5.5 Cultural Resources

5.5.1 Environmental Setting

Information presented in this section was compiled from *Cultural Resources Inventory and Evaluation Report for the Cressey-Gallo 115 kV Power Line Project* (DeBaker and Martin, 2011) and *Cultural Resources Constraints Analysis for Seven Potential Staging Areas and One Power Line Reroute along the Proposed Cressey-Gallo 115 kilovolt (kV) Power Line Project in Merced County, California* (DeBaker, 2012) prepared by Garcia and Associates (GANDA) and *Paleontological Resources Assessment Cressey-Gallo 115 kV Power Line Project, Merced County, California* (Spaulding, 2011) prepared by CH2MHill.

Cultural Resources

Regulatory Context: Defining Historical Resources

The CEQA Statute and Guidelines include procedures for identifying, analyzing, and disclosing potential adverse impacts to historical resources, which include all resources listed in or formally determined eligible for the National Register of Historic Places (NRHP), the California Register of Historic Resources (CRHR), or local registers. CEQA further defines a "historical resource" as a resource that meets any of the following criteria:

- A resource listed in, or determined to be eligible for listing in, the National Register of Historic Places or California Register of Historical Resources.
- A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code, unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- A resource identified as significant (e.g., rated 1-5) in a historical resource survey meeting the requirements of Public Resource Code Section 5024.1(g) (Department of Parks and Recreation [DPR] Form 523), unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the determination is supported by substantial evidence in light of the whole record. Generally, a resource is considered "historically significant" if it meets the criteria for listing on the California Register of Historical Resources (CEQA Guidelines Section 15064.5).

The CRHR is a listing of State of California resources that are significant within the context of California's history, and includes all resources listed in or formally determined eligible for the NRHP. The CRHR is a state-wide program of similar scope to the NRHP. In addition, properties designated under municipal or county ordinances are also eligible for listing in the CRHR. A historic resource must be significant at the local, state, or national level under one or more of the following criteria defined in the California Code of Regulations Title 14, Chapter 11.5, Section 4850:

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

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

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

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

The CRHR criteria are similar to NRHP criteria, and are tied to CEQA, as any resource that meets the above criteria is considered a historical resource under CEQA.

Background

Three kinds of cultural resources, classified by their origins, are considered in this assessment: prehistoric, ethnographic, and historic. Prehistoric archaeological resources are associated with the human occupation and use of California prior to prolonged European contact. In California, the prehistoric period began over 12,000 years ago and extended through the eighteenth century until 1769, when the first Europeans settled in California. Ethnographic resources represent the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. Historic-period resources, both archaeological and architectural, are associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. The following prehistoric, ethnographic, and historical background provides the context for the evaluation of the CRHR eligibility of any identified cultural resources within the study area for this project.

Prehistory

Human populations have occupied the Northern San Joaquin Valley for at least 10,000 years. However, little is known about the prehistory of the region. In part, this is the result of natural processes which have buried or eroded many sites. Human action through agricultural development and levee construction has also played a part in this destruction. The culture-historical chronological sequence for the Northern San Joaquin Valley consists of six periods, based on a general evolutionary sequence hallmarked primarily by different artifact types: Paleo-Indian (11,550 to 8550 cal B.C.), Lower Archaic (8550 to 5550 cal B.C.), Middle Archaic (5550 to 550 cal B.C), Upper Archaic (550 cal B.C to cal A.D. 1100), and Emergent Period (cal A.D. 1000 to Historic).

While there have been no recorded prehistoric sites within the Study Area or the construction corridor, archaeological investigations along the Merced River have revealed numerous prehistoric occupation sites from all time periods. These sites, and others throughout the Central Valley, suggest alternating settlement by prehistoric groups from both the valley and adjacent coast ranges.

Ethnography

The project area would have likely included the territories of *Coconoon* people, a presumed group of Northern Valley Yokuts who resided along the Merced River and whom were first chronicled by early Spanish explorers. Additional biographical accounts mention the *Nopchinichi* group, who are said to have resided between the mouth of the Merced River down to modern day Mendota, and the *Laki-samni*, a tribe believed to have held territory around the City of Manteca. By the early nineteenth century, the Northern Yokuts had established themselves throughout the valley region, with particularly dense settlements along the east bank of the San Joaquin and its main tributaries. The first Spanish explorers described these village settlements as prosperous and well-populated.

History

The historic period of the northern San Joaquin valley can be broken into three periods: the Spanish Period (1769-1821), the Mexican Period (1821-1848), and the American Period (1848-present). Because the aridity of much of the San Joaquin Valley made it unsuitable for the kind of agriculture Euro-Americans practiced, non-Native American settlement did not occur on any significant scale in the project area until the late nineteenth century, when irrigation systems were developed.

All resources located within the Study Area were historic-period resources. Resource types include canal and railroad segments, buildings, land parcels, and historic artifact scatters. These resources are associated with four main historic themes: the early American settlement of Merced County (1848-1870s), the development of Merced Irrigation District (1860s to present), the history of the Yamato Colony (1906 to 1940s), and the growth of Merced County (1940s to present).

Early American Settlement of Merced County (1848-1870s)

American settlers began arriving in San Joaquin Valley after Mexico ceded California and other borderland territories to the United States in 1848. They were attracted to the valley's rich agricultural land located along streams and rivers, such as the Merced River, just north of the project area. Ranching dominated the local economy in the 1850s and 1860s, and large ranches carved up the majority of its territory. The ranchers raised livestock to supply fresh meat and other products to the state's rapidly rising population.

Development of Merced Irrigation District (1860s to present)

The valley's arid climate provided an unreliable source of water and influenced the development of its economy and infrastructure. Land barons constructed the first large-scale irrigation systems to water pastures on their land in the 1860s and 1870s. The rise of irrigated farming also spurred the formation of organizations with the financial and political clout to construct large-scale irrigation systems.

Encompassing the project area, the Merced Irrigation District initially began in the 1870s, when Robla Canal Company diverted water from the Merced River to the company's land holdings. It currently maintains a complex water system comprised of the New Exchequer Dam (rebuilt in 1967), McSwain Dam, reservoirs, ditches, canals, laterals, wells, pumping plants, and hydroelectric facilities. Five canals or laterals owned by Merced Irrigation District are located within the project area, including Lehner Lateral, Curtner Lateral, Wakefield Canal, Cressey Lateral, and King Lateral.

History of Yamato Colony (1906 to 1940s)

The growth of irrigated farming and the arrival of the railroad in San Joaquin Valley also led to the formation of land colonies, which bought large tracts of land between the 1890s and 1920s, and then sold 20-acre parcels to farmers. The colonies were speculative land ventures rather than utopian or religious communities, and the colonies' organizers made money through land and water rights sales. A segment of the Study Area extends through the Yamato Colony, which is regarded as one of the most important examples of ethnic agricultural cooperatives in California. It was one of three colonies formed by Japanese immigrants in the Central Valley in the early twentieth century, and its history has been extensively documented. No extant buildings associated with the Yamato Colony are within the Study Area.

Growth of Merced County (1940s to present)

Following World War II, rural Merced County continued to grow and change in response to evolving transportation networks and agricultural practices. SR-99, which runs northwest-southeast through the Study

Area, was expanded from a two-lane road to a four-lane, divided highway in 1949. The expanded highway allowed residents to travel more quickly to urban areas for work. As a result, people increasingly moved to the area, because they could live farther from their offices and purchase cheaper housing. In conjunction with an increase in suburban-style residential development, farms began to be consolidated, and the number of families engaged in farming decreased.

Methods and Results

The project area is defined as the area within one-quarter mile on either side of the approximately 14.4-mile proposed power line route, the Cressey and Gallo Substations. It encompasses the approximately 0.8-mile shoo-fly and seven potential staging areas (see Figures 4-3a through 4-3h). A record search and archival research was conducted for these areas, providing an interpretive context for the results of the pedestrian survey. A pedestrian survey was conducted for the area of direct impacts which consists of a 120-foot-wide corridor along the power line route and the two substations. The project area encompasses the area of direct impacts. The results of these studies are summarized below, but a detailed discussion can be found in *Cultural Resources Inventory and Evaluation Report for the Cressey-Gallo 115 kV Power Line Project* (DeBaker and Martin, 2011) and *Cultural Resources Constraints Analysis for Seven Potential Staging Areas and One Power Line Reroute along the Proposed Cressey-Gallo 115 kilovolt (kV) Power Line Project in Merced County, California* (DeBaker, 2012) prepared by Garcia and Associates (GANDA).

Record Search and Archival Research

A records search was conducted by research staff at the Central California Information Center (CCIC) of the California Historical Resources Information System (CHRIS) at California State University, Stanislaus on January 4, 2011 and again on October 11, 2012. In addition, archival research was conducted Merced Irrigation District's main office in Merced to verify that it owns and maintains the newly recorded canals and laterals within the construction corridor. The results of the records search indicate that 17 previous cultural resources investigations have been completed within the project area, eight of which include the area of direct impacts. These studies resulted in the identification of 11 previously recorded cultural resources within the project area as well as numerous unrecorded segments of existing canals. Known cultural resources consisted of historic resource types such as canals, railroads, buildings, land parcels, and ranch complexes. The records search did not result in the identification of any prehistoric archaeological sites within the project area.

Pedestrian Survey

An intensive pedestrian survey for archaeological and built-environment resources was conducted within the area of direct impacts in May 2011. The survey was completed by walking two parallel, 60-foot (18.3-meter)-wide transects on either side of the approximately 14.4-mile proposed route. Some areas could not be surveyed due to landowner restrictions, fumigated fields, or dense agricultural vegetation. These areas were noted during the pedestrian survey, and their locations digitized into GIS. Portions of the proposed shoo-fly, pull and tension sites, new access roads, and the seven staging areas have not been surveyed as of early February 2013.

Results

Resource types within the area of direct impacts include canal and railroad segments, buildings, land parcels, and historic artifact scatters. A total of 23 resources were identified within the area of direct impacts including 14 sites, four isolates, and five segments of a historic irrigation district. Formal determinations of eligibility for the NRHP and the CRHR have not been made for 12 of these resources,

therefore they must be considered historical resources under CEQA. Eleven of these resources have been determined ineligible for the NRHP and the CRHR and are therefore not considered historical resources under CEQA. GANDA consulted with PG&E to determine that the existing Cressey and Gallo Substations are modern (i.e., less than 45 years old), and therefore are not considered historic-period resources. No previously documented or newly identified prehistoric resources are located within the area of direct impacts. All resources identified in the area of direct impacts, regardless of whether they are considered historical resources under CEQA, are described below. The five segments of the historic irrigation district, however, are described together.

1. **The proposed Merced Irrigation District Historic District (P-24-001909)** is comprised of dams, reservoirs, hydroelectric facilities, ditches, canals, laterals, wells, and pumping plants. This resource was recommended eligible for the NRHP and CRHR as a historic district. Segments of five canals or laterals which are contributing elements to the Merced Irrigation District are located within the project area, including Lehner Lateral, Curtner Lateral, Wakefield Canal, Cressey Lateral, and King Lateral. Although all seven proposed staging areas and the proposed shoo-fly route are located within the boundaries of the historic district none of the contributing canals or laterals are in their vicinity. The eligibility of these segments has not been evaluated, but for the purposes of this analysis they are assumed to be eligible.

2. **Arena Canal (P-24-000093)** is an historic irrigation canal. Two 120-foot-long segments of the canal were observed. The Magnolia Avenue segment is notable for being unlined on the south side of the road. The Liberty/Arena segment of the canal is concrete lined and associated with a two-lane bridge, at least two submerged slide gates, and a large, modern pump/intake/screen system at the west end. This resource was determined to be ineligible for the NRHP and the CRHR.

3. **McCoy Lateral (P-24-001911/CA-MER 471H)** consists of a 15-foot-wide by 6-foot-deep, concrete-lined irrigation canal lateral with a 7-foot-wide dirt shoulder on either side. It is located adjacent to proposed Staging Area 003. This resource was recommended eligible for the NRHP and CRHR as a contributing element of the proposed Merced Irrigation District Historic District.

4. **P-24-000492** is an approximately 10-acre residential property containing a house, cabin, garage, and barn located at 5490 Sultana Drive in the City of Livingston. This resource was determined ineligible for the NRHP and CRHR.

5. **Southern Pacific San Joaquin Valley Mainline (P-24-000097)** consists of an actively used railroad track. During the current survey work a previously unevaluated, 125-foot-long stretch of track was recorded. This resource was determined ineligible for the NRHP and CRHR.

6. **P-24-000491** is no longer in existence. It consisted of two commercial buildings that once comprised the La Fuentes Market and Restaurant. The two buildings dated to approximately 1940, and were simple barn-type structures with wood false fronts. A pull and tension site is proposed for this location. This resource was determined ineligible for the NRHP and CRHR.

7. **P-24-001667** consists of the residence at 10480 Liberty Avenue which includes a house, shed, and animal pen. It is located adjacent to proposed Staging Area 007. This resource was determined ineligible for the NRHP and CRHR.

8. **P-24-001666** consists of an approximately 10-acre residential property containing a house and garage at 5771 Arena Way in the City of Livingston. This resource was determined ineligible for the NRHP and CRHR.

9. **Livingston Canal (P-24-0000552)** is an historic irrigation canal. It has well maintained, earthen lined berms, with occasional sections of concrete, and carrying 10- to 12-foot-wide maintenance roads. During the survey for this project, a previously unrecorded 100-foot-long, segment of the canal was observed southwest of the community of Cressey. At this location it is approximately 40 feet wide, and its berms are substantial, steep-walled, unlined (earthen), and support service roads on either side. It is located adjacent to the proposed shoo-fly route and a proposed new orchard dirt access road. This resource was determined ineligible for the NRHP and CRHR, with concurrence from SHPO.

10. **Yamato Colony (P-24-000697 and CG-9H)** is a historic farming community established by Japanese immigrants in 1906. It encompasses approximately 3,000 acres of open land east of the City of Livingston, in Merced County, California. It originally was divided into individually owned 40-acre lots, each including a house with gardens, in addition to agricultural fields. There are no extant buildings or structures located within the portion of the Yamato Colony that crosses the area of direct impacts or the proposed shoo-fly route, the proposed new orchard dirt access road, and the multiple proposed pull and tension sites. This resource is recommended eligible for the CRHR.

11. **P-24-001881** consists of a 16-mile segment of railroad tracks, located between the community of La Grand and the City of Merced. The railway is a single gauge track, laid on a raised bed of earth and crushed rock ballast. During the survey for this project, a previously unrecorded 175-foot-long stretch of actively used railroad track was noted near the community of Cressey. This resource has not been evaluated, but for the purposes of this analysis they are assumed to be eligible.

12. **GANDA CG-1H** is a sparse and diffuse scatter of domestic debris dating to the 1950s and 1960s along an unpaved road shoulder and established vineyard. This resource is recommended ineligible for the CRHR.

13. **GANDA CG-2H** is a diffuse scatter of historic glass and ceramic fragments embedded in the actively used dirt driveways of an occupied house located immediately adjacent to proposed Staging Area 005. The residence (outside the project area) is a ranch-style house appearing to date to the 1950s or 1960s. This resource is recommended ineligible for the CRHR.

14. **GANDA CG-3H** is a historic isolate in a in a highly disturbed agricultural setting located adjacent to a proposed pull and tension site. Isolated artifacts are not eligible for the CRHR.

15. **GANDA-CG-4H** is a relatively sparse and diffuse scatter of historic debris located in actively cultivated farmland. Aerial photos indicate a close proximity between the site and a former complex of structures or buildings once surrounded by orchard; all have since been removed and replaced with row crops. This resource is recommended ineligible for the CRHR.

16. **GANDA CG-5H** is a historic isolate in a in a highly disturbed agricultural setting. Isolated artifacts are not eligible for the CRHR.

17. **GANDA CG-6H** is a historic isolate in a in a highly disturbed agricultural setting east of proposed Staging Area 006. Isolated artifacts are not eligible for the CRHR.

18. **GANDA CG-9H** is a 1913 American penny, within the Yamato Colony boundary. Isolated artifacts are not eligible for the CRHR.

19. **GANDA-CG-13H** is a built-environment resource consisting of two garages or shops that front a residence or farm complex. This resource has not been evaluated, but for the purposes of this analysis they are assumed to be eligible.

Native American Consultation

The Native American Heritage Commission (NAHC) maintains two databases to assist cultural resources specialists in identifying cultural resources of concern to California Native Americans, referred to by staff as Native American ethnographic resources. The NAHC Sacred Lands database has records for places and objects that Native Americans consider sacred or otherwise important, such as cemeteries and gathering places for traditional foods and materials. The NAHC Contacts database has the names and contact information for individuals, representing a group or themselves, who have expressed an interest in being contacted about development projects in specified areas.

GANDA contacted the NAHC on December 21, 2010, with a request for information regarding sites, resources, or locations of cultural importance to the local Native American community. The NAHC responded on December 28, 2010, with the information that the Sacred Lands File (SLF) database failed to indicate the presence of Native American cultural resources in the immediate project vicinity. The NAHC also forwarded a list of Native American groups or individuals interested in development projects in Merced County. On January 18, 2011 GANDA sent a letter to the five Native American individuals and groups identified by the NAHC. Follow-up phone calls were made on February 2, 2011. To date, no follow-up phone calls or consultation letters have resulted in responses from any of the Native American tribes or individuals contacted.

Paleontological Resources

Regulatory Context: Defining Paleontological Resources

Paleontological resources include fossil plants and animals, and other evidence of past life such as preserved animal tracks and burrows. Data provided by fossils also contribute to proper stratigraphic interpretations, paleoenvironmental and paleoclimatic reconstructions, and to understanding evolutionary processes. The importance of paleontological resources is therefore based on their scientific and educational value. The Society of Vertebrate Paleontology (SVP) identifies vertebrate fossils, their taphonomic and associated environmental data, and fossiliferous deposits as scientifically significant nonrenewable paleontological resources. Botanical and invertebrate fossils and assemblages may also be significant.

Paleontologic resources are afforded protection by environmental legislation set forth under CEQA. Appendix G (part V) of the CEQA Guidelines provides guidance relative to significant impacts on paleontological resources, indicating that a project would have a significant impact on paleontological resources if it will disturb or destroy a unique paleontological resource, site, or unique geological feature.

Paleontological sensitivity is a qualitative evaluation by a professional paleontologist of geological units based on their potential to yield scientifically significant fossils. The paleontological sensitivity of a geologic unit is determined by background literature research, records review, and then a field survey. The analysis of paleontological sensitivity used for this assessment follows standard guidelines (SVP and BLM) and uses the following four sensitivity categories:

- **High:** Areas underlain by geologic units that are likely to yield vertebrate fossils, plant megafossils, or scientifically important invertebrate fossils.
- **Moderate:** Areas underlain by geologic units that may yield scientifically significant fossils, but for which there are no direct records for fossil resources, and/or there are relatively few records.

- **Undetermined:** Areas underlain by geologic units for which little information regarding paleontological resources is available, although the nature of the unit (e.g., fine-grained sediments deposited in a low-energy setting) is conducive to fossil preservation.
- **Low:** Areas underlain by geologic units that are not known to yield fossils. This includes agricultural soils where disturbance would have compromised the stratigraphic integrity of any fossil material that survived mechanical damage, and weathered soil horizons where chemical leaching destroys fossil material.

Background

The project site is located in the Great Valley (or Central Valley) of California, a large northwest-trending basin composed of the Sacramento Valley to the north, and the San Joaquin Valley and the Tulare Basin to the south. The Great Valley occupies the larger part of an area that was a marine, forearc basin consisting of thousands of feet of sedimentary deposits, which has undergone alternating periods of subsidence and uplift over millions of years. The project area is underlain directly by the Pleistocene age Modesto and Riverbank Formations. Although not exhaustively mapped, it is assumed that the Riverbank Formation underlies the Modesto Formation in all areas where it is not in evidence at the surface. The Merced River floodplain immediately north of the project area is occupied by Holocene alluvium although it also hosts Late Pleistocene sediments at depth (fluvial facies of the Modesto Formation).

Modesto Formation

In the San Joaquin Valley, the Modesto Formation forms the surface of alluvial fans of the major tributaries of the San Joaquin River, and disturbed agricultural soils and Holocene sediments frequently cap the Modesto in turn. Modesto Formation sediments range from fluvial gravels and sands to eolian facies representing terminal Pleistocene dunes and sand sheets. Researchers differ as to the exact age of this formation although all agree that it dates to sometime during the last glacial age and perhaps the earliest Holocene (73,000 to 9,000 years before present [B.P.]). In the project area the Modesto Formation ranges from 6 to 15 feet in depth, and has been widely disrupted by agricultural activities. Multiple vertebrate fossils have been found within the Modesto Formation in the floodplains and flood basins of the San Joaquin and Merced Rivers. However, the paleontological sensitivity of the Modesto Formation away from the floodbasins is thought to be low.

Riverbank Formation

The Riverbank Formation lies below the Modesto Formation, and it consists of weakly consolidated reddish-brown to pink siltstones, sandstones, and pebble to cobble conglomerates with a few thin intervals of brick-red claystone. It dates to between 450,000 and 130,000 radiocarbon years B.P., or Middle Pleistocene in age. The form of this deposit is consistent with a massive discharge from the Sierra Nevada over a short period of time. In the general area, on the surface of the Tuolumne and Merced River alluvial fans, the top of the Riverbank Formation is marked by a prominent, compound soil. This dark gray to off-white paleosol is composed of calcium carbonate and pedogenic clay, and has been identified throughout the project area during paleontological monitoring and field surveys. It appears truncated by erosion at its contact with the overlying Modesto Formation, and is from 2 to 4 feet thick. Vertebrate fossils have been found within the Riverbank Formation paleosol, but not below it.

Corcoran Clay Member

Below the Riverbank Formation at depths of approximately 100 to 200 feet in the project vicinity lies an organics- and clay-rich stratum known as the Corcoran Clay Member of the Tulare Formation. The Cor-

coran Clay is sediment that was deposited in a widespread freshwater lake, and/or system of lakes and marshes, that occupied the San Joaquin Valley when its drainage was blocked upstream. The Corcoran Clay is highly fossiliferous but deeply buried.

Methods and Results

A region of several miles surrounding the Proposed Project was evaluated for the recorded presence of paleontological resources and the potential for the geologic units in the region to contain significant paleontological resources. This evaluation consisted of three parts: a literature review, a records search, and a pedestrian survey. The results of these surveys are summarized below, but a detailed account is available in *Paleontological Resources Assessment Cressey-Gallo 115 kV Power Line Project, Merced County, California* (Spaulding, 2011) prepared by CH2MHill.

Literature Review and Record Search

The literature review included a detailed examination of geologic maps of the area. In addition, pertinent published literature and unpublished manuscripts on the geology and paleontology of Modesto County were reviewed. In order to gather existing paleontological resource data in the project area available published resources including books, journals, and maps, and information available via the internet on government websites were consulted. A records search at the Paleobiology Database, San Bernardino County Museum Paleontological Database, and the University of California at Berkeley Museum of Paleontology (UCMP) was completed. Museum collection records were searched for the purposes determining the whether there are any known fossil localities in or near the boundaries of the project area. Also the records search identified information on the geologic units present in the Project area, and helped in determining the paleontological sensitivity rating of those geologic units to assess potential impacts to nonrenewable paleontological resources.

The results of the literature review and the online fossil locality search found 169 fossil localities within Merced County. No paleontological sites could be identified that lie within the immediate vicinity (one mile or less) of the project area, although several are located within ten miles that inform on the paleontological sensitivity of the sediments affected by this project. These sites were characterized by horse, bison, camel, and Harlan's ground sloth primarily from both the Riverbank Formation paleosol, and the fluvial facies of the Modesto Formation. Neither the Modesto Formation, nor the Riverbank Formation below its capping paleosol, has been shown to be fossiliferous away from the main river valleys.

Pedestrian Survey

GANDA conducted a pedestrian survey of surficial geology exposed within and directly adjacent to the project area in April 2011. Large parts of the survey area were covered with crops, lowering ground visibility. Virtually all surfaces were agricultural, or likely to have been disturbed in the recent past. Both the Modesto and Riverbank Formations were identified during the pedestrian survey. Several modern-age bone fragments were identified during the pedestrian survey, containing no paleontological significance. No paleontological material was identified.

Results: Paleontological Sensitivity

The project area is underlain directly by the Late Pleistocene Modesto Formation and at greater depth by the Middle Pleistocene Riverbank Formations. The Modesto Formation, which comprises approximately 99 percent of the project area, differentiated into floodplain or floodbasin deposits, and into alluvial deposits away from the principal river courses. Near the intersection of Walnut Avenue and

Arena Way, the upper member of the Riverbank Formation (about 1 percent of the project area) has been mapped.

The results of reviews of paleontological records from the Merced River and Tuolumne River alluvial fans in Stanislaus and Merced counties were combined with paleontological and geological studies and past monitoring results to identify geological units with low, moderate, and high paleontological sensitivity in the project area. Based on these findings, fluvial facies (floodplain and floodbasin deposits) of the Modesto Formation were determined to possess high paleontological sensitivity, and a capping soil below the Modesto and comprising approximately the top 6 feet of the Riverbank Formation has moderate paleontological sensitivity. The Modesto Formation away from the rivers and the Riverbank Formation beneath its capping paleosol possess low paleontological sensitivity.

At depths beginning at about 100 feet below the surface in the vicinity of Cressey Substation, and dipping to greater depths farther west, is the highly fossiliferous Corcoran Clay Member of the Tulare Formation. This deeply buried geological unit has yielded abundant vertebrate fossils as well as paleobotanical remains, and is considered to possess high paleontological sensitivity.

Applicant Proposed Measures

PG&E proposes to implement measures during the design, construction, and operation of the Proposed Project to ensure it would occur with minimal environmental impacts in a manner consistent with applicable rules and regulations. Applicant Proposed Measures (APMs) are considered part of the Proposed Project in the evaluation of environmental impacts. CPUC approval would be based upon PG&E adhering to the Proposed Project as described in this document, including this project description and the APMs (see Table 5.5-1), as well as any adopted mitigation measures identified by this Initial Study.

Table 5.5-1. Applicant Proposed Measures (APMs) Related to Cultural and Paleontological Resources

APM Number	Issue Area
	Cultural and Paleontological Resources
APM CU-1	Pre-construction Worker Environmental Awareness Program. PG&E will design and implement a worker environmental awareness program that will be provided to project personnel who might encounter or alter historical resources or important/unique archaeological properties, including construction supervisors and field personnel. No construction worker will be involved in field operations without having participated in the worker environmental awareness program. The worker environmental awareness program will include a kick-off tailgate session to present site avoidance requirements and procedures to be followed if unanticipated cultural resources are discovered during project implementation, and a discussion of disciplinary and other actions that could be taken against persons violating historic preservation laws and PG&E policies. All project workers involved with ground-disturbing activities will receive a pamphlet listing how to identify cultural resources and what to do if an unanticipated discovery is made during construction. The worker environmental awareness program may be conducted in concert with other environmental or safety awareness and education programs for the project, and may be recorded for use in subsequent training sessions.

Table 5.5-1. Applicant Proposed Measures (APMs) Related to Cultural and Paleontological Resources

APM CU-2	Management of Unanticipated Discoveries. In the unlikely event that previously unidentified cultural resources are uncovered during project implementation, all work within 100 feet of the discovery will be halted and redirected to another location. The find will be secured, and PG&E's cultural resources specialist or designated representative will be contacted immediately. The specialist will inspect the discovery and determine whether further investigation is required. If additional impacts to the discovery can be avoided, the resource will be documented on California Department of Parks and Recreation (DPR) cultural resource records (Form DPR 523) and filed at the CHRIS; no further effort will be required. If additional disturbance to the resource cannot be avoided, PG&E will evaluate the significance and CRHR eligibility of the resource and (if warranted) implement data recovery excavation or other appropriate treatment measures. The methods and results of evaluation or data recovery work at an archaeological find will be documented in a professional level technical report to be filed with the CCIC.
APM CU-3	Treatment of Human Remains. In the unlikely event that human remains or suspected human remains are uncovered during pre-construction testing or during construction, all work within 100 feet of the discovery will be halted and redirected to another location. The find will be secured, and PG&E's cultural resources specialist or designated representative will be contacted immediately to inspect the find and determine whether the remains are human. If the remains are not human, the cultural resources specialist will determine whether the find is an archaeological deposit and whether APM CU-2 applies. If the remains are human, the cultural resources specialist will immediately implement the provisions in PRC Sections 5097.9 through 5097.996, beginning with the immediate notification to the County coroner. The coroner has two working days to examine human remains after being notified. If the Coroner determines that the remains are Native American, he or she must contact the NAHC within 24 hours. The NAHC, as required by the PRC Section 5097.98, determines and notifies the Most Likely Descendant (MLD).
APM PR-1	Worker Environmental Awareness Program Paleontological Resources Module. The project's worker environmental awareness program, which all workers will complete prior to beginning work on the project site, will include a module on paleontological resources (fossils). The module will discuss the laws protecting paleontological resources, recognition in the field and types of paleontological resources that could be encountered on the project, and the procedures to be followed if a paleontological resource is discovered. A copy of the project's worker environmental awareness training will be provided to the CPUC for recordkeeping prior to the start of construction.
APM PR-2	Paleontological Resource Monitoring. If paleontological resources are observed during construction activities, a qualified paleontologist will be notified to review the need for paleontological monitoring during subsequent ground-disturbing activities with the potential to affect paleontologically sensitive sediments at that location. The qualified paleontologist will be responsible for the reassessment of paleontological sensitivity upon the receipt of additional information from ongoing excavations, which may result in reducing, or increasing, the amount of monitoring required. The current project description identifies one location, Cressey Substation, where ground-disturbing activities have potential to affect sediments with high paleontological sensitivity. The ground anode installations at Cressey Substation are expected to reach a depth below~~of~~ 100 feet, which is the approximate depth at which the Corcoran Clay is expected to begin at this location. A paleontological monitor will be present during this drilling when a depth of approximately 80 feet or greater is reached to monitor for paleontological resources that may be encountered in the Corcoran Clay layer. The paleontological monitor will be able to: (1) recognize fossils and paleontological deposits, and deposits that may be paleontologically sensitive; (2) take accurate and detailed field notes, photographs, and locality coordinates; and (3) document project-related ground-disturbing activities, their locations, and other relevant information, including a photographic record.

Table 5.5-1. Applicant Proposed Measures (APMs) Related to Cultural and Paleontological Resources

APM PR-3	Unanticipated Paleontological Resource Discovery. If fossils are observed during excavation, work in the immediate vicinity of a paleontological find will be halted or redirected to avoid additional impact to the specimen(s), and to allow the qualified paleontologist to assess the scientific importance of the find and determine appropriate treatment. If the discovery is significant, but can be avoided and no further impacts will occur, the resource will be documented in the appropriate paleontological resource records and no further effort will be required. If the resource is significant, but cannot be avoided and may be subject to further impact, the paleontologist will evaluate the significance of the resource and implement data recovery excavation, if appropriate, to scientifically recover the specimen as well as its stratigraphic and other pertinent contextual information, or other appropriate treatment measures as approved by the landowner. Any such discoveries on private land are the property of the landowner. If a scientifically controlled recovery occurs, the fossil materials will be prepared so that they can be properly identified and used in research, and curated into an appropriate museum repository. A report will be prepared to accompany the finds that will include descriptions of the geological and stratigraphic context of the find, attendant analyses such as radiocarbon dating and specimen identification, a narrative summary including preliminary interpretations, and a catalog of specimens.

5.5.2 Environmental Impacts and Assessment

CULTURAL RESOURCES Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
d. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

Significance criteria established by CEQA Guidelines, Appendix G.

a. Would the project cause a substantial adverse change in the significance of an historical resource as defined in §15064.5 [§15064.5 generally defines historical resource *under CEQA]?*

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Construction activities have the potential to affect nine known historical resources eligible for the CRHR or unevaluated cultural resources through ground-disturbing activities. These resources include six segments of the proposed Merced Irrigation District Historic District (Lehner Lateral, Curtner Lateral, Wakefield Canal, Cressey Lateral, King Lateral, and McCoy Lateral), the Yamato Colony, a railroad track segment (P-24-001881), and a historic structure (GANDA-CG-13H).

In addition to implementation of APM CU-1 (Pre-Construction Worker Environmental Awareness Program), Mitigation Measure C-1 (Conduct Preconstruction Cultural Resources Surveys for Areas Not Previously Surveyed) and MM C-2 (Avoid Known Historical Resources) are required to identify and evaluate resources in areas which have not been surveyed and ensure protection of these known cultural resources, which are not covered under Applicant Proposed Measures, in order to reduce the potential impacts to known historical resources to a less than significant level. The Yamato Colony (P-24-000697) has no associated extant building structures within the project area. The project area is also not considered sensitive for the presence of historic-period deposits associated with this colony; therefore, there would be no impact to this resource or visual impacts to the portion of the colony within the project area. As such, avoidance of the Yamato Colony is not required.

In addition to known resources, previously undiscovered historical resources could also be encountered during project implementation. If a previously undiscovered historical resource is encountered and it is eligible for listing in the NRHP and CRHR, then any impacts to that resource would be potentially significant. Implementation of APM CU-1 and APM CU-2 (Management of Unanticipated Discoveries) would reduce potential impacts to previously undiscovered historical resources to a less than significant level and no additional mitigation is required.

MM C-1 **Conduct Preconstruction Cultural Resources Surveys for Areas Not Previously Surveyed.** Before any construction or staging activities occur in areas that have not previously been surveyed for the project, a qualified cultural resources specialist, approved by the CPUC, shall conduct an intensive pedestrian survey for archaeological and built-environment resources.

If any resources are identified during preconstruction surveys the preferred strategy shall be avoidance or preservation in place. If the resource cannot be avoided, it shall be evaluated by the CPUC-approved qualified cultural resources specialist to determine if it is a historical resource as defined by CEQA Guidelines (Section 15064.5). All resources identified shall be documented on California Department of Parks and Recreation (DPR) cultural resource records (Form DPR 523) and filed at the Cultural and Historic Resource Information System (CHRIS).

If the resource is determined to be a historical resource, the cultural resource specialist shall consult with CPUC staff regarding methods to ensure that substantial adverse change to the significance of the resource pursuant to CEQA Guidelines Section 15064.5(b) would be minimized. Other methods to be considered shall include evaluation, collection, recordation, and analysis of any significant cultural materials in accordance with a Cultural Resources Management Plan prepared by the CPUC-approved qualified cultural resource specialist. The methods and results of evaluation or data recovery work at an archaeological or historic find shall be documented in a professional level technical report to be filed with CHRIS. Work may commence upon completion of treatment, as approved by the CPUC.

MM C-2 **Avoid Known Historical Resources.** Known historical resources shall be ~~flagged and~~ avoided during construction. The portions of historical resources that cross into or are immediately adjacent to the project area (i.e., within 25 feet) shall be marked with visible flagging tape to create a 10-foot buffer around the site. ~~In addition, at any known historical resource within 165 feet (50 meters) of the project area, the limits of the project area near the resource shall be marked with visible flagging tape prior to construction.~~ The construction crews shall be instructed that no vehicle access, travel, equipment staging, storage, or other construction-related work shall occur outside the flagged areas to ensure that known historic resources are not inadvertently damaged during implementation of the project.

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED. Construction activities have the potential to affect three unevaluated historical archaeological resources through ground-disturbing activities (GANDA-CG-1H, GANDA-CG-2H, and GANDA-CG-4H). In addition to APM CU-1 (Pre-Construction Worker Environmental Awareness Program), and APM CU-2 (Management of Unanticipated Discoveries), implementa-

tion of Mitigation Measure C-1 (Conduct Preconstruction Cultural Resources Surveys for Areas Not Previously Surveyed) and MM C-2 (Avoid Known Historical Resources) are required to identify and evaluate resources in areas which have not been surveyed and reduce the potential impacts to historical resources to a less than significant level.

c. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

LESS THAN SIGNIFICANT IMPACT. Several stratigraphic units within the project area have the potential to contain significant paleontological resources, such as vertebrate fossils. Implementation of APM PR-1 (Worker Environmental Awareness Program Paleontological Resources Module), APM PR-2 (Paleontological Resource Monitoring), and APM PR-3 (Unanticipated Paleontological Resource Discovery) would ensure that impacts to paleontological resources would be less than significant level and no mitigation is necessary.

d. Would the project disturb any human remains, including those interred outside of formal cemeteries?

LESS THAN SIGNIFICANT IMPACT. The potential for encountering human remains within the project area is very low given the limited amount of surface area disturbed and the construction techniques employed. In the event that human remains are encountered as the result of construction activities, impacts would be less than significant with the implementation of APM CU-3, and no additional mitigation is necessary.