

# TABLE OF CONTENTS

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Section 6	Environmental Information .....	6.4-1
6.4	Cultural Resources .....	6.4-1
6.4.1	Laws, Ordinances, Regulations, and Standards .....	6.4-1
6.4.2	Affected Environment.....	6.4-7
6.4.3	Environmental Consequences.....	6.4-22
6.4.4	Mitigation Measures .....	6.4-23
6.4.5	Specific Archaeological Mitigation Measures.....	6.4-25
6.4.6	Mitigation Measures for Built Environment.....	6.4-25
6.4.7	References.....	6.4-27

## List of Tables

Table 6.4-1	Laws, Ordinances, Regulations, and Standards
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## List of Figures

Figure 6.4-1	Approximate Survey Areas
Figure 6.4-2	Photograph of west-facing side of the IID El Centro Steam Turbine Building
Figure 6.4-3	Close-up view of northwest corner of power plant, showing extant doors and covered-over doorways

# TABLE OF CONTENTS

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## 6.4 CULTURAL RESOURCES

Cultural resources include archaeological and historical objects, sites and districts, historic buildings and structures, cultural landscapes, and sites and resources of concern to local Native Americans and other ethnic groups. The cultural resources analysis, which follows, reports efforts to determine whether cultural resources exist in areas that could be adversely affected by the Project. The significance of any resources, which will potentially be affected, is assessed. Measures are proposed to mitigate potential adverse effects of the Project to any significant resources, which are present.

LORS pertinent to the identification, assessment of significance, and mitigation of adverse effects to cultural resources are identified in Section 6.4.1, Laws, Ordinances, Regulations, and Standards. As part of the field inventory, archaeological field investigations and historic evaluations were undertaken to assess the presence, absence, and/or the extent and significance of cultural resources. All cultural resources reviewed for this Project were carried out under the direct supervision of an archaeologist and architectural historian who meet the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation, and are consistent with the procedures for compliance with Section 15064.5 of CEQA.

The cultural resources personnel who supervised the field survey and prepared the Technical Report and SPPE are:

- Diane Douglas, Ph.D. (Principal Investigator)
- Kevin Mock (Senior Archaeologist)
- Adele Philippides (Staff Archaeologist)
- Dustin Kay (Staff Archaeologist)
- Jeremy Hollins (Architectural Historian)

Dr. Douglas meets the professional standards of the Secretary of the Interior for archaeology (NPS 1983) and is certified by the Register of Professional Archaeologists (RPA).

With few exceptions, the potential effects of any project upon cultural resources in California must be evaluated under CEQA. This section of the SPPE serves as CEQA environmental compliance. The cultural resources survey for the Project was also conducted in compliance with the CEC's "Instructions to the California Energy Commission Staff for the Review of and Information Requirements for an Application for Certification" (Draft) (CEC 1992) and "Rules of Practice and Procedure and Power Plant Site Certification Regulations" (CEC 1997). The cultural resources fieldwork protocols for the Project were prepared in consultation with the CEC.

### 6.4.1 Laws, Ordinances, Regulations, and Standards

The survey described above served to identify cultural resources present within and immediately adjacent to the Project's area of potential effect (APE). This Project is considered a state level undertaking and as such, is subject to state LORS for cultural resources. Any cultural resource potentially affected by the Project will be subject to compliance with the provisions outlined in CEQA/California Register of Historic Resources (CRHR). If a cultural resource is discovered

during construction, and cannot be avoided, a construction program of site evaluation will be undertaken to ascertain site significance under CEQA/CRHR.

Table 6.4-1, Laws, Ordinances, Regulations, and Standards, further details the federal, state, and local LORS for cultural resources.

**TABLE 6.4-1  
LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

<b>Statute</b>	<b>Requirements</b>	<b>Oversight Agency</b>
<b>Federal Laws Governing Cultural Resources</b>		
<b>Native American Graves Protection and Repatriation Act of 1990</b> [PL 101-601; 25 U.S.C. 3001 et seq.]	NAGPRA provides a process for museums and Federal agencies to return certain Native American cultural items - human remains, funerary objects, sacred objects, and objects of cultural patrimony - to lineal descendants, culturally affiliated Indian tribes, and Native Hawaiian organizations.	U.S. Department of the Interior, National Park Service
<b>American Disabilities Act of 1990</b> , Section 4.1.7	Establishes regulations allowing access to historic buildings by disabled persons.	U.S. Department of the Interior, National Park Service, State Historic Preservation Office, State and local agencies
<b>Archaeological Resources Protection Act of 1979</b> , as amended [PL 96-95; 16 U.S.C. 470aa-mm]	Secure the protection of archaeological resources and sites which are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals.	U.S. Department of the Interior, National Park Service
<b>National Park Service Organic Act</b> , Section 8, Reports on Threatened Landmarks and New Area Studies, as amended [PL 91-458; 16 U.S.C. 1a-5]	The Secretary of the Interior is directed to investigate, study, and continually monitor the welfare of areas whose resources exhibit qualities of national significance and which may have the potential for inclusion into the National Park System; the Secretary must also submit to the Speaker of the House of Representatives and to the President of the Senate, a complete and current list of all areas in the Registry of Natural Landmarks and those of areas of National Significance listed in the National Register of Historic Places (NRHP) and which areas exhibit known or anticipated threats or damage to their integrity	U.S. Department of the Interior, National Park Service
<b>American Indian Religious Freedom Act of 1976</b> , as amended [PL 95-341; 42 U.S.C. 1996 and 1996a]	Policy of the United States to protect and preserve religious freedom of American Indians, Eskimo, Aleut, and Native Hawaiians.	U.S. Department of the Interior, National Park Service
<b>Archaeological and Historic Preservation Act of 1974</b> , as amended [PL 89-665 16 U.S.C. 469-469c]	Guidelines for Archeology and Historic Preservation: Standards and Guidelines	U.S. Department of the Interior, National Park Service

**TABLE 6.4-1  
LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

<b>Statute</b>	<b>Requirements</b>	<b>Oversight Agency</b>
<b>National Environmental Policy Act of 1969</b> , as amended [83 Statute 852; U.S.C. 4321 et seq.]	It is the continuing responsibility of the Federal Government to use all practicable means, to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings and to preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice.	U.S. Environmental Protection Agency
<b>National Historic Preservation Act of 1966</b> , as amended [80 Stat. 915; 16 U.S.C. 470 et seq.]	Provides for the protection of significant historical properties	U.S. Department of the Interior, National Park Service
<b>National Trust for Historic Preservation</b> , Creation and Purpose, as amended [63 Stat. 927; 16 U.S.C. 468]	Furtheres policies established in Historic Sites Act and facilitates public participation in the preservation of sites, buildings, and objects of national significance or interest.	U.S. Department of the Interior, National Park Service
<b>Historic Sites Act of 1935</b> , as amended [49 Stat. 666, 16 U.S.C. 461 et seq.]	National policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States.	U.S. Department of the Interior, National Park Service
<b>National Park Service Organic Act</b> , Section 1, NPS Mission, as amended [39 Stat. 535; 16 U.S.C. 1]	Establishes the creation of the National Park Service within the Department of the Interior, with the objective of promoting and regulating areas known as national parks, monuments, and reservations for the purpose of conserving the scenery and the natural and historical objects and the wildlife therein.	U.S. Department of the Interior, National Park Service
<b>Antiquities Act of 1906</b> [34 Stat. 225, 16 U.S.C. 431 et seq.]	Prohibits the destruction of historic or prehistoric ruins or monuments on federal government lands without the permission of the government.	U.S. Department of the Interior, National Park Service
<b>Other Federal Laws Governing Cultural Resources</b>		
<b>Executive Order 13287</b> , Preserve America	It is the policy of the Federal Government to provide leadership in preserving America’s heritage by actively advancing the protection, enhancement, and contemporary use of the historic properties owned by the Federal Government, and by promoting intergovernmental cooperation and partnerships for the preservation and use of historic properties.	General Services Administration
<b>Executive Order 13175</b> , Consultation and Coordination with Indian Tribal Governments	Agencies shall respect Indian tribal self-government and sovereignty, honor tribal treaty and other rights, and strive to meet the responsibilities that arise from the unique legal relationship between the Federal Government and Indian tribal governments.	General Services Administration
<b>Executive Order 11593</b> , Protection and Enhancement of the Cultural Environment	The Federal Government shall provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the Nation.	General Services Administration

**TABLE 6.4-1  
LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

<b>Statute</b>	<b>Requirements</b>	<b>Oversight Agency</b>
<b>Executive Order 13007</b> , Protection and Accommodation of Access to “Indian Sacred Sites”	Accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners; avoid adversely affecting the physical integrity of such sacred sites; and maintain the confidentiality of sacred sites.	General Services Administration
<b>Executive Order 13006</b> , Locating Federal Facilities on Historic Properties in Our Nation’s Central Cities	The Federal Government shall utilize and maintain, wherever operationally appropriate and economically prudent, historic properties and districts, especially those located in our central business areas.	General Services Administration
<b>Internal Revenue Code, Section 47 Rehabilitation Credit</b> [PL 101-508; 26 U.S.C. 47]	Tax credits for the rehabilitation of historic buildings.	U.S. Department of the Interior, National Park Service
<b>Internal Revenue Code of 1986, Section 170(h)</b> , Qualified Conservation Contributions, as amended [PL 96-541; 26 U.S.C. 170(h)]	Contribution of a qualified real property interest, to a qualified organization, exclusively for conservation purposes.	Internal Revenue Service
<b>Public Building Cooperative Use Act of 1976</b> [PL 94-541; 40 U.S.C. 601a]	Public use of historically and architecturally significant buildings.	General Services Administration
<b>Federal Property and Administrative Services Act of 1949</b> , as amended [63 Stat. 385; 40 U.S.C. 484(k)(3) and (4)]	Transfer of excess property among Federal agencies and other organizations; transfer of real property located in Indian reservations to the Secretary of the Interior.	General Services Administration
<b>3 Code of Federal Regulation Part 771</b>	Environmental Impact and Related Procedures	U.S. Department of Transportation and Federal Highway Administration
<b>26 CFR Parts 1 and 602</b>	Income Tax: Investment Tax Credit for Qualified Rehabilitation Expenditures	Internal Revenue Service
<b>26 CFR Parts 1, 20, 25, and 602</b>	Income Tax: Qualified Conservation Contributions	Internal Revenue Service
<b>30 CFR Part 700 to the end</b>	Office of Surface Mining Reclamation and Enforcement	U.S. Department of the Interior
<b>36 CFR Part 60</b>	National Register of Historic Places	U.S. Department of the Interior
<b>36 CFR Part 61</b>	Procedures for State, Tribal, and Local Government Historic Preservation Programs	U.S. Department of the Interior
<b>36 CFR Part 63</b>	Determinations of Eligibility for Inclusion in the National Register of Historic Places	U.S. Department of the Interior
<b>36 CFR Part 65</b>	National Historic Landmarks Program	U.S. Department of the Interior
<b>36 CFR Part 67</b>	Historic Preservation Tax Incentive Certification	U.S. Department of the Interior

**TABLE 6.4-1  
LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

<b>Statute</b>	<b>Requirements</b>	<b>Oversight Agency</b>
<b>36 CFR Part 68</b>	The Secretary of the Interior’s Standards for the Treatment of Historic Properties	U.S. Department of the Interior
<b>36 CFR Part 73</b>	World Heritage Convention	U.S. Department of the Interior
<b>36 CFR Part 78</b>	Waiver of Federal Agency Responsibilities under Section 110 of the National Historic Preservation Act (NHPA)	U.S. Department of the Interior
<b>36 CFR Part 79</b>	Curation of Federally Owned and Administered Archaeological Collections	U.S. Department of the Interior
<b>36 CFR Part 800</b>	Protection of Historic Properties	Advisory Council on Historic Preservation
<b>40 CFR Part 15001517</b>	Regulations of the Council on Environmental Quality	U.S. Department of the Interior
<b>41 CFR 10117</b>	Assignment and Utilization of Space	General Services Administration
<b>41 CFR 10120</b>	Management of Buildings and Grounds	General Services Administration
<b>43 CFR Part 3</b>	Preservation of American Antiquities	U.S. Department of the Interior
<b>43 CFR Part 7</b>	Protection of Archaeological Resources	U.S. Department of the Interior
<b>43 CFR Part 10</b>	Native American Graves Protection and Repatriation Act	U.S. Department of the Interior
<b>Laws Governing State Cultural Resources</b>		
<b>California Environmental Quality Act of 1970, as amended</b>	Applies to discretionary projects causing a significant effect on the environment and a substantial adverse change in the significance of an historical or archaeological resource with a significant impact.	State Lead Agency
<b>Administrative Code, Title 14, Section 4307</b>	No person shall remove, injure, deface or destroy any object of paleontological, archaeological, or historical interest or value.	State Lead Agency; State Historic Preservation Office; Tribal Historic Preservation Office
<b>Government Code, Sections 6253, 6254, 6254.10</b>	Disclosure of archaeological site information is not required for records that relate to archaeological site information maintained by the Department of Parks and Recreation, the State Historical Resources Commission, or the State Lands Commission.	All State and local agencies
<b>Government Code, Sections 25373 and 37361</b>	Authorizes county and city governments to establish zoning ordinances for the protection and regulation of buildings and structures of special historical value.	All local agencies
<b>Health and Safety Code, Section 7050.5</b>	Requires construction or excavation stopped near human remains until a coroner determines whether the remains are Native American; requires the coroner to contact the Native American Heritage Commission (NAHC) if the remains are Native American.	State Lead Agency

**TABLE 6.4-1  
LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

<b>Statute</b>	<b>Requirements</b>	<b>Oversight Agency</b>
<b>Health and Safety Code, Section 7052</b>	Disturbance of Indian Cemeteries is a felon.	State Lead Agency
<b>Health and Safety Code, Section 18950-18961</b>	Establishes the State Historical Building Code for the protection and preservation of historic buildings, while also ensuring building safety from natural and man-made hazards.	State Historical Building Safety Board
<b>Penal Code, Title 14, Section 622.5</b>	Misdemeanor offense for any person, other than the owner, who willfully damages or destroys archaeological or historic features on public or privately owned land.	State Lead Agency, local agency
<b>California Public Resources Code (PRC) Section 5020-5029.5</b>	Creates the California Historic Landmarks Committee and authorizes the Department of Parks and Recreation to designate Registered Historical Landmarks and Registered Points of Historical Interest; establishes criteria for the protection and preservation of historic resources.	Department of Parks and Recreation, State Lead Agency, local agencies
<b>PRC 5097-5097.6</b>	Provides guidance for state agencies in the management of archaeological, paleontological, and historical sites affected by major public works projects on state land.	State Lead Agency, Department of Parks and Recreation
<b>PRC 5097.9-5097.991</b>	Establishes regulations for the protection of Native American religious places; establishes the Native American Heritage Commission; California Native American Remains and Associated Grave artifacts shall be repatriated; Notification of discovery of Native American human remains to a Most-Likely descendent.	State Lead Agency; State Historic Preservation Office; Tribal Historic Preservation Office; Native American Heritage Commission
<b>California Code of Regulations Section 1427</b>	Recognizes that California’s archaeological resources are endangered by urban development; the Legislature finds that these resources need preserving; it is a misdemeanor to alter any archaeological evidence found in any cave, or to remove any materials from a cave.	State Lead Agency
<b>Senate Concurrent Resolution Number 43</b>	Requires all state agencies to cooperate with programs of archaeological survey and excavation, and to preserve known archaeological resources whenever reasonable.	State Lead Agency
<b>Senate Concurrent Resolution Number 87</b>	Provides for the identification and protection of traditional Native American resource gathering sites on State Land.	Department of Parks and Recreation, State Lead Agency
<b>Senate Bill 18 (Burton)</b>	Protection and preservation of Native American Traditional Cultural Places during city and county general plan development.	State Lead Agency, local agency, Office of Planning and Research and the Native American Heritage Commission

**TABLE 6.4-1  
LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

<b>Statute</b>	<b>Requirements</b>	<b>Oversight Agency</b>
<b>Senate Bill 922 (Ducheny)</b>	Exempts from California Public Records Act Native American graves, cemeteries, archaeological site information and sacred places in the possession of the Native American Heritage Commission and other state or local agencies.	State Lead Agency, local agency, Native American Heritage Commission
<b>Laws Governing Local Cultural Resources</b>		
<b>Imperial County General Plan, Conservation/Open Space Element</b>	Identify, preserve, and protect locally-significant cultural resources, and preserve prehistoric and historic areas as open space.	Imperial County Planning Department
<b>El Centro General Plan, Conservation/Open Space Element, Community and Historic Resources</b>	Identify, preserve, and protect locally-significant cultural resources, and preserve prehistoric and historic areas as open space.	El Centro Development Services

**6.4.2 Affected Environment**

*Site Description*

This SPPE Application is for the construction and operation of the ECGS Unit 3 Repower Project. The Project will be owned and operated by IID (“the Applicant”) and will utilize the existing staffing at the ECGS. IID is an irrigation district established under Division 11 of the California water code, Sections 20500 et seq., that provides electrical power, non-potable water, and farm drainage services to the lower southeastern portion of the California Desert, primarily in Imperial County. ECGS Unit 3 will continue to serve the growing electrical load demands of the region. The Project Site is located in Township 15 South, Range 14E, Section 32. The UTM coordinate for the Project center is 11 636657E 3630148N.

The Project consists of replacing the existing CE boiler with a GE Frame 7EA dry low NO<sub>x</sub> CTG and HRSG to supply steam to the existing Westinghouse STG. The generator output from the Unit 3 Repower Project will be stepped-up to transmission voltage and interconnected to the existing IID El Centro Switching Station also located within the ECGS Site.

Most of the existing ECGS systems will continue to be used with only minor modifications. Systems that will continue to be used include the STG, cooling system, water treatment system, water supply system, control room, fire system, ammonia system, site access during operations, and electrical El Centro Switching Station.

The Project consists of two major project areas:

- Project Site – new Unit 3 CTG/HRSG, minor modifications to the existing Unit 3 cooling tower, replacement of the Unit 3 condenser, minor modifications to Unit 3 STG, the 92 kV electrical interconnection and modifications to the existing gas interconnection facilities.
- Temporary Construction Area – construction parking, construction trailers, and construction laydown area.

The total Project disturbance will be 12.5 acres, all of which is within the ECGS Site.

### *Natural History*

The Project Site is located in the Imperial Valley, also known as the Salton Trough and Colorado Desert, a subsection of the Sonoran Desert. The Salton Trough is a sunken landform between two branching spurs of the San Andreas Fault, which gradually causes expansion of this basin at a rate of 8 centimeters per year (Cohen et al. 1999:15). This area, which is as much as 75 meters below sea level, extends from the Coachella Valley southwards into Mexico, where it is flooded by the upper Gulf of California. The land here is flat and arid desert, but this has not always been the case. In the past, the waters of the Colorado River were repeatedly directed towards the Salton Trough, depositing silt that eventually built up a delta. This barrier cut off the low area from the gulf, creating a landform between the basin and the gulf, thus preventing seawater from inundating the basin. The Colorado River's water subsequently collected in the basin to form the ancient Lake Cahuilla—the present-day Salton Sea is within the bounds of this ancient lakebed. There were also times when the Colorado River took a more eastern course, resulting in gradual evaporation of the lake and the return to an arid desert landscape (Moratto 1984:17-18). The New River and the Alamo River also run through this region, and, before modern interference they carried intermittent flows of water to the basin; these intermittent flows typically occurred when they were filled by the Colorado River during late spring flooding.

Creosote scrub communities compose the vegetation of this region, with creosotebush (*Larrea tridentate*) and white bursage (*Ambrosia dumosa*) largely dominant; annuals alternate according to the season. Temperatures can exceed 110°F during summer months, while winters typically average in the 40s, dropping down to freezing only during unusual years. Annual precipitation averages less than 3 inches (Cohen et al. 1999:18).

### *Soils and Geology*

The Colorado Desert is bound to the west by the Peninsular Ranges Physiographic Province, on the north by the Transverse Ranges and the Mojave Desert Physiographic Province, and on the east by the Colorado River Valley. To the south lies the Gulf of California. Twenty thousand feet of Cenozoic sediments deposited by flooding of the Colorado River cover the Imperial and Coachella valleys down to the Gulf of California (Diblee 1954:22). On the surface, Quaternary alluvial sediments dominate, interspersed with areas of Tertiary and Quaternary sedimentary rock.

### *Current Physical Setting*

Although much of the arid desert in the Imperial Valley is unaltered, a significant portion is used for agriculture, with major crops being alfalfa, sudan grass, wheat, and cotton (Cohen et al. 1999:21). The lowest portion of the valley was flooded by a canal failure in 1904, inundating the Salton Sink and creating a 50-mile by 15-mile body of water that is now known as the Salton Sea. Runoff from the surrounding agricultural areas continually expands the Salton Sea, which serves as a sump for all drainage in the Imperial-Coachella Valley (Diblee 1954:21). Much of the Project Site contains buildings, structures, water-retaining basins, and other associated features for the ECGS. Surrounding the ECGS to the north and east are agricultural fields, to the south by industrial complexes and further to the west by residential areas.

### *Prehistory*

The Project Site and existing ECGS is strictly localized within the Colorado Desert, in an area that has not had substantial archaeological research. With the completion of more extensive archaeological research, however, Colorado Desert native cultures are likely to compare with those of the Mojave Desert cultures to the north and where extensive archaeological investigations have been conducted. However, some cultural differences between these regions are expected. The Colorado Desert lies at a lower latitude than the Mojave Desert and is prone to different weather conditions, which affects the types and abundance of plant and animal resources available to prehistoric peoples. In addition, throughout the Holocene, the Colorado River inundated the Salton Sink creating Lake Cahuilla. The lake increased freshwater sources and created a more fertile environment which could sustain a larger human population (Weide 1976:81).

Malcolm Rogers, in the 1920s, conducted the most extensive (although rudimentary compared to today's standards) archaeological survey of the Colorado Desert (Weide 1976: 81). Rogers (1939: 21) describes the cultural materials as non-stratified surface remains. The artifact chronology, however, was still in development at that time; subsequently, Rogers' theory on the chronology of this area is rudimentary (Weide 1976:81). Several archaeological sites Rogers recorded have no artifact assemblage associated with them, and are merely cleared circles of about 6 feet in diameter, sometimes defined by a low wall around the perimeter. Rogers identified these cleared circles as "temporary bedding platforms" (Rogers 1939:7-8). In association with the "bedding platform" features, Rogers identified artifact assemblages of crude tools, leading to the assumption that these were associated with a pre-projectile point culture, i.e., Pre-Clovis or Pre-Paleoindian period (Ibid: 21). Many archaeologists after Rogers, including the Leakeys, have suggested Pre-Paleoindian cultures in California. Modern archaeological testing has been unable to verify the existence of these cultures (i.e., cultures dating from before approximately 20,000 years ago) working on-sites in the Mojave Desert, the Leakey's, in the mid-20<sup>th</sup> century, proposed sites dating from approximately 100,000 years ago.

Aside from the disputed Pre-Paleoindian Period, archaeological research in southern California over the past century has resulted in the development of a temporal scheme for regional prehistory. This temporal scheme is generally accepted by the archaeological community today, with only slight revisions from time to time. The temporal periods include: Paleoindian (12,000 to 7,000 years before the present [BP]); the Archaic (8,000 to 3,000 BP); and Late Prehistoric (3,000 BP to European Contact, also known as the protohistoric). Although specific dates are given, the beginning and end for each period is not static because technological innovations occur at different times within this region. For example, the introduction of the bow and arrow closely coincides with the introduction of pottery, but their introduction does not appear to have occurred simultaneously throughout the region (Morrato 1984).

#### **Paleoindian Period "San Dieguito" (12,000 to 7,000 BP)**

San Dieguito is the earliest established and dated period for the Colorado Desert region (Weide 1976:84). The start of the Paleoindian period is marked by cooler temperatures and increased rainfall, which formed deep pluvial lakes and marshes even in interior desert regions, offering a number of subsistence options. Although temperatures warmed and the lakes began to recede around 11,000 BP (Moratto 1984:78), this recession was so gradual that the pluvial lake environment was still in existence for several millennia, during which the San Dieguito people adopted living patterns in association with their environment. These cultural patterns composed

the Western Pluvial Lakes Tradition, and included developing methods of procuring foods and materials based on the plants and animals that lived around the lakes (Ibid: 93). Marshes in particular offered a variety of plants with edible seeds, roots, and stems. The wet habitat provided frogs, turtles, fish, and water rats, as well as attracting ducks and other waterfowl, which were good for meat and eggs. Sites located along the former shore of Lake Cahuilla reveal that these people had developed a flaked-stone industry with an extensive number of tools forms, including ovate bifaces, chipped stone crescents (called amulets by Rogers), drills, cleavers, pulping planes, and keeled scrapers (Rogers 1939:33-36). However, milling tools are conspicuously absent from these sites, implying hard seeds were not included in their diet (Moratto 1984:97).

### Archaic Period (7,000 to 3,000 BP)

With a dramatic increase in temperature and the evaporation of the pluvial lakes, the population of the Colorado Desert dropped precipitously. Archaeological sites are limited to small areas of artifact scatter. Dates for these sites are disputable because of poor chronological sequencing, and the only chronology existing to gauge them is that of the Southern Mojave Desert. Excavations in this region include several sites in the Pinto Basin Area, which revealed many examples of the material culture of this period (Campbell and Campbell 1935: 49-50). The period for these sites, estimated to be about 7,000 to 4,000 BP (Moratto 1984:410) is marked by large numbers of Pinto style points and the introduction of a small, flat variety of millingstone (Ibid: 349). A few Pinto-like points have been found in the Colorado Desert, such as one at the Split Mountain Sand Dune Site. However, a radiocarbon date of the stratum placed the point at this site at 770 BP, making the interpretation of the site as a Pinto Point Culture site questionable (Weide 1976:85). Pinto Points have been reliably dated from about 8,000-7,000 BP to 5,000 BP (Justice 2002:134), so this occurrence may reflect reuse of a Pinto Point by a later cultural group.

Pinto points are also recorded from areas located along the edge of the ancient Lake Cahuilla, which may indicate the lake refilled temporarily during this period (Ibid: 85). These sites, as well as the Truckhaven Man burial, with a radiocarbon date of 5840 BP, and a quartz point of unspecified type from a stratum carbon dated at 4980 BP (Ibid: 85) suggest that the Colorado Desert region was not entirely unoccupied during this period. Rather, it indicates populations severely declined and people may have been present only on a seasonal basis. The lack of a great quantity of resources forced populations to be migratory (Fagan 2003:299).

The evaporation of the lakes also caused a shift in vegetation types, requiring the development of new tools to process them. The hard seeds of mesquite (*Prosopis juliflora*) and screwbean (*Prosopis pubescens*) became staples of the Native American diet, as well as foods from other desert-adapted plants like various types of cactus and agaves (Barker 1976:26). Manos, metates, and mortars and pestles were developed to aid in the processing of these new foods, and are found in great evidence throughout the Mojave (Moratto 1984:356). The people of the Colorado Desert may have also made wooden milling utensils and other artifacts of organic materials that are not preserved in the archaeological record. Ethnographic records show use of wooden mortars and pestles, and also items such as hooked sticks for shaking mesquite pods down from trees, nets in which to collect cactus and then beat against the ground to remove the needles, digging sticks for excavating rodents from burrows or digging up plants, and throwing sticks for hunting hare and other small game (Barker 1976:26-33). These tool types could potentially have been used for millennia.

### Late Prehistoric Period (3,000 BP to 1769 AD)

Between 500 and 800 anno Domini (AD), the Colorado River shifted course westward, as it had many times in the past, and by around 1050 AD, refilled Lake Cahuilla, providing a stable year-round water supply in the Colorado Desert. People, some following the river on its route from the Colorado River Valley, some attracted from the Mojave Desert or the mountain ranges to the west, began to repopulate the Colorado Desert (Moratto 1984:359; Weide 1976:89).

With enough resources to provide year-round sustenance, people began to occupy permanent settlements, and exploit different food sources at different times of the year. Evidence of different plant and animal foods that would have been available for eating during each season has been found through coprolite analysis (Moratto 1984:407). Trade networks with coastal people also likely developed during this time. This is suggested by the first appearance of shell beads and ornaments in the artifact assemblages (Ibid: 358). Ceramic wares, which had been introduced centuries before in other areas, were brought into this region with the influx of people. Typical wares included mainly Tizon Brown Wares, and, in smaller quantities, Lower Colorado Buff Wares (Moratto 1984:404-405). These wares, used since 800 AD, were modified around 1050 AD, exhibiting new attributes such as stucco finishes, recurved jar rims, and tab handles on scoops. These attributes aid archaeologists in dating sites located along the lake's banks (Ibid: 359). Cottonwood Triangular points, commonly date to around 900 AD, and Desert Side-notched points, appearing for the first time around 1100 AD, replace the larger point types that marked the earlier periods. Appearance of smaller points is attributed to the introduction of the bow and arrow (Ibid:404-406, 420). These forms are common throughout California and the Great Basin Region during this period, and continue into Historic times (Justice 2002:372-384).

Around 1450 AD, the Colorado River's course again shifted eastward, and native people living in the area were confined to an ever-decreasing fertile area as Lake Cahuilla gradually dried up (Ibid: 359). As the lake receded, adjacent regions experienced an increase in occupation as the population shifted to more abundant lands, such as the Colorado River Valley to the east and the mountains to the west (Weide 1976:89, Moratto 1984:427). Yet people still persevered in the desert environment, as evidenced by a series of stone-lined fish traps marking the progress of the receding waterline (Moratto 1984:407). With the disappearance of the lake and its associated subsistence resources, people began to rely more on limited agriculture. Specialized water control techniques, such as the use of wells and springs for irrigation and the construction of reservoirs and ditches, were developed to establish agriculture in the region (Weide 1976:89). Tizon Brown wares still compose a majority of the ceramic wares used, although the usage of Lower Colorado Buff ware significantly increases through this period (Moratto 1984:404). Desert Side-notched and Cottonwood Triangular points still remain the common point types (Moratto 1984:427).

### *Ethnography*

Kroeber's 1925 inventory of California Indian Groups found that the Salton Trough was occupied at least intermittently by the Kamia (Figure 6.4-1, Approximate Survey Areas) (Heizer 1966:8), a band that has been more recently linked to the Ipai and Tipai tribes. Although the bands did not recognize a native tribal name, they were grouped together based on their linguistic similarities, all sharing the Tipai language, classified in the Yuman language family, Hokan stock (Luomala 1978:592). Together, the Ipai and Tipai ranged from the Colorado Desert to the

coast, and along the coast from Agua Hedionda down past Todos Santos Bay (Ibid: 592-593). The Kamia band occupied a small area of the Ipai/Tipai area, and was found primarily in Imperial Valley (Gifford 1931:1).

The Southern Diegueño were another band of the Tipai, occupying the peninsular ranges to the west of the Colorado Desert. The Kamia kept in close contact with this group, although they spoke different dialects, and had different social structures and subsistence collection methods (Barker 1976:31-34). The Kamia would frequently exchange agricultural produce with their Southern Diegueño neighbors for gathered food staples abundant at higher elevations, such as acorns, dried cakes of mescal, and piñon nuts (Gifford 1931:23; Barker 1976:29). Relations between the Kamia and the Southern Diegueño were so friendly that Gifford had difficulty defining a territorial boundary between the two (Gifford 1931:2).

The Kamia apparently also had strong relationships with another group of Yuman speakers, the Quechan tribe to the east, who occupied the Colorado River Valley (Luomala 1978:593). The two tribes were so familiar with each other that it was reported in 1849 that the “Grand Chief of the Cuchans (Quechan)” was a Kamia and born in a New River settlement (Gifford 1931:1). The two tribes shared many traits, including the practice of agriculture, and frequently were allied in battle together (Ibid:17-18). As with the Southern Diegueño, friendly relations made territorial boundaries between the Quechan and the Kamia difficult to ascertain, but the boundaries on Kroeber’s maps (where the Quechan territory is marked as Yuma) are a close approximation (Gifford 1931:2). Gifford even records Kamia living on the west bank of the Colorado, although the land evidently belonged to the Quechen territory (Gifford 1931:4).

Some overlapping of territory may have occurred with the Cahuilla, whose boundaries lay close to the north, extending from the Salton Sink up to the San Bernardino Mountains (Bean 1978:575). There is no record of any interaction with the Kamia; the Cahuilla preferred to trade and intermarry among tribes more closely related to their own language and culture, such as the Gabrielino, found along the coast near present-day Los Angeles (Ibid: 575). Their language belongs to the Cupan subgroup of the Takic family of Uto-Aztecan stock (Ibid: 575). Since the environment of the Cahuilla was similar to that of the Kamia, subsistence tactics were essentially the same, although with less reliance on agriculture (Ibid: 585).

The Tipai were thought to have lived along the coast and in the mountains for millennia before spreading east into the Mojave Desert and south along the Colorado River around 1000 AD, and eventually extending into the Colorado Desert and around Lake Cahuilla (Luomala 1978:594). As Lake Cahuilla dried up, some migrated back to the mountain region, while others relocated to the banks of the New and the Alamo rivers. Heintzelman recorded a population of 254 Kamia living along the banks of the New River in 1849 (Barker 1976:23). Although European contact with the Tipai occurred with the arrival of the Spanish in 1540 (Luomala 1978:594), the inland band of Kamia may not have encountered colonists until 1769. It was at this time that the Spanish took an interest in inland routes and Gaspar de Portola, governor of the Spanish territory Las Californias, led an expedition through Mexico and across the Colorado Desert region to San Diego (Chartkoff and Chartkoff 1984:259). Still, even before this, the effects of the contact on the coast rippled through native settlements, resulting in population drops even among the interior tribes due to the introduction of European pathogens (Cook 1978:92).

The Kamia band of Tipai were a semi-sedentary people who, in contrast with the rest of the Tipai, practiced horticulture during summer months, after the floods of the Colorado had peaked

(Luomala 1978:592; Barker 1976:24). Crops such as maize (*Zea mays*), tepary beans (*Phaseolus acutifolius* var. *latifolius*), and several species of gourds and melons were grown, as were cowpeas (*Vigna sinensis*) which had been introduced by the Spanish (Barker 1976:24). Irrigation canals were typically not used in most areas, with exception of the Jacumba Valley, but occasionally sloughs were dammed to thoroughly soak an area before planting (Gifford 1931:22). This agriculture was supplemented by gathering wild plant foods, with a particular reliance on mesquite (*Prosopis juliflora*) and screwbean (*Prosopis pubescens*) (Barker 1976:26). They also practiced hunting rabbits, deer, sheep, and small mammals, and fishing in sloughs around the New River (Ibid: 28).

The last Kamia chief died in 1905 and was not replaced because the population was too scattered (Ibid: 31), and the entire Kamia social system suffered a breakdown, although there were still living Kamia individuals. Kamia descendants may have survived this breakdown, but currently no longer show any cultural distinction from the other Tipai bands.

### *Historic Setting*

#### Spanish Period (1540 AD to 1821 AD)

Due to its remoteness and dry, nearly waterless environment, the western deserts of the United States were rarely visited by Europeans until the intensive settlement of the 20<sup>th</sup> century. One early European explorer of the region was Hernando de Alarcon, who was most likely the first Spanish explorer to discover the Colorado River, in the 1540s. Spanish explorers would visit the desert region several hundred years later as they attempted to locate a more direct travel route between their much older and well-established missions in Sonora, just south of present-day Arizona, and New Mexico with the missions of San Diego, San Gabriel, near present day Los Angeles, and Monterey. The latter missions were all located along coastal Alta California (northern California) and were on the frontier with Russian fur-trappers who were moving south along the Pacific coast. Thus, as Weber (1992:246) points out “the success or failure of New California as a bastion against Russian expansion seemed to depend on the rapid delivery of reinforcements, food, and supplies.”

Spanish officials and clerics in California made many attempts during the mid-18<sup>th</sup> century to have the various viceroys of Mexico provide a reliable supply network. Finally, after much resignation, Antonio María de Bucareli, upon a visit and much convincing by Father Junípero Serra, enlisted the aid of the Sonoran frontier officer Capitán Juan Bautista de Anza in 1773 to find an appropriate overland route from Sonora to San Diego and onto Monterey; along with the overland route, a sea venture was also formulated with the effect that both the sea and land routes would send a message to the Russians that Alta California belonged to Spain. Anza acquired the assistance of a small group of soldiers and two Franciscan friars, the most notable being Francisco Garcés, who had made the trip through the lower Colorado Desert several times. The Anza-Garcés journey started in 1774 at the mission in Tubac, south of present-day Tucson, Arizona, headed south to Altar in the state of Sonora, Mexico, and one month later arrived at the junction of the Gila and Colorado rivers. By early 1774, the Anza-Garcés expedition had crossed the Sonoran Desert, encountered the Yuman Indians along the Colorado, crossed the San Jacinto Mountains, and reached the San Gabriel Mission (Ibid: 251-252).

In 1781, to further secure the overland travel route between Sonora and the California coast, José de Gálvez, who had argued for the establishment of an outpost along the Colorado as early as 1771 and was now Secretary of the Indies, ordered the construction of two outposts along the Colorado River: Purísima Concepción, near present-day Yuma, and San Pedro y San Pablo de Bicuñer, near present-day Laguna Dam (Ibid: 257). Although Father Garcés was the leading priest for the villages, Teodoro de Croix became the first Comondancia General de Provincias Internas in 1777 (The Texas State Historical Association 2001). In effect, de Croix was the commandant for the interior provinces of Mexico and was the person responsible for ensuring the success of the enterprise of the two newly established villages along the Colorado. Four years after the creation of the villages, the Yuma Indians, because of the ill treatment caused to them by the Spanish, attacked the villages killing Father Garcés along with many of the settlers. In 1782, Pedro Fages, who had arrived in New Spain in 1765 and had argued for an increased force to defend against Indian attacks and Russian encroachment, was sent to quell the Indian uprising. Although Fages rescued several of the remaining Spanish captives in Yuman custody and managed to inflict heavy damage on the Yuman villages, this did not encourage the Yuman to any peace accords with the Spanish. By the close of the 18<sup>th</sup> century, New Mexico again did not have a reliable overland route to their settlements along the Pacific coast of Alta California and were forced to rely on sea ventures to supply these settlements (Weber 1992:258).

#### Mexican Independence (1821 AD to 1848 AD)

The downfall of Spain as a colonial imperialist in the New World likely had its most dramatic beginnings in 1810, when a group of Anglo-Americans, who were living in Spanish-controlled West Florida, had rebelled against the Spanish-controlled government in West Florida and captured the town of Baton Rouge on behalf of the United States government. Because of its own domestic problems, Spain could do little to provide economic assistance to its overseas ventures and in 1819 signed a peace accord, the Adams-Onís Treaty, which gave East Florida to the United States and in effect de facto control of West Florida to the United States. However, Texas, a heavily contested region, was to remain under Spanish control.

Just two years after the signing of the Adams-Onís Treaty, Agustín de Iturbide, in 1821, led a successful coup over the Spanish-controlled government in New Spain. Iturbide was an officer in the Spanish military in New Spain but became disenchanted with the new government ruling Spain. In 1820, he was assigned by the Spanish government to suppress an uprising against the government, but instead Iturbide led the coup. In February of 1821, Iturbide issued the “Plan of Iguala,” which laid the framework for New Spain’s independence from Spain. By August of 1821, the New Spanish government signed the Treaty of Córdoba recognizing the change of government to Iturbide’s insurrection. In the process, Iturbide self-righteously ordained himself Agustín I, emperor of New Spain, in 1822. Because of his despotism, Antonio López de Santa Anna led a successful coup in 1824, thereby ending the reign of Iturbide. However, Iturbide reign would leave an infamous legacy for Mexico. In 1822, Iturbide permitted Stephen Austin and small group of Anglo-Americans to construct a settlement inside the border of Texas, more likely as an act of appeasement to limit the increasingly frequent border disputes. This act, however, only furthered the cause of the Anglo-Americans to take control of the southwest.

Little to no development activities were conducted in the northern territories of New Spain during this period. The Colorado Desert was nearly forgotten about and only referenced as Indian (Yuman) horse thieves were chased through the desert. However, between 1826 and

1827, Romualdo Pacheco, who would become the first California-born governor of the State of California and was sub-Lieutenant, Engineer officer, and aide-de-camp to the governor of Mexican California, made several exploratory expeditions through the region (Stott 1950:4). Several years later, a group of Anglo-American traders departed St. Louis in 1831, headed for Santa Fe, traveled through the Colorado Desert and ended in San Diego. One person of note in this trip was Jonathan Trumbull Warner of Connecticut, who was a clerk on the expedition (Ibid: 4). Warner later acquired San Jose Valley in San Diego County; the valley became known as “Warner’s Ranch,” the name it retains to this day.

### American Period (1848 AD – Present)

There are two likely main causes for the Mexican-American War, 1846 to 1848: the Texas War of Independence and “Manifest Destiny.” Jacksonian Democrats coined the phrase “Manifest Destiny” in the 1840s as a political philosophy whereby the United States would control all of the land between the Atlantic and Pacific Ocean. The focus was primarily on the northwest coast, in Oregon territory, and on the Texas territory. In 1845, during the Presidency of James K. Polk, the United States annexed Texas and in 1846 invaded Mexico. President Polk, in 1846, also enlisted the aid of Mormon volunteers to form a battalion and advance on the Mexican Army in California. The Mormons already had a large population in the West particularly in Salt Lake City, Utah. By June 1846, Colonel Stephen W. Kearney, commander of the western army, with the assistance of Brigham Young, recruited 314 Mormon soldiers (Vurtinus 1979). Before the fall of 1846, the battalion moved through the southwest towards California and eventually reached San Diego on January 29, 1847. In the process, the western army, with the aid of the Mormon battalion, established garrisons in San Diego, Los Angeles, at the old mission of San Luis Rey, and established a battery in Cajon Pass, San Bernardino County (Ibid).

In 1848, the United States, victorious over the Mexican Army, signed the Treaty of Guadalupe Hidalgo, thereby acquiring all Mexican territory north and west of the Rio Grande and Gila rivers. This land included Texas, New Mexico territory, and Alta California. In the same year, Anglo-Americans discovered gold in the mountains of California, particularly in San Bernardino County and near Julian in San Diego County. Following the discovery of a large gold field in California, the United States admitted California to the Union as the 31<sup>st</sup> state in 1850. Upon discovery of gold, California transformed from a Hispanic backwoods frontier to the new Anglo-American “Golden State.”

The settlement of the Imperial Valley, however, owes much of its early history to Dr. Oliver M. Wozencraft. In 1849, Wozencraft, on his way to the gold fields of San Bernardino from New Orleans, traveled through the Imperial Valley and noted the soil fertility and potential for arability. He was likely the first person to recognize the potential for agriculture and, because the Colorado River was much higher than the valley, the feasibility of irrigating the valley through the construction of a gravity canal from the Colorado River (Garnholz 1991:15). Wozencraft’s opinion of the fertile valley was re-affirmed in 1853 when Jefferson Davis, U.S. Secretary of the War Department, ordered a scientific expedition along the Colorado River for the placement of fortifications. This expedition was led by Lieutenant R.S. Williamson and William Phipps Blake, a professor of Yale College. Blake noted the fertility of the alluvial soil at the southern end of the Salton Sink, even stating “it is indeed a serious question, whether a canal would not cause the overflow once more of a vast surface, and refill, to a certain extent, the dry valley of the ancient lake” (Ibid: 7). In fact, Blake’s expedition in the Salton Sink was the

most scientific of its time and included soil scientists, geologists, geographers, and paleontologists to name a few. Blake's expedition was the first to scientifically describe that the Colorado River had meandered through the valley, delivered enough silt to block the mouth of the Gulf of California, and recognized that the banks of the current Colorado River course were much higher than that of Imperial Valley (Smith 1979:2); the Colorado River historically flooded the valley several times during the 19<sup>th</sup> century including 1840, 1842, 1852, 1859, and 1867 (Garnholz 1991:7).

With the information gathered from the scientific expedition, Wozencraft pressed the State of California into granting him approximately 1,600 square miles or roughly ten million square acres (essentially the entire Coachella and Imperial valleys). However, the federal government retained title to the land in this region of California and Wozencraft was unable to convince Congress, even with the results of the scientific analysis of the valley, to support his efforts. Wozencraft then approached George Chaffey to finance the project. Chaffey was also unconvinced and noted that the "Imperial Valley was to [sic] hot for white men to prosper" (Ibid:17); Chaffey would later change his mind and near the end of the 19<sup>th</sup> century would lead the effort to irrigate the valley. Still undeterred, Wozencraft hired the Los Angeles County surveyor, Ebenezer Hadley, in 1860 to draw up a plan to irrigate the valley by diverting the Colorado River through the Alamo River (Ibid:15). Wozencraft eventually left California for Washington, D.C. to lobby Congress; he died several years later without ever convincing Congress and never seeing his dream fulfilled. While Wozencraft failed to create an irrigation network, his efforts during the mid-19<sup>th</sup> century lead the way for future development efforts.

Marc Reisner, author of *Cadillac Desert* (1986), describes the passion investors had to convert the dry, arid wastelands of the west into fertile agricultural oases and discusses many of the negative environmental effects of these changes in the landscape. The history of Imperial County is just one example of this obsession and is defined almost entirely by two main events at the beginning of the 20<sup>th</sup> century: the creation of a network of irrigation canals to hydrate the dry but potentially fertile Imperial Valley, and the flooding of the valley caused by the diversion of the Colorado River from its natural course, through the construction of these irrigation canals.

Between 1893 and 1894, the Colorado Irrigation Company, under the direction of Chief Engineer Charles R. Rockwood, attempted to irrigate the Imperial Valley—following upon Wozencraft's earlier attempts. Originally known as the "Valley of the Dead," understandable considering it receives less than 3 inches of rainfall per year, Charles Rockwood renamed it "Imperial Valley" upon his grand vision of channelizing the Colorado through thousands of miles of canal lines with the net effect of irrigating hundreds of thousands of acres of land in the Colorado Desert (Reisner 1986:122). Teaming with George Chaffey, head of the California Development Company, Rockwood, who became the Chief Engineer of the company in 1901, continued upon the plans established by Wozencraft in the mid-19<sup>th</sup> century to have a canal, referred to as the "main channel," constructed from the Colorado River through the Imperial Valley using an ancient overflow channel of the Colorado known as the Alamo River (Sperry 1975). Chaffey, to avoid conflict with the Mexican government over land development—the canal was to be developed almost entirely on the south side of the border, which because it was conducted by a foreign agency, was prohibited by Mexican law, established a subsidiary to the California Development Company; it was known as the Sociedad de Irrigación y Terrenos de la Baja California (Smith 1979:2). By 1901, the Imperial Valley was irrigated and attracted many

new settlers and farmers from the mid-west. Imperial County was established several years later, in 1907, from the eastern portions of San Diego County.

George Chaffey, who had earlier spurned Oliver Wozencraft's idea of settling and irrigating the Imperial Valley, introduced Charles Rockwood into the Colorado Irrigation Company more because of his experience in working on canal projects and deep financial interests in seeing the development of the southwest. One of the main problems throughout the entire canal venture project was constant silting, which needed consistent dredging of mud. The solution was to build a wooden, although supposedly temporary, structure referred to as the "Chaffey Gate" (Sperry 1975). The year the gate was constructed, 1904, was one of the wetter years on record and the gate was constructed too high on the riverbank. Arguments at the time seem to suggest that Chaffey had the gate constructed correctly, but because the water level was high at the time the engineer in charge of the project placed several removable flashboards in the bottom of the gate, which silted over rapidly (Ibid). The next few years were very dry causing the canal's water level to drop, which precipitated the construction of more diversions and gates around the Chaffey gate. The year 1905, however, was extremely wet, which caused several flooding episodes. The fifth flooding episode completely destroyed all remaining gates and dams along the canal network system. The Colorado River, originally flowing to the Gulf of California on an easterly course, had changed its course and started flooding the Alamo River and the Salton Sink in Imperial Valley.

In addition to the financial troubles caused by not providing an adequate and steady flow of water to ranchers, farmers and developers of the Imperial Valley, and the damage to the canal system caused by the overflow of the Colorado River, the Southern Pacific Railroad Company threatened a lawsuit against the company for flooding their railroad line along the Salton Sink. A year later, the company reorganized and the board was taken over by men associated with the Southern Pacific, including Epes Randolph, who was Assistant to the President of the Southern Pacific and became President of the Development Company (Ibid). The task of returning the Colorado to its natural course heading to the Gulf of California was such a daunting, and very expensive quest that the Southern Pacific eventually ended its association with the California Development Company; the Southern Pacific did however request over \$3 million from the United States government for expenses incurred in turning the Colorado back towards the Gulf—the government awarded them \$1 million 22 years later (Ibid). Only the construction of the Hoover Dam allowed for more effective control of the Colorado River for irrigation purposes.

At about the same time that Rockwood and Chaffey were devising plans to irrigate the Imperial Valley, W.F. Holt was developing an idea to introduce electricity to the region through hydroelectric power. Holt formed the Holton Power Company in 1903 with the purpose of constructing a 40-foot drop on the Alamo River. By 1916, the Holton Power Company was successfully producing enough energy to supply the needs of the entire Imperial Valley. Soon after, the Nevada-California Electric Company (Nev-Cal) acquired the Holton Power Company. Nev-Cal had problems, however, in producing enough reliable electricity to the expanding agricultural economy of the valley and electricity rates to produce the power demand were becoming too high for the average farmer.

The development of the IID helped change the tide. The IID organized in 1911 to acquire the land rights of the defunct California Development Company, and its Mexican subsidiary Sociedad de Irrigación y Terrenos de la Baja California, from the Southern Pacific. By the mid-1920s, IID was delivering water to over 500,000 acres of arable land (IID 1998). The Boulder

Canyon Act, passed in 1928, authorized the Bureau of Reclamation to construct the Boulder Dam, completed in 1935, along the Colorado River. A product of the dam construction, the Imperial Valley and IID benefited greatly, since the Act and the dam provided immediate hydroelectric power to the valley. The Act also provided for the construction of the All-American Canal; in 1932, the Secretary of the Interior and IID signed an agreement to allow IID the utilization of hydroelectric power from the canal system for repaying the costs of the canal construction. The All-American Canal was begun in 1934 and the first diesel generating plant was constructed near Brawley in 1936 (IID 1998). Subsequent hydroelectric plants were constructed in 1941 and a steam plant and El Centro Switching Station were constructed in 1949 in El Centro (Ibid.).

### *Native American Consultation*

URS contacted the Native American Heritage Commission (NAHC) on December 15, 2005 and requested a list of known sacred lands near the Project Site and a list of Most Likely Descendants (MLDs) who may have some knowledge of known cultural resources or Traditional Cultural Properties (TCPs) that may be affected by this undertaking. The NAHC responded on December 19, 2005 and stated that they have no listings of known sacred lands near the Project Site.

In addition to the response letter, the NAHC also supplied a contact list for MLDs for the Project. These MLDs were sent a notification of the proposed undertaking on December 27, 2005 with a request that they respond with any known cultural resources, TCPs, or Sacred Lands near the Project Site. As of this draft, URS has not received any letters of concern that the Project may impact any traditional cultural areas or properties.

### *Background Research*

Preparation for the cultural resources field survey consisted of an inventory and overview of known cultural resources within the study area. Bibliographic references and pertinent data compilation were conducted at the Southeastern Information Center (SIC) Imperial Valley College Desert Museum (IVCDM), the Office of Historic Preservation's (OHP) website for California Historical Landmarks (CHL), and the NPS Database for National Register of Historic Places (NRHP). A record search of previously recorded sites and surveys, as well as National and Historic Landmarks (NHL), was made for a one-half mile radius surrounding the Project Site, the defined APE. This study provided the basis for evaluating Project impacts and assessing current survey requirements and cultural resources likely to be present on the ECGS Site.

### Previous Survey Within or Adjacent to Study Area

Records at the SIC IVCDM revealed that four previous cultural resource surveys were conducted within the APE, which includes the ECGS Site proper and a one-half mile radius from the ECGS Site. The first survey, conducted by ENSR Consulting and Engineering, was a study for the laying of a fiber optic cable in 1990, and the survey covered the length of Dogwood Road bordering the east side of the ECGS boundary. Preparatory work by KEA Environmental, Inc. for the M Transmission Line Pole Replacement Project in 1998 also covered the east side of the ECGS boundary before turning east onto East Villa Avenue. A survey completed by ASM Affiliates, Inc., in 1998 for the IID's L-Line Pole Replacement Project covered the southern

boundary of the ECGS, along the Southern Pacific Railways, and then turned transverse to the railways to cut through the ECGS along an unnamed road. The survey of the Calipatria City/County Library Building, completed in 2001 by Jay von Werlhof, Archaeologist/Historian, was also located along Dogwood Road.

### Previously Recorded Sites Within or Adjacent to Study Area

Previous surveys conducted within the APE yielded no historic buildings, structures, or cultural sites. Based on a review of the cultural resources site files at the SIC IVCDM, no other additional sites or historic structures have been previously recorded within one-half mile of the Project Site.

### *Field Survey*

#### Archaeological Survey

To identify previously unrecorded cultural resources, URS Principal Investigator Diane Douglas and Senior Archaeologist Kevin Mock conducted a field survey of the ECGS Site (now considered Parcel F) on November 16, 2005. During project development, IID considered using one of the four adjacent parcels (owned by IID) as temporary construction laydown or parking areas. As such, URS archaeologists Kevin Mock and Dustin Kay subsequently resurveyed the additional IID property on February 21 and 22, 2006. Subsequently, IID determined to keep all project disturbances, including the Temporary Construction Area within the existing and previously disturbed ECGS Site. The Project Site is located within Area F (Figure 6.4-1, Approximate Survey Areas).

The results of the cultural resources survey were as follows:

- **Area A:** this approximate 17-acre area was completely covered with cut grass/hay with 0% ground visibility, thus limiting the results of the archaeological survey.
- **Area B:** the entire 20 acres of this parcel has been graded and graveled, and is now called the “pole yard”—this is the transmission pole storage area; there were no visible cultural resources within Area B.
- **Area C:** there was 100% ground visibility in this approximately 58-acre area; there were no cultural resources visible on the ground surface.
- **Areas D and E:** both of these areas, 33 and 40 acres, respectively, had approximately 80 to 90% ground visibility; there was no cultural resources evident within either of these two areas.
- **Area F:** the surface soils of this area were significantly disturbed, primarily due to the prior construction of other generating station components, such as generators, boilers, water tanks, and El Centro Switching Station. Little to no vegetation is present within the Project Site and visibility was 95 to 100%. Although no archaeology sites were observed in this area, one historic building, the IID Steam Turbine Building constructed in 1949, is located within to this surveyed area (see discussion of this building in next section). Dr. Douglas and Mr. Mock performed a reconnaissance level walk over of the Temporary Construction Area on November 16, 2005. Visibility was excellent. The entire area has been extensively disturbed by previous construction of the water storage basins and irrigation canal and no historic or

prehistoric cultural resources were observed. Additionally, minimal ground disturbance is associated with preparing the area for construction parking and laydown, therefore there is an extremely low probability that buried cultural resources will be encountered on the ECGS Site.

### Historic Buildings Survey

One historic structure, the Steam Turbine Building constructed in 1949 (earliest segments of the building as it was built in phases over the course of 10 years), is located in the ECGS Site (Figure 6.4-2, Photograph of west-facing side of the ECGS, and Figure 6.4-3, Close-up view of northwest corner of Steam Turbine Building, showing extant doors and covered-over doorways). The views presented in Figure 6.4-2 and Figure 6.4-3 are not visible to the general public (located approximately 2,600 feet west of the ECGS Site) and would only be visible from the ECGS Site or the 58-acre fenced property (which is also owned by IID).

The building is eligible for the CRHR under Criteria 1 (event); it is part of a pattern of events that convey the IID's significance and success in serving the Imperial Valley. Only preliminary research has been conducted on the building and, prior to nomination to the CRHR, further research and historic context studies should be completed (see CUL-3).

Based on historical field research, the Steam Turbine Building is a vernacular industrial interpretation of the International style. The Steam Turbine Building's setting is a public utility generation facility, and several non-historic public industrial buildings, structures, water basins, power generating equipment, and open space surround it. The building has a compound rectangular form and is composed of reinforced poured concrete. The building is four stories, approximately 60-feet tall, and sits on a concrete foundation. The Steam Turbine Building has a raised ceiling and fenestration is through a series of tall vertical windows evident on the west elevation. The windows are separated into six sections by a mullion and two rails. The uppermost sections are awning windows and the lowermost sections are hopper windows.

The windows feature a small square sash-glazing pattern. The building has an asymmetrical flat roof. The east and south sides of the roof project higher than the west side. Air ducts and vents are located above the east side of the building's roof. The north elevation of the roof has parapet walls and the west elevation of the roof features a guardrail above the west wall. The southern part of the roof has exposed structural beams. Two parallel structural beams run the length of the west elevation and are flush with the exterior wall. There are several access entryways to the building. Predominately, these entryways are unadorned or are window paneled doors situated at various locations on the north and west elevations. The west elevation of the Steam Turbine Building has two corrugated pent roofs that project from the building's exterior walls and are used to cover power-generating equipment.

Specific alterations to the building have affected its ability to communicate its architectural significance. Foremost, several original doors and openings on the second story of the west elevation have been removed. The doors and openings have been in-filled with a concrete finish similar to the original exterior finish. This was done most likely simultaneously with the removal of a catwalk that previously was on the exterior of the second story west elevation. Exterior building surface alteration from the removal of these features are evident. These alterations are less than 50 years old and are not considered significant as architectural elements and features. Additionally, while it is evident the building is a late interpretation of the

International style; it does not embody the distinctive characteristics of a type, period, or method of construction. The building does not represent the work of a master, possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction.

The condition of the Steam Turbine Building is good. While the exterior of the building has rust damage on the walls and exposed structural beams, the building remains functional and structurally sound. The building's historic activity as an energy facility is evident by the resource's visual feel and physical elements.

A brief historic study of the building, in order to determine its eligibility to the California Register, discovered the Steam Turbine Building conveys the significance, importance, and impact of the IID in providing water and power for the Imperial Valley and Coachella Valley areas of Imperial County. The Steam Turbine Building is historically significant due to (1) its association with the IID in providing water and power to the Imperial Valley, and (2) for the fact that portions of the Steam Turbine Building are over 50 years old. The Steam Turbine Building is part of a historical trend and pattern of events by the IID to supply residents and commercial ventures of Imperial Valley with electric power and water resources. Additionally, the IID and the ECGS have contributed significantly to the agriculture and economic vitality of the Imperial Valley. Since 1949, the Steam Turbine Building and its historic function is representative of the IID's achievement of providing commercial prosperity through transforming a dry desert climate into one of the country's leading agriculture areas. The Steam Turbine Building is important to the area's historic context, since it illustrates a mid-20<sup>th</sup> century solution to a problem that had plagued the Imperial Valley for over a century. Through new technology and advancements in electric generation, the Steam Turbine Building demonstrates the historic ability of the IID to generate power for a region that had faced numerous difficulties and obstacles throughout time.

Aside from the Steam Turbine Building's significance under Criteria 1, the resource retains a significant amount of its original integrity. This conclusion was drawn by evaluating the seven aspects of integrity as set forth by the NPS. Those aspects include location, design, setting, materials, workmanship, feeling, and association.

Location is defined as the "place where the historic property was constructed or the place where the historic event occurred" (NPS 1997: 44). The Steam Turbine Building is located at its original location in El Centro. The Steam Turbine Building's location is part of a pattern of historic events involving the Imperial Valley and the IID.

Design is defined as the "combination of elements that create the form, plan, space, structure, and style of a property" (Ibid: 44). The Steam Turbine Building is a late vernacular interpretation of the International style of architecture. The International style in southern California developed in Los Angeles and reached its apex of popularity from 1935 to 1941 (Gebhard 1977:704). The style was influenced by an earlier movement in Europe in the 1920s, and emphasized function over traditional decorative motifs and regional characteristics (Burden 2002:178). The International style is relatively rare in the United States, and following World War II developed into the Contemporary Style, where various wall cladding materials and roof types were used more widely.

International buildings, like the Steam Turbine Building, