by posting a guard, covering with heavy metal plates (if the human remains are found below grade), covering with other impervious material, or making other provisions to prevent damage to the remains.

2. The project owner or authorized representative (usually the CRS) will contact the county coroner (Alameda County Coroner (510) 268-7300, Contra Costa County Coroner (925) 335-1510).

3. The CRS will notify the CPM and, as a courtesy, will notify the NAHC.

4. The coroner will have 2 working days to examine the remains after being notified in accordance with HSC 7050.5. If the coroner determines that the remains are Native American and are not subject to the coroner's authority, the coroner has 24 hours to notify the NAHC of the discovery.

5. The NAHC will immediately notify the MLD, who will have 48 hours after being granted access to the location of the remains to inspect them and make recommendations for treatment. Work will be suspended in the area of the find until the CPM approves the proposed treatment of the human remains.

6. If the coroner determines that the human remains are neither subject to the coroner's authority nor are Native American in origin, then the CRS will again contact the CPM in accordance with CUL-7 to determine mitigation measures appropriate to the discovery (see Section 6.8.2).

6.9 Expansive Exposure of Discovered Resources Is Possible

Broad areas are usually accessible for archaeological investigations at the plant site. In some cases, broad excavations are possible within a linear ROW when the ROW is through open land. When discoveries possibly over 50 years of age are made in areas where investigations can be conducted over broad areas, the following will be completed:

1. The horizontal and vertical boundaries of the deposit will be defined.

2. The stratigraphic relationships and depth of the deposit will be defined.
3. The content of the deposit (i.e., the date range and information potential) will be investigated by means of subsurface testing.
4. Sufficient information will be gathered to make a recommendation of eligibility using the research design (refining research design, if necessary).
5. The deposit will be recorded on a DPR 523 form, including a location map, a scaled drawing, and a photograph of the resource.
6. On the DPR 523 form, an eligibility recommendation will be made for the resource.
7. If the find cannot be recommended as clearly eligible or ineligible for the CRHR, the deposit will be assumed to be eligible. As a result, a CPM-approved data recovery program will be developed, based on the CRMMP research design or a refined version of the CPM-approved research design that reflects the information identified by the subsurface testing. If the CPM determines that the find is eligible for the CRHR, then all mitigation required by the CPM will be completed prior to continuing construction in the area of the discovery.

6.10 Expansive Exposure of Discovered Resources Is Not Possible

When discoveries more than 50 years old are made in trenches within public roadways or in areas where access is restricted, the possibility of completing a thorough evaluation of a discovery may be limited. Safety considerations may constrain excavation or testing of a cultural resource. Access to resources discovered at depth in a trench should not automatically be considered restricted. If a question occurs about whether access is restricted, the CRS, project owner, and CPM will consult, and the CPM will determine whether the access is restricted, as part of the requirements of CUL-7. In cases where exposure of the resource is limited, evaluation of a portion of a deposit for the CRHR may not be sufficient to allow an eligibility recommendation for the entire resource. When expansive exposure is possible, the following information will be gathered:

1. The horizontal and vertical boundaries of the deposit or resource will be defined to the extent possible.
2. The stratigraphic relationships and depth of the deposit will be identified by using subsurface testing. The content of the deposit (the date range and information potential) will be investigated. Where access is limited, the content and date of the deposit (if possible) will be described, and the information potential will be evaluated using the research design.
3. The site will be recorded on a DPR 523 form, including a location map, a scaled drawing, and a photograph of the resource.
4. If horizontal excavation is extremely limited and the find cannot clearly be recommended as eligible or ineligible for the CRHR, the deposit will be assumed eligible. The deposit will be treated by preparing a DPR 523 primary form to provide a

record of the find, including a location map, a scaled drawing, and a photograph of the resource. Treatment will also include developing a limited data recovery program approved by the CPM, based on the research design in the CRMMP or a refined version of the research design approved by the CPM. All mitigation required by the CPM will be completed prior to continuing construction in the area of the discovery.

Construction-related excavations near the find will remain halted until all suspected cultural finds have been properly evaluated and required mitigation is completed. All ambiguous materials, including suspected yet unfamiliar or not readily identifiable cultural materials, will be considered significant by the crew and foreman, until the CRS or CRM can observe the finds, and the CRS can make a significance recommendation to the CPM. If significant cultural resources are present and cannot be avoided, then impacts will be mitigated through data recovery or other means consistent with CUL-7.

6.11 Reporting Procedures for Monitoring and Non-compliance

Pursuant to CUL-6, if monitoring should be needed as determined by the CPM, CRMs will keep a daily log of monitoring and other cultural resources activities and any instances of non-compliance with the conditions or applicable LORS on forms provided by the CPM. Copies of the daily monitoring logs will be provided by the CRS to the CPM, if requested by the CPM. From these logs, the CRS will compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report will specify why monitoring has been suspended.

The CRS may make changes in the level of monitoring and in the frequency of daily reporting by submitting a request and detailed justification for the changes to the CPM and receiving CPM approval for the changes, according to CUL-6. The CRS may informally discuss the mitigation and monitoring program with the CEC staff.

If the CRS, a CRM, or other cultural resources personnel observe non-compliance with established cultural resources procedures, the CRM will prepare a Non-Compliance and Resolution Report for distribution to the CPM and project owner within 24 hours.

6.12 Data Recovery, Recordation, and Curation

The cultural resources team will have the full complement of equipment and supplies necessary for archaeological data recovery, including site mapping, photography of artifacts and features, and recovery of artifacts and samples, for resources encountered during earth-disturbing activities. Pursuant to COC CUL-3 and CUL-6, cultural resources more than 50 years old, or younger resources if exceptional, encountered during the monitoring of construction will be recorded on the appropriate DPR 523 forms and will be mapped. Recovered artifacts and samples will be analyzed in accordance with the research design and will be prepared for eventual curation at the Sonoma State University David A. Fredrickson Archaeological Collections Facility ((707) 664-2381) as described in Appendix E.

6.13 Technical Reporting

The final CRR will report on all archaeological fieldwork—surveys, monitoring, and data recovery—conducted during project construction. Ninety days after completing ground disturbance (including landscaping), the project owner will provide to the CPM a technical report—the CRR—that describes all project monitoring, data recovery (if required), and data analyses, in accordance with the requirements of CUL-4. The CRR will follow the recommendations in the California State Office of Historic Preservation's ARMR: Recommended Contents and Format (1990). The contents and format of the CRR for the project will be as follows:

The designated CRS will be the primary author and will direct the preparation of a final CRR according to the ARMR guidelines. The CRR will present findings for newly discovered cultural resources, or archaeological test excavations or data recovery programs that take place. The CRR will also document all field activities, such as the procedures used to determine that no cultural resources were present, or the procedures for avoidance of archaeological sites newly discovered during project construction, or new surveys for borrow sites and dates, times, locations, results, samplings, and analyses.

The report will present a detailed research design, test investigation or data recovery excavation methods, the methods used, scientific results and archaeological research questions addressed, site significance, and any additional recommendations. The report will include an evaluation of cultural resources for the project area, whether the findings are positive or negative. The report will also contain a discussion of the results of specialized analyses (radiocarbon, faunal, floral, obsidian hydration, and sourcing). It will contain completed primary and archaeological site records (DPR 523 form) for newly recorded and previously recorded sites within the project area, maps and photos of the site, drawings and photos of excavation units, and drawings and photos of selected artifacts.

If ARMR reports, survey reports, DPR 523 forms, or additional research reports have been sent to the CHRIS, then receipt letters from the CHRIS will be included as an appendix to the CRR. If the ARMR reports, survey reports, DPR 523 forms, or additional research reports have not been previously submitted to the CHRIS, then the reports will be attached as an appendix to the CRR. The project owner will submit the CRR to the CEC CPM. Within 90 days of CEC CPM approval of the report, the final report will be distributed to the North Coast Information Center of the CHRIS system, the SHPO, and the CPM.

If additional cultural resources monitoring and data recovery are conducted during the operation and maintenance of the project, a CRR addendum will be provided to the CPM 90 days after completing ground disturbance in accordance with CUL-4.

SECTION 7

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Appendix A
Cultural Resources Conditions of Certification

Based on the cultural resources inventory conducted for the proposed MEP, staff has determined that the project would have no impact on known CRHR-eligible archaeological resources, ethnographic resources, individual built-environment resources, or historic districts. The MEP would be consistent with the general historic preservation goals of Alameda and Contra Costa Counties and would be in compliance with the applicable state laws, ordinances, regulations, and standards listed in Table 1. Based on a geoarchaeological assessment of the project area, the potential for the project to encounter as-yet-unknown buried archaeological deposits is low; however, conditions of Certification **CUL-1** through **CUL-8** would address any potential inadvertent archaeological discoveries during the construction and/or operation of the MEP should they occur.

With the adoption and implementation of Conditions of Certification **CUL-1** through **CUL-8**, the MEP would have a less-than-significant impact on any CRHR-eligible archaeological resources, if inadvertently discovered during construction-related excavation activities. Staff thus recommends that the Commission adopt these conditions. These measures are intended to facilitate the identification and assessment of potential unknown archaeological resources encountered during construction and to mitigate any significant impacts from the project on any newly found resources evaluated as eligible for the CRHR. To accomplish this, the conditions provide for the following: the hiring of an on-call Cultural Resources Specialist; cultural resources awareness training for construction workers; the recovery of data from inadvertently discovered CRHR-eligible archaeological deposits; the writing of a technical archaeological report(s) on any archaeological activities and findings; the curation of any recovered artifacts and other data. When properly implemented and enforced, staff believes that these conditions of certification would reduce any impacts to as-yet-unknown CRHR-eligible cultural resources encountered during construction or operation to a less-than-significant level. Additionally, with the adoption and implementation of these conditions, the MEP would be in conformity with all applicable LORS.

Proposed Conditions of Certification

CUL-1 Prior to the start of ground disturbance (includes "preconstruction site mobilization," "construction ground disturbance," and "construction grading, boring and trenching," as defined in the General Conditions for this project) the project owner shall obtain the services of an on-call Cultural Resources Specialist (CRS), and one or more alternate CRSs, if alternates are needed. The CRS shall manage all evaluations, mitigation, curation, and reporting activities required in accordance with the Conditions of Certification (Conditions). The CRS may elect to obtain the services of Cultural Resources Monitors (CRMs) and other technical specialists, if needed, to assist in potential evaluation, monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the eligibility for listing in the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be affected in an unanticipated manner. No ground disturbance shall occur prior to CPM (Compliance Project Manager) approval of the CRS and alternates, unless such activities are specifically approved by the CPM. Approval of a CRS may be denied or revoked for reasons including but not limited to non-compliance on this or other Energy Commission projects.

CULTURAL RESOURCES SPECIALIST

The resumes for the CRS and alternate(s) shall include information demonstrating to the satisfaction of the CPM that their training and backgrounds conform to the U.S. Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61 (36 C.F.R., part 61). In addition, the CRS shall have the following qualifications:

1. The CRS's qualifications shall be appropriate to the needs of the project and shall include a background in anthropology, archaeology, history, architectural history, or a related field;
2. At least three years of archaeological and/or historical (as appropriate per the nature of predominant cultural resources on the project site) resource identification, evaluation, and mitigation field and reporting experience in California; and
3. At least one year of experience in a decision-making capacity on cultural resources projects in California and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

The resumes of the CRS and alternate CRS shall include the names and telephone numbers of contacts familiar with the work of the CRS/alternate CRS on referenced projects and demonstrate to the satisfaction of the CPM that the CRS/alternate CRS has the appropriate training and experience to implement effectively the Conditions.

CULTURAL RESOURCES MONITORS

CRMs shall have the following qualifications:

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

CULTURAL RESOURCES TECHNICAL SPECIALISTS

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

Verification:

1. At least 45 days prior to the start of ground disturbance, the project owner shall submit the resume for the CRS, and alternate(s) if desired, to the CPM for review and approval.
2. At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval. At the same time, the project owner shall also provide to the proposed new CRS the AFC and all cultural resources documents, field notes, photographs, and other cultural resources materials generated by the project. If there is no alternate CRS in place to conduct the duties of the CRS, a previously approved monitor may serve in place of a CRS so that project-related ground disturbance may continue up to a maximum of 3 days without a CRS. If cultural resources are discovered then ground disturbance will remain halted until there is a CRS or alternate CRS to make a recommendation regarding significance.
3. At least 20 days prior to ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and stating that the identified CRMs meet the minimum qualifications for cultural resources monitoring required by this Condition.

4. At least 5 days prior to additional CRMs beginning on-site duties during the project, the CRS shall provide additional letters to the CPM identifying the CRMs and attesting to their qualifications.
5. At least 10 days prior to any technical specialists beginning tasks, the resume(s) of the specialists shall be provided to the CPM for review and approval.
6. At least 10 days prior to the start of ground disturbance, the project owner shall confirm in writing to the CPM that the approved CRS will be available for onsite work and is prepared to implement the cultural resources conditions.

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

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

Weekly, until ground disturbance is completed, the project construction manager shall provide to the CRS and CPM a schedule of project activities for the following week, including the identification of area(s) where ground disturbance will occur during that week.

The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases.

<u>Verification:</u>

1. At least 40 days prior to the start of ground disturbance, the project owner shall provide the AFC, data responses, and confidential cultural resources documents to the CRS, if needed, and the subject maps and drawings to the CRS and CPM. The CPM will review submittals in consultation with the CRS and approve maps and drawings suitable for cultural resources planning activities.
2. At least 15 days prior to the start of ground disturbance, if there are changes to any project-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS and CPM.

3. At least 15 days prior to the start of each phase of a phased project, the project owner shall submit the appropriate maps and drawings, if not previously provided, to the CRS and CPM.
4. Weekly. during ground disturbance, a current schedule of anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.
5. Within 5 days of changing the scheduling of phases of a phased project, the project owner shall provide written notice of the changes to the CRS and CPM.

CUL-3 Prior to the start of ground disturbance, the project owner shall submit the Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by or under the direction of the CRS, to the CPM for review and approval. The CRMMP shall follow the content and organization of the draft model CRMMP, provided by the CPM, and the authors' name(s) shall appear on the title page of the CRMMP. The CRMMP shall identify general and specific measures to minimize potential impacts to sensitive cultural resources. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, each CRM, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless such activities are specifically approved by the CPM.

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

1. the following statement included in the Introduction: "Any discussion, summary, or paraphrasing of the Conditions of Certification in this CRMMP is intended as general guidance and as an aid to the user in understanding the Conditions and their implementation. The conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the CRMMP. The Cultural Resources Conditions of Certification from the Commission Decision are contained in Appendix A."
2. a proposed general research design that includes a discussion of archaeological research questions and testable hypotheses specifically applicable to the project area, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design. The research design will specify that the preferred treatment strategy for any buried archaeological deposits is avoidance. A specific mitigation plan shall be prepared for any unavoidable impacts to any CRHR-eligible (as determined by the CPM) resources. A prescriptive treatment plan may be included in the CRMMP for limited data types.
3. specification of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the

ground-disturbance and post-ground–disturbance analysis phases of the project.

4. identification of the person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team.
5. a description of the manner in which Native American observers or monitors, if needed, will be included, the procedures to be used to select them, and their role and responsibilities.
6. a description of all impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas identified during construction ground disturbance. The description shall address how these measures would be implemented once sensitive areas are identified and how long they would be needed to protect the resources from project-related effects.
7. a statement that all encountered cultural resources over 50 years old shall be recorded on a DPR form 523 and mapped and photographed. In addition, all archaeological materials retained as a result of the archaeological investigations (survey, monitoring, testing, data recovery) shall be curated in accordance with the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, into a retrievable storage collection in a public repository or museum.
8. a statement that the project owner will pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the project. The project owner shall identify three possible curation facilities that could accept cultural resources materials resulting from project activities.
9. a statement that the CRS has access to equipment and supplies necessary for site mapping, photography, and recovery of any cultural resource materials that are encountered during ground disturbance and cannot be treated prescriptively..
10. a description of the contents and format of the final Cultural Resource Report (CRR), which shall be prepared according to ARMR guidelines.

<u>Verification:</u>

1. Upon approval of the CRS proposed by the project owner, the CPM will provide to the CRS an electronic copy of the draft model CRMMP.

2. At least 30 days prior to the start of ground disturbance, the project owner shall submit the CRMMP to the CPM for review and approval.

At least 30 days prior to the start of ground disturbance, a letter shall be provided to the CPM indicating that the project owner agrees to pay curation fees for any

materials collected as a result of the archaeological investigations (survey, monitoring, testing, data recovery).

CUL-4 The project owner shall submit the final Cultural Resources Report (CRR) to the CPM for approval, if preparation of a CRR becomes necessary. The final CRR shall be written by or under the direction of the CRS and shall be provided in the Archaeological Resource Management Report (ARMR) format. The final CRR shall report on all field activities including dates, times and locations, results, samplings, and analyses. All survey reports, Department of Parks and Recreation (DPR) forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as appendices to the final CRR.

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

Verification:

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

materials were collected, and to the Tribal Chairpersons of any Native American groups requesting copies of project-related reports.

CUL-5 Prior to and for the duration of ground disturbance, the project owner shall provide Worker Environmental Awareness Program (WEAP) training to all new workers within their first week of employment at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas. The training shall be prepared by the CRS, may be conducted by any member of the archaeological team, and may be presented in the form of a video. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes. The training shall include:

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

Verification:

1. At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the training program draft text and graphics and the informational brochure to the CPM for review and approval.
2. At least 15 days prior to the beginning of ground disturbance, the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.
3. Monthly, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of workers who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-6 At the direction of the CPM, the project owner shall ensure that the CRS, alternate CRS, or CRMs monitor full time all ground disturbances in the area where a CRHR-eligible (as determined by the CPM) cultural resources discovery has been made. The level, duration, and spatial extent of monitoring shall be determined by the CPM. In the event that the CRS believes that a current level of monitoring is not appropriate, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring.

Full-time archaeological monitoring for the project, if deemed necessary, shall be the archaeological monitoring of all earth-moving activities in the areas specified in the previous paragraph, for as long as the CPM requires. Where excavation equipment is actively removing dirt and hauling the excavated material to a location farther than fifty feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation and a second monitor shall inspect the disposal of the excavated soil. For excavation areas where the excavated soil is disposed of no farther than fifty feet from the location of active excavation, one monitor is sufficient to observe both the excavation and soil disposal.

An effort shall be made to obtain a Native American representative to monitor ground disturbance in areas where Native American artifacts may be discovered. Contact lists of interested Native Americans and guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that shall be monitored. If efforts to obtain the services of a qualified Native American monitor are unsuccessful, the project owner shall immediately inform the CPM. The CPM will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

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

If monitoring should be needed, as determined by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of non-compliance with the Conditions and/or applicable LORS on forms provided by the CPM. Copies of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended.

The CRS or alternate CRS shall report daily to the CPM on the status of the project's cultural resources-related activities, unless reducing or ending daily reporting is requested by the CRS and approved by the CPM.

The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resource monitoring and mitigation activities with Energy Commission technical staff.
Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

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

Verification:

1. At least 30 days prior to the start of ground disturbance, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log.
2. Monthly, while monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS and shall attach any new DPR 523A forms completed for finds treated prescriptively, as specified in the CRMMP.
3. At least 24 hours prior to implementing a proposed change in monitoring level, the project owner shall submit to the CPM, for review and approval, a letter or e-

mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for changing the monitoring level.

4. Daily, as long as no cultural resources are found, the CRS shall provide a statement that "no cultural resources over 50 years of age were discovered" to the CPM as an e-mail or in some other form of communication acceptable to the CPM.
5. At least 24 hours prior to reducing or ending daily reporting, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for reducing or ending daily reporting.
6. No later than 30 days following the discovery of any Native American cultural materials, the project owner shall submit to the CPM copies of the information transmittal letters sent to the Chairpersons of the Native American tribes or groups who requested the information. Additionally, the project owner shall submit to the CPM copies of letters of transmittal for all subsequent responses to Native American requests for notification, consultation, and reports and records.
7. Within 15 days of receiving them, the project owner shall submit to the CPM copies of any comments or information provided by Native Americans in response to the project owner's transmittals of information.

CUL-7 The project owner shall grant authority to halt project-related ground disturbance to the CRS, alternate CRS, and the CRMs in the event of a discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS. Employees are to halt work on their own in the vicinity of a potential cultural resource discovery and shall contact their supervisor and the CRS or CRM. Redirection of work would be determined by the construction supervisor and the CRS;

In the event that a cultural resource over 50 years of age is found (or if younger, determined exceptionally significant by the CPM), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and daily reporting as provided in other conditions shall continue during the project's ground-disturbing activities elsewhere. The halting or redirection of ground disturbance shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner, and the CPM has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of CRHR eligibility, and

recommendations for data recovery from any cultural resources discoveries, whether or not a determination of CRHR eligibility has been made.

2. If the discovery would be of interest to Native Americans, the CRS has notified all Native American groups that expressed a desire to be notified in the event of such a discovery.
3. The CRS has completed field notes, measurements, and photography for a DPR 523 "Primary" form. Unless the find can be treated prescriptively, as specified in the CRMMP, the "Description" entry of the DPR 523 "Primary" form shall include a recommendation on the CRHR eligibility of the discovery. The project owner shall submit completed forms to the CPM.
4. The CRS, the project owner, and the CPM have conferred, and the CPM has concurred with the recommended eligibility of the discovery and approved the CRS's proposed data recovery, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, and CRMs have the authority to halt project-related ground disturbance in the vicinity of a cultural resources discovery, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.
2. Within 48 hours of the discovery of an archaeological or ethnographic resource, the project owner shall ensure that the CRS notifies all Native American groups that expressed a desire to be notified in the event of such a discovery.
3. Unless the discovery can be treated prescriptively, as specified in the CRMMP, completed DPR 523 forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.

CUL-8 If fill soils must be acquired from a non-commercial borrow site or disposed of to a non-commercial disposal site, unless less-than-five-year-old surveys of these sites for archaeological resources are documented to and approved by the CPM, the CRS shall survey the borrow and/or disposal site/s for cultural resources and record on DPR 523 forms any that are identified. When the survey is completed, the CRS shall convey the results and recommendations for further action to the project owner and the CPM, who will determine what, if any, further action is required. If

the CPM determines that significant archaeological resources that cannot be avoided are present at the borrow site, other conditions shall apply. The CRS shall report on the methods and results of these surveys in the final CRR.

Verification:

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

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

Appendix B
WEAP Sign-off Record

Certification of Completion of Cultural Resources Education Program

Mariposa Energy Project, Alameda County, California
Cultural Resources Education Program Verification
All On-Site Employees

This is to certify the below-mentioned individuals have completed a mandatory California Energy Commission-approved Cultural Resources Education (Environmental Awareness) Program for Employees on site at the Mariposa Energy Project. By signing below, the participants indicate that they understand and shall abide by the guidelines set forth in the Program materials.

No.	Employee Name	Company	Signature	Date
1.				
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Trainer: _____ Signature: _____ Date: _____/_____/_____

Appendix C
Resumes for Cultural Resources Team

APPENDIX C

Resumes for Cultural Resources Team

Complete list of resumes will be included upon approval of the cultural resources monitors.

Designated Cultural Resources Specialist:
Clint Helton

Cultural Resources Specialist Alternate:
Aaron Fergusson

Cultural Resources Monitors:
Mr. Phillip Reid, Ms. Sonia Sifuentes, and Mr. Daniel Ewers

Clint Helton, RPA

Senior Cultural Resources Specialist

Education

M.A., Anthropology

B.A., Language and Literature

Professional Registration

Registered Professional Archaeologist (1999, No. 11280)

Distinguishing Qualifications

- Strong background in environmental impact evaluations, with particular expertise in conducting cultural resources studies in California, Colorado, Idaho, Nevada, Utah, and Wyoming
- Has 13 years of environmental management experience in the western U.S.
- Meets Secretary of Interior Professional Qualification Standards (36 CFR 61)
- Highly experienced managing cultural resources studies for large linear transportation and utility projects to meet requirements of National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), California Environmental Quality Act (CEQA), and standards of the California Energy Commission (CEC), and Federal Energy Regulatory Commission (FERC)

Relevant Experience

Mr. Helton is an environmental consultant with more than 13 years of environmental management experience in the western United States. He has a strong background in environmental impact evaluations, having directed technical studies; negotiated with lead agencies, responsible agencies, and clients; and written, edited, and produced a substantial number of environmental review and technical documents. Mr. Helton has extensive experience of regulatory compliance, cultural and paleontological resources, NEPA and NHPA compliance activities, and federal regulations governing treatment of cultural resources, especially Section 106 of NHPA (36CFR800) and the Native American Graves Protection and Repatriation Act (NAGPRA) (43CFR10). Additionally, Mr. Helton is experienced with the challenges of preparing environmental documentation for large linear utility projects, including large interstate pipelines and is familiar with the process and guidelines of CEC and FERC among others. Mr. Helton has authored numerous environmental technical reports, cultural resources management plans, cultural resources studies, Programmatic Agreements, and Memorandums of Understanding (MOU) and contributed to many NEPA and CEQA documents for a variety of private and public sector clients.

Representative Projects

Mariposa Energy Project, Alameda County, California. Task Lead and overall management of cultural resources studies for the construction of a simple-cycle generating facility with a nominal capacity of 200-megawatts. Responsible for preparation of cultural resources

component of project, including field surveys, report preparation, and conducting Native American consultation.

Turlock Irrigation District Almond 2 Power Plant, Ceres, California. Task Lead and overall management of cultural resources studies for the construction of a simple-cycle peaking facility rated at a gross generating capacity of 174 megawatts. Responsible for preparation of cultural resources component of project, including field surveys, report preparation, and conducting Native American consultation.

Carlsbad Energy Center Project, Carlsbad, California. Task Lead and overall management of cultural resources studies for the construction of a combined-cycle facility consisting of two natural-gas-fired turbines, heat recovery steam generators, steam turbine generators, and associated equipment. Responsible for preparation of cultural resources component of project, including field surveys, report preparation, and conducting Native American consultation.

GWF Energy Tracy Combined Cycle Conversion Project, San Joaquin County, California. Task Lead and overall management of cultural resources studies for this conversion of an existing peaking plant to a combined-cycle baseload facility in San Joaquin County, California. Responsible for preparation of cultural resources component of project, including field surveys, report preparation, and conducting Native American consultation.

BrightSource Energy, Ivanpah Solar Electric Generating System Project, San Bernardino County, California. Assisted with preparation of Application For Certification for California Energy Commission in support of a large proposed solar power generation facility covering over 4,000 acres of land managed by Bureau of Land Management in San Bernardino County, California. Responsible for preparation of cultural resources component of project, including archival research, field surveys, report preparation, and conducting Native American consultation.

Terra-Gen LLC Alta Wind Project, Kern County, California. Task Lead, quality control manager, and overall management of cultural resources studies for this 5,000-acre-plus alternative energy development project near the City of Tehachapi, Kern County, California. Provide regulatory guidance, regional technical expertise in cultural resources and coordination with Kern County. Supervised inventory for cultural resources, technical report preparation, and conducted Native American Consultation.

Iberdrola Renewables, Multiple Solar Energy Development Projects, Arizona, California, New Mexico, Nevada. Led preparation of cultural resources assessments for solar power generation facilities in Arizona, New Mexico, Nevada, and California. Mr. Helton is acting as principal investigator for several critical issues analyses as well as full permit preparation of solar energy development projects in Arizona, California, Nevada, and New Mexico. Project acreages range from 5,800 acres to 35,000 acres.

PPM Energy, Solar Energy Development, Arizona, Nevada, California. Cultural resources assessments for solar power generation facilities in Arizona, Nevada, and California. Mr. Helton is acting as principal investigator for literature searches and field visits for several proposed solar energy projects in Arizona, California, and Nevada. Project acreages range from 2,000 acres to 25,000 acres.

Edison Mission Energy, Walnut Creek Energy Park Power Plant, California. Assisted with preparation of Application for Certification for California Energy Commission in support of this proposed 500-MW power generation facility in Los Angeles County, California. Responsible for preparation of cultural resources component of project, including field surveys, report preparation, and conducting Native American consultation.

Edison Mission Energy, Sun Valley Energy Center Power Plant, California. Assisted with preparation of Application for Certification for California Energy Commission in support of this proposed 500-MW power generation facility in San Bernardino County, California. Responsible for preparation of cultural resources component of project, including field surveys, report preparation, and conducting Native American consultation.

Chula Vista Energy Upgrade Project, MMC Energy, San Diego County, California. Task Lead and overall management of cultural resources studies for this 100-MW power plant upgrade project in San Diego County, California. Responsible for preparation of cultural resources component of project, including field surveys, report preparation, and conducting Native American consultation.

Names and telephone numbers of contacts familiar with the work of the CRS on referenced projects:

Beverly Bastian
California Energy Commission
Biological/Cultural Resources Unit
(916) 654-4840

Dena Parish
Humboldt Bay Generating Station
Office (707) 444-6568
Cell (707) 267-8674

Aaron Fergusson, RPA
Cultural Resource Specialist

Education

M.B.A, Business Administration, University of Phoenix, Las Vegas
M.A., Anthropology with an emphasis in Archaeology, Brigham Young University, Utah
B.A., Anthropology with an emphasis in Archaeology, Brigham Young University, Utah

Professional Registrations

Registered Professional Archaeologist

Distinguishing Qualifications

- Experienced in cultural resource management and National Historic Preservation Act (NHPA) consultation
- Experienced in NEPA analyses
- Meets Secretary of Interior's Professional Qualification Standards in Archaeology
- Trained CH2M HILL Site Safety Coordinator, certified in First Aid and CPR

Relevant Experience

Mr. Fergusson offers a well-rounded background in project management, cultural resource management and NHPA consultation, and NEPA analyses. Mr. Fergusson has lead or conducted dozens of large cultural resource investigations including literature reviews, pedestrian inventories, testing, and excavation in 12 western states. When requested by federal agencies, Mr. Fergusson has assisted in Native American consultations and coordination. Mr. Fergusson specializes in large scale, complex projects that require sensitive consultations between stakeholders, hiring and coordinating staff, conducting complex level Section 106 and NEPA analyses, and supervising sub-contractors.

Representative Projects

Task Manager, Rice Solar Energy Project, SolarReserve, San Bernardino County, CA. Conducted an intensive pedestrian cultural resources survey for a 3,324 acre block to be utilized as a solar energy generation plant in support of a California Energy Commission Application for Certification. The project was located on the abandoned WWII Rice Army Airfield, a significant historic resource in CA. Tasks included staffing the project, including reviewing resumes and hiring new staff, conducting agency consultation and coordination for permits, making all logistical arrangements, conducting a literature review, leading a crew in the pedestrian survey, hiring a sub-contractor with expertise in historic military installations, authoring the final report including making NRHP recommendations.

Task Manager, National Environmental Observation Network, National Science Foundation, Arizona, Colorado, North Dakota, Oregon, Texas, Utah, and Wyoming. Conducted and coordinated a literature review of known cultural resources and reviewed

reports for the NEON facilities located across the U.S. Responsible for reviewing the records, writing a summary report making recommendation for further investigation, and contributed to the Environmental Assessment for each of the NEON domains.

CBP Southern Border Patrol Expansion, U.S. Customs and Border Patrol, New Mexico and Texas. Lead the cultural resource investigations for proposed expansions at 12 Border Patrol Stations in Texas and New Mexico. Responsible for conducting literature review, reviewing historic maps, conducting field cultural resources assessments, authoring the report submitted to SHPO and the cultural resources section of the Environmental Assessment.

Task Manager, Saguaro to North Loop Transmission Line, Tucson Electric Power, Pima and Pinal Counties, AZ. Lead a cultural resources investigation including file search, pedestrian survey, and reporting for a 13 mile transmission line upgrade through a large Hohokam Platform Mound complex. Revisited and documented cultural resources affected by the proposed transmission lined and authored final inventory report with recommendations for developing a monitoring and mitigation plan.

Task Manager, Milford Wind Generation Project, FirstWind, Millard and Beaver Counties, UT. Served as the task lead to oversee the subcontractors hired to conduct pedestrian inventories of over 5,000 acres for a proposed wind generation site and a 90+ mile transmission line. Worked with BLM in development of a project specific Programmatic Agreement. Prepared the cultural resources sections of the associated Environmental Assessment.

Task Manager, Blundell 3 Geothermal Project, PacifiCorp and Rocky Mountain Power, Beaver County, UT. Served as the task lead to conduct pedestrian inventories of 10 five acre well pad locations, access roads, pipelines, and a 26 mile transmission line. Recorded sites and worked with BLM on evaluating significant cultural resources associated with a prehistoric lithic quarry. Prepared the cultural resources sections of the associated Environmental Assessment.

Task Manager, Dave Johnston Power Plant, PacifiCorp, Converse County, WY. Served as the cultural resources task manager to conduct pedestrian cultural resources survey of proposed modifications at the historic Dave Johnston Power Plant. Prepared the technical report which was submitted to the Wyoming SHPO.

Field Supervisor, Ivanpah Solar Energy Project, Bright Source Energy, San Bernardino County, California. Cultural resources lead for field surveys of more than 4,000 acres for a proposed 400-MW solar generation facility. Selected and supervised field personnel, oversaw conditions of permits, coordinated the logistics, and contributed to reporting to state and federal agencies.

In-House Consultant, Natural Resource Group. Consultant to a company specializing in the permitting and licensing of energy-related pipelines and facilities. Supervised the progress of field crews, reviewed technical reports, and conducted Native American consultations for pipelines across the country.

Project Manager, Kern River Expansion Project, Kern River Gas Transmission Company, Utah. Managed the Kern River cultural resources mitigation project in Utah. Kern River Gas

Transmission Company needed to loop an existing natural gas line with a new 36-inch natural gas pipeline to fuel new power plants in California. The pipeline began in Wyoming and stretched nearly 700 miles to California, crossing Utah and Nevada. Utah contained more than 160 significant archaeological sites that required mitigation. Mr. Fergusson successfully negotiated a multi-million dollar budget, carried out the fieldwork on time and under budget, and supervised the lab work and report production. Elements of the mitigation included excavation, construction monitoring, reconnaissance inventory of new work areas, synthesis reports, popular reports for public distribution, specialized archaeological analyses of artifacts, and technical reports and presentations.

Task Manager, Resource Management Plan/EIS, Kanab Field Office, Bureau of Land Management, Utah. Developed the cultural resources section of the Analysis of the Management Situation for the RMP/EIS. Conducted a file search with the Utah State Historic Preservation Office and summarized and integrated the results of a literature review for the document.

Task Manager, Comprehensive Conservation Plan/EIS, Desert National Wildlife Refuge Complex, U.S. Fish and Wildlife Service; Las Vegas, Nevada. Cultural resources technical lead for the preparation of a cultural resources overview and synthesis of the known archaeological data for the 1.5-million-acre complex. Reviewed the existing archaeological data, identified archaeological and historic themes common on the complex, made management recommendations regarding the needs for future data gathering, and created a context for the evaluation of future cultural resources on the complex. Assisted with the Native American consultation that included the 17 tribes that make up the Consolidated Group of Tribal Organizations in southern Nevada.

Names and telephone numbers of contacts familiar with the work of the CRS on referenced projects:

Andrea Grenier
Grenier & Associates, Inc
1420 E. Roseville Parkway, Suite 140-377
Roseville, CA 95661
Office: (916) 780-1171

George E. Kline
Archaeologist M.A., R.P.A.
BLM Renewable Energy Coordinating Office
1201 Bird Center Drive, Palm Springs, CA 92262
(760) 833-7135 (Office)

PHILLIP GRANT REID M.A.
Archaeologist and Osteologist
Home 925-370-2709
Cell 510-673-0909

EDUCATION

San Francisco State University, M.A., Anthropology, 2010

San Francisco State University, B.A., Anthropology, 2001

TRAINING

HAZWOPER Hazardous Waste Operations and Emergency Response Training (40-hour class)

OSHA 10 hour construction Safety Training

PROFESSIONAL EXPERIENCE

Mr. Reid is an archaeologist with over ten years experience in cultural resource management with a specialization in human osteology and the archaeology of the built environment. Mr. Reid has served as a field director, a construction monitor, and participated in numerous surveys, the recording of historic and prehistoric archaeological sites, as well as archaeological data collection and analysis. Mr. Reid has successfully interfaced between clients and Native American representatives in order to find solutions to complex cultural resource issues, developed and implemented cultural resource management plans, and has contributed to numerous reports for NHPA Section 106, NAGPRA and CEQA compliance.

CURRENT POSITION

2006 - Present	Staff Archaeologist and Osteologist Garcia and Associates (GANDA)	San Anselmo, CA

SELECTED EXPERIENCE

PG&E Colusa Generating Station, Maxwell California **2008-2010**

Cultural Resources Monitor (CRM) and report author. Monitored excavations in areas of intact native soils with the potential for cultural deposits, including construction within the CGS project site and associated off-site transmission, and natural gas lines as well as the Teresa Creek bridge replacement. Cultural resource finds to the California Energy Commission (CEC), who was the lead agency for the project.

Port Petrol Marine Terminal Facility at Vandenberg AFB, **2009**
Santa Barbara County, CA.

Completed field survey, mapping of existing historic resources and contributed to a Cultural Resources Condition Assessment for the Port Petrol Marine Terminal Facility at Vandenberg AFB as part of Vandenberg AFB Section 106 compliance program.

PG&E Gateway Generating Station, Antioch California **2007-2009**

Cultural Resources Monitor (CRM) and report author. Monitored excavations in areas of intact native soils with the potential for cultural deposits, including construction within the GGS project site as well as associated off-site transmission, natural gas and sewer lines. Cultural resource finds to the California Energy Commission (CEC), who was the lead agency for the project.

PG&E Kilarc-Cow Hydroelectric decommissioning project, Shasta County, California **2008**

Survey, site recording, and report preparation to comply with Section 106 and FERC regulations for the decommissioning of the Kilarc-Cow Creek Hydroelectric facility in Shasta County, California.

Archaeological monitoring and testing for the Owens Lake Dust Control Project, Inyo County, California. **2008-2010**

Field director, monitor, and report author. Tasks included an update of the records search, Native American consultation, onsite field monitoring and archaeological site testing and evaluation for new cultural resources discovered during monitoring to comply with CEQA and Section 106 regulations.

SELECTED AUTHORED AND CO-AUTHORED REPORTS

Owens Lake Dust Mitigation, Phase 7Cultural Resources Monitoring and Mitigation Report 2008-2010. Prepared for the Los Angeles Department of Water and Power Prepared for the Los Angeles Department of Water and Power Environmental Services, 111 North Hope Street, Room 1044 Los Angeles, California 90012. May 2010.

Report on Cultural Resources for the LADWP 1600 AF Project, Inyo County, California. Prepared for the Los Angeles Department of Water and Power Environmental Services, 111 North Hope Street, Room 1044 Los Angeles, California 90012. December 2009.

Final Monitoring Report Years 2008 and 2009 PG&E Colusa Generation Station, Colusa, CA. November, 2009

Archaeological Evaluation and Testing OL-2009-2 for Phase 7 of the Owens Lake Dust Mitigation Program, Inyo County, California. Prepared for KDG. July, 2009

Cultural Resources Survey Report for the Port Petrol Marine Terminal Facility at Vandenberg AFB, Santa Barbara County, CA. April 2009.

Cultural Resource Management Plan (CRMMP) for the PG&E Colusa Generating Station in Maxwell, Colusa County, California. Prepared for CH2MHill. February, 2008

Final Monitoring Report Years 2007 and 2008 PG&E Gateway Generation Station, Antioch, CA. February 2009.

Fort Bragg IARAP - ARCADIS Archaeological Monitoring Report- Field Year 2008 For The Georgia-Pacific Corporation Wood Products Manufacturing Facility Closure Project Fort Bragg, Mendocino County, California Prepared For: Arcadis140 2nd Street, Suite 200, Petaluma, California 94952. February 2009.

Cultural Resources Inventory and Evaluation for the Kilarc-Cow Creek Hydroelectric Decommissioning Project, FERC No. 606, Shasta County, California. Submitted to CH2MHill and PG&E, May 2008.

Balch Camp – Oak Flat Water and Sewer Line Replacement Project, Fresno County, CA. December 2007.

Letter Report RE: Cultural Resource Constraints Analysis for the Proposed Area 6 SCADA Project: Colgate #27. Report prepared for PG and E. May, 2007.

Letter Report RE: Cultural Resource Constraints Analysis for the Proposed Area 6 SCADA Project: Smartville #17, #19, #27, and #29. Report prepared for PG and E. May, 2007.

Letter Report RE: Cultural Resource Constraints Analysis for the Proposed Area 6 SCADA Project: Elizabethtown # 61 and #71. Report prepared for PG and E. May, 2007.

Letter Report RE: Cultural Resource Constraints Analysis for the Proposed Area 6 SCADA Project: Summit. Report prepared for PG and E. May, 2007.

OTHER RELEVANT EXPERIENCE

Archaeological Technician 2005-2006
Holman and Associates , San Francisco CA
Completed surveys and excavations for Phase I through III for various projects in California. Monitoring and excavating human remains for various projects in California. Test excavations at the Levi-Strauss building in San Francisco in preparation for earthquake retrofitting.

Field Archaeologist, Crew Chief 2006
Pacific Legacy Inc., Cameron Park CA
Crew Chief, duties included directing monitoring, burial excavation, interfacing with Native American representatives and construction managers at CA-CCO-1 in Bethel Island, California.

Research Assistant 2004-2007
Mission Dolores Museum San Francisco, CA
Assisted curator with research and creating new exhibits at Mission Dolores, San Francisco, California.

Research Assistant 2002-2005
NAGPRA Program, San Francisco State University, San Francisco CA
Cataloging of materials, collection management, and student instruction for a variety of projects, including the catalog of the Buchanan Reservoir for the Army Corps of Engineers.

Archaeological Technician/Consultant 2001-2004
Basin Research Associates, San Leandro CA
Completed excavations at the Asian Art Museum of San Francisco (CA-SFR-126/H) during which a mid to late 19th century cemetery was excavated, including human burials and associated artifacts during seismic retrofit. Also monitored construction activities at the San Jose City Hall project in San Jose California; duties included recording and excavating several privy columns including various types of historic artifacts.

Field Archaeologist 2002
URS Corp., Chico CA
UIFR Survey in Ely, Nevada for the Bureau of Land Management. Recorded several late 19th and early 20th century mining camps and homesteads in addition to prehistoric sites. Artifact types include household, toys, food preparation and storage and were analyzed on site.

Field Archaeologist 2002
TRC Corp., Albuquerque NM
Participated in survey and recording archaeological sites and isolates for the Bureau of Land Management and the Fort Irwin Archaeological Survey.

Monitor/Lecturer 1999-2005
Ohlone Indian Tribe, Fremont CA
Frequently employed as a monitor for various construction projects in the San Francisco Bay Area and lecturer for school children from 3rd grade to college level students.

Staff Archaeologist 1998-2004
Archaeor, Fremont CA
Completed surveys and excavations for Phase I through III for various projects in California, including CA-ALA-1/H in Fremont. Excavated and analyzed artifacts from a mission period dormitory foundation. Artifact types include luxury and religious items, tools, food preparation and storage. Also monitored the renovations of an early 20th century cannery and late 18th century winery at Plant 51 in San Jose.

ADDITIONAL EXPERIENCE
1997-1999 Archaeological Field School, Ohlone College at Mission San Jose in Fremont, CA.
Supervisor: George Rogers

MEMBERSHIPS
2005-2009 Member of the Mission Dolores Scholars Group, Mission Dolores, San Francisco, CA

PRESENTATIONS
Society for California Archaeology, Northern CA Data Sharing Meeting, October 22nd 2005, San Francisco State University. Topic: The Archaeology of CA-ALA-343.

REFERENCES

Christopher Canzonieri, M.A. Physical Anthropologist & Archaeologist
Basin Research Associates
1933 Davis Street, Suite 210
San Leandro, CA 94577
510.430.8441 ext. 207
510.220.1822 field cell

Andrew Galvan, Tribal Consultant and Curator at Mission Dolores, San Francisco, CA.
PO Box 3152
Mission San Jose, CA 94539
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510.656.0787 Office

Richard Thompson, Archaeologist
Archaeor
PO Box 3388
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510.882.3507
510.687.9292

Carole Denardo, Project Manager, Archaeologist and Architectural Historian
Garcia and Associates
1 Saunders Ave
San Anselmo, CA 94960
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415.458.5803

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San Leandro, CA 94577
510.430.8441 ext. 207
925.200.5422

Sonia Renee Sifuentes
14349 Figwood Drive, Fontana, CA 92337
909-730-8829
ssifuent83@sbcglobal.net

EDUCATION

University of Southern California, Los Angeles, CA
B.A. in Anthropology **2006**
Minors: Gender Studies, News Media and Society
GPA:3.21/4.00

University of Otago, Dunedin, New Zealand **Spring 2005**
Study abroad

Belize Valley Archaeological Reconnaissance Project (BVAR), Caves Branch Valley, Belize **July-Aug 2007**
Student Archaeologist
Project/field school where students learned settlement pattern survey, excavation procedures, data recording and analysis, and laboratory skills. Duties included learning to excavate, map, and identify human skeletal remains in the field as well as basic techniques in osteological analysis in the lab including identification of sex, age, pathologies, and trauma. Also trained in a range of laboratory methods, including artifact sorting, cataloguing, learning basics of ceramic identification and classification.
Field Directors: Gabriel Wrobel and Dr. Jamie Awe

HONORS

- USC College of Letters, Art and Sciences Dean's List **Spring 2006**
- USC Trojan Marching Band Grant **2005**
- Mexican American Alumni Association Scholarship **2002-2004**

WORK HISTORY

SWCA Environmental Consultants, Spokane, WA **Oct 2009-**
Cultural Resource Specialist **Present**
Cataloging historical artifacts from the US 95 Sandpoint Archaeological Artifact Analysis & Data Reporting Project. Writing brief reports on individual artifacts and classes of artifacts.

Cogstone Resource Management, Inc., Orange, CA **Dec 2008-**
Archaeological Technician/Monitor **Sept 2009**
Monitored construction activities on Southern California Edison's Tehachapi Renewable Transmission Project Segments 1-3A.

Alpine Archaeological Consultants, Inc., Montrose, CO **Sept 2008-**
Archaeological Technician **Nov 2008**
Conducted Phase I survey on TransCanada Pathfinder project in northwestern Colorado and southwestern Wyoming. Participated in Phase III data recovery on OneOk project in northwestern Colorado.

Office of the State Archaeologist, University of Iowa, Iowa City, IO **July 2008-**
Aug 2008
Archaeological Technician
Worked on Phase III data recovery on Rockies Express Pipeline project in Louisiana, MO.

Passport In Time, Los Angeles National Forest, CA **May 2008**
Volunteer Archaeologist
Set up and excavated units in the Chilao Flats camp area.

Stantec, Irvine, CA **Oct 2007-Nov 2007**
Archaeological Technician
Participated in Phase III data recovery stage of excavation in Irvine, CA.

CRM Tech, Colton, CA **Aug 2007**
Field Crew Member
Worked on final stage of Phase III data recovery on a historic-period Cahuilla village of *Tuikiktum Hemki* near Indio, CA.

Belize Valley Archaeological Reconnaissance Project (BVAR), Caves Branch Valley, Belize **July2007-Aug 2007**
Student Archaeologist
Learned archaeological techniques in the field.

Mt. Lowe Archaeological Project, Los Angeles National Forest, CA **June 2006-July 2006**
Volunteer Archaeologist
Participated in then-PhD candidate Stacey Camp's thesis project concerning material remnants of the railway worker's camp at the Mount Lowe Resort and Railway, a popular tourist site in late 19th and early 20th century America. Duties included small area surveys, excavation set up and artifact cleaning. Also contributed to the "Girl Scout and Boy Scout Career Day" by discussing various aspect of the project with participants and teaching the scouts how to excavate and screen for artifacts.

Mission Inn Museum, Riverside, CA **Sept 2001-June 2002**
Volunteer
Worked alongside other volunteers and the Collections Manager to update the Museum's stored collection. Duties included cataloging, retagging, bar-coding, photographing, preparing the information of artifacts to be entered into the Museum's ARGUS database.

SKILLS

Laboratory work

- Cleaning and sorting metal, glass, ceramic and other artifact types into descriptive and functional categories
- Researching composition, identification, function and date range for historical artifacts
- Entering artifact data into databases
- Querying database and exporting data to Microsoft Excel for analysis
- Digital photography of artifacts

Field work

- Surveying using maps and compass
- Operating GPS, including Trimble
- Recording sites on site forms, including California DPR 523 forms
- Setting up excavation units
- Excavating units in either arbitrary or stratigraphic levels
- Dry and wet screen process
- Drawing wall profiles and sketch site maps
- Monitoring construction

Other

- Typing: 51 wpm
- Microsoft Office 2007

- Leadership (Co-captain of Silks section Spring 2005 to Fall 2005; Camp Counselor Easter Seals Central California Camp Harmon; Substitute Teacher)

PRESENTATIONS AND PAPERS

"Pressed Clothes or Pressed Glass? A Preliminary Examination of Press-Molded Glass at a Chinese Laundry"

Presentation at the 63rd Northwest Anthropology Conference in Ellensburg, WA 2010

LANGUAGES

- English – native language

MEMBERSHIPS

- Idaho Archaeological Society

INTEREST

My professional interests include prehistoric and historical archaeology, public archaeology and archaeology and the media.

REFERENCES

Mark Warner
Associate Professor
Department of Sociology, Anthropology
& Justice Studies
University of Idaho, Moscow
Email:mwarner@uidaho.edu
Phone: (206) 790-3090

Stacey Lynn Camp
Assistant Professor
Department of Sociology, Anthropology
& Justice Studies
University of Idaho, Moscow
Email: scamp@uidaho.edu
Phone: (208) 885-6736

David Morrill
Field Director
Cogstone Resource Management, Inc.
1518 West Taft Ave
Orange, CA 92685
Email: backdirt@hotmail.com

DANIEL G. EWERS

EXPERTISE

Archaeological Excavation, , Site Evaluation, Survey
Archaeological Assessment
Archaeological Construction Compliance Monitoring
GPS, Photography
Native American Consultation
Paleontological Assessment
Paleontological Monitoring
Paleontological Field Preparation
Technical Report Writing

EDUCATION

California State University, Fullerton, MA, Department of Anthropology (Archaeology) 2008
California State University, Fullerton, BA, Department of Anthropology (Archaeology) 2003.

THESIS

PECKED AND SCRAPED: ROCK ART AND ETHNIC/CULTURAL IDENTIFICATION OF PIUTE SPRING AND THE SURROUNDING AREA

ACCREDITATIONS

Register of Professional Archaeologists (RPA)

MEMBERSHIPS

American Rock Art Research Association (ARARA)
Lambda Alpha Honor Society—Lifetime membership
Pacific Coast Archaeological Society
Society for California Archaeology

PROFESSIONAL CERTIFICATIONS AND TRAINING

Basic First Aid--current

Adult-Child-Infant 2 Rescuer Cardiopulmonary Resuscitation--current

OSHA 40-Hour HAZWOPER [29 CFR 1910.120(e)(q)] --current

24-Hour First Responder Training [Cal OSHA 8 CCR 5192(e)(q)] --current

Riverside County Cultural Sensitivity Training Program (2009).

Storm Water Pollution Prevention Program, Building Industry Association of Southern California. 2002

PROFESSIONAL EXPERIENCE

Present. Cultural Resources Specialist. CH2M HILL, Santa Ana office, California.

November 2004-June 2009. Archaeologist, LSA Associates, Inc., (LSA) Irvine, California.

2002–2004. Crew Chief at The Keith Companies, Inc. (TKC). Responsible for all phases of archaeological fieldwork including Phase I reconnaissance and intensive surveys, Phase II test evaluation, and Phase III data recovery excavation. Additional duties include writing of field methods, procedure, and archaeological and historical site records, and archaeological site mapping. Assisted with removal of paleontological specimens from locations in Orange County and also monitored Orange County construction sites for paleontological specimens.

1999-2002. The Keith Companies, Inc. (TKC). Assisted with systematic excavation of archaeological sites. Duties included excavation, labeling and transporting archaeological data, and washing unit matrices. Also responsible for boxing and labeling of washed materials and preparation for laboratory analysis. Other duties included sorting archaeological matrices for cultural materials and identification of cultural artifacts, tagging and labeling cultural materials.

PRINCIPAL PROFESSIONAL RESPONSIBILITIES

Mr. Ewers is primarily responsible for research, field surveys, monitoring, and excavating of archaeological and paleontological resources. He prepares and conducts archival record searches at State Archaeological Information Centers. He also conducts laboratory procedures including sorting, analysis, and cataloguing of both artifacts and ecofacts collected from archaeological sites. Finally, he is responsible for preparation of archaeological and paleontological reports. Mr. Ewers has mapped archaeological sites using a Trimble GPS unit with TerraSync™ software.

RELEVANT PROJECT EXPERIENCE

Ceramic analysis of western Mexico pottery from a pre-Columbian site in Canton, Jalisco, Mexico

Rock Art Study in the Mojave National Preserve, San Bernardino County, California

Ground stone study of CA-ORA-1587

Construction Compliance Monitoring

Site 3O remediation monitoring of lead impacted soils on Camp Pendleton, San Diego County, California

Cultural resource monitoring for repair of broken communication lines at sites CA-SDI-10728, SDI-102731, and SDI-812/H near the Las Flores adobe on Camp Pendleton, San Diego County, California

Southern Orange County Transportation Infrastructure Improvement Project, Geotech Boring Monitoring, Orange and San Diego Counties.

Laguna Canyon CA-ORA-1055 monitoring Laguna Beach, California

McSweeny Farms, Testing and Phase 1 Monitoring, Hemet California.

Monitored construction grading at Planning Area 8A, Irvine California.

Construction Monitoring of Planning area 22 Shady Canyon Irvine California

Cultural Resource Surveys

Rice Air Field Solar Project CH2M Hill Cultural Resources Supervisor Arron Fergusson

Tehachipi Solar Project CH2M Hill Cultural Resources Supervisor Clint Helton

EME PV/26 Grey Butte Solar Energy project CH2M Hill Cultural Resources Supervisor Clint Helton

Southern Orange County Transportation Infrastructure Improvement Project, Archaeological Phase II testing Orange County

Mid County Parkway Extended Phase 1 testing excavation. Riverside California

Mid County Parkway Phase 2 testing excavation. Riverside California

Oak Valley San Gorgonio Pass California Archaeologist brush clearing monitor for geophysical study. San Bernardino and Riverside Counties.

Mesquite Regional Landfill (MRL) Project, located in Imperial County, California. Surveying and recording of prehistoric and historic sites on 2,500 acres administered by Bureau of Land Management

Fagan Canyon Ventura County California: Archaeologist in the excavation and trenching of two prehistoric sites.

Oak Valley San Gorgonio Pass California Archaeologist for the survey portion of the project.

Mid County Parkway Survey Riverside County, California

Mid County Parkway, Riverside California: Crew Chief and field crew on the Mid County Parkway Survey.

Cultural Resource Assessment Nuevo 57 in the Community of Nuevo unincorporated Riverside County, California

Cultural Resource Assessment Perris Marketplace City of Perris, Riverside County California

Cultural Resource Assessment Pine Cove Well Survey for the Pine Cove Water District in the City of Idyllwild, California

Cultural Resource assessment Mount San Jacinto Community College District Southwest Campus-Wildomar Riverside County, California

Cultural Resource Assessment and Archaeological Testing of the Stoneridge Development Project, Moreno Valley, California (LSA Associates, Inc.).

Archaeological Assessment of the San Gorgonio Hydroelectric Decommissioning Project, San Bernardino National Forest, California (LSA Associates, Inc.).

Cultural Resource Assessment of Vista del Valle, Victorville, California (LSA Associates, Inc.).

Cultural Resource Assessment Verbena Gardens in the city of Desert Hot Springs, Riverside County, California

Field crew for nine archaeological sites in Planning Area 17 Irvine, California.

Field crew Phase I and II testing of nine archaeological sites in Planning Area 27 Irvine, California

Phase I testing of archaeological site Ca-ORA-244

Survey Planning Area 39, Irvine, California

Crew Chief Phase II testing of 15 prehistoric sites Planning area 6, Irvine, California.

Cultural Resource Survey Adams Canyon, Santa Paula California

REPORTS

Sole Author

2005 Cultural Resource Assessment Perris Marketplace City of Perris, Riverside County California

2005 Cultural Resource Assessment Pine Cove Well Survey for the Pine Cove Water District in the City of Idyllwild, California

2005 Cultural Resource assessment Mount San Jacinto Community College District Southwest Campus-Wildomar Riverside County, California

Co-Authored Reports

2008 Cultural Resources Assessment Survey for reaches IV-A and IV-B of the Santa Ana Watershed Protection Agency, Santa Ana Regional Interceptor Pipeline. San Bernardino and Riverside Counties

2008 Preliminary Recommendations of Site Eligibility and Level of Effects: South Orange County Infrastructure Improvement Project (SOCTIIP)

2008 Archaeological Monitoring Report: Laguna Canyon Road (SR-133) Widening & Realigning Project Station 112+80 to 175+90, Orange County California

2007 Draft Archaeological Evaluation Proposal South Orange County Transportation Infrastructure Improvement Project (SOCTIPP) Orange and San Diego Counties, California

2007 Paleontological Resources Assessment for Stonefield Chino Hills 37 City of Chino Hills, San Bernardino County, California

2006 Results of Cultural Resources Monitoring for a 23-Acre Inland Empire Utility Agency Parcel, City of Chino Hills, County of San Bernardino, California.

2005 Cultural Resource Assessment Nuevo 57 in the Community of Nuevo unincorporated Riverside County, California

2004 Cultural Resource Assessment Verbena Gardens in the city of Desert Hot Springs, Riverside County, California

As Other Than Primary

2008 Supplemental Cultural Resource Assessment: Oak Valley Substation project

2007 Cultural Resources Survey of an Approximately 12,350-Acre Area outside of the Mid County Parkway Area of Potential Effects Between Corona and San Jacinto

2006 Archaeological Testing Program for the Fagan Canyon Ranch, Santa Paula, Ventura County, California.

2006 Treatment of Cultural Resources: Mesquite Regional Landfill Imperial County, California, LSA Associates, Inc.

2004 Testing and Phase 1 monitoring at Mc Sweeny Farms, Hemet California

2004 Cultural Resource Assessment Summerwind Ranch at Oak Valley, Phase 1, City of Calimesa, Riverside County, California

2004 Archaeological Testing Program Trailmark Specific Plan Assessor's Parcel Numbers 327-150-004 and 327-150-006 Riverside County, California

PAPERS PRESENTED

Santa Catalina Island: Lay of The Land. Presented at the Annual Meeting of the Society of California Archaeology, Burbank, California April 18, 2008

ADDITIONAL INFORMATION:

- Computer Knowledge: WordPerfect, Microsoft Office.
- Technical Training: Trimble Geo XH Handheld and other models using Arc-Pad and Terrain navigator
- Proven leadership and interpersonal communication skills.
- Ability to handle high-pressure situations and deadlines with a dedication to team play.

References

Ivan Strudwick, LSA Associates 20 Executive Park, Irvine, CA 92614 949-337-6101

Clint Helton CH2M Hill 6 Hutton Centre Dr # 700, Santa Ana, CA 714-435-6140

Gloriella Cardenas 626-535-3374

Additional References available upon request

Appendix D
Daily Monitoring Log

Cultural Resources Daily Monitoring Log

_____ Project, Date: _____, Monitor Name:_____
Weather Conditions: _____
Hours on Site Not Worked and Reason: _____
Work Location (Project Component):_____
Work Type (Machine): _____
Depth of Excavation: _____
Observed Native Soils (Stratigraphy):_____
_____
_____
Disturbed/Redeposited Soils: _____
_____
_____
Features: _____
_____
_____
Artifacts (Isolated? Diagnostic? Older than 45 years? Exceptional? Include description, provenience, stratigraphic context.):
_____
_____
_____
_____
_____
_____
Recommendation of Significance of Any Finds?
_____
_____
_____
_____
Actions Taken (Halt/Resume Construction; Identification; Notifications; Recommendations; Photography; Collecting; Sampling), Other Observations:
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Appendix E
Archeological Curation Services Letter from Sonoma State University

SONOMA STATE UNIVERSITY
1801 East Cotati Avenue
Rohnert Park, CA 94928-3609

ANTHROPOLOGICAL STUDIES CENTER
707.664.2381 • fax 707.664.4155
www.sonoma.edu/asc

Nat Lawson
Archaeologist
CH2M HILL
6 Hutton Centre Drive, Suite 700
Santa Ana, CA 92707

February 17, 2011

RE: Archaeological curation services for the Mariposa Energy Project

Dear Ms. Lawson,

This letter confirms that the David A. Fredrickson Archaeological Collections Facility at Sonoma State University is willing to accept archaeological materials collected by CH2M HILL in the course of your work on the Mariposa Energy Project for the California Energy Commission in Alameda County, California.

This offer is subject to the conditions of our standard curation agreement that include, but are not restricted to, the following: payment of a one-time in perpetuity fee, the inclusion of copies of field notes relevant to the collections, the absence of perishable objects (such as fabric or leather), and the absence of any materials subject to the Native American Graves Protection and Repatriation Act.

Please note that the Facility does not fully meet the requirements of 36 CFR 79 as it has no climate control system. The Facility does, however, have an electronic security system, a fire suppression system, and a permanent endowment that receives all fees; the Facility is overseen by a collections manager.

Regards,

Erica Gibson, M.A., RPA
Lab/Collections Manager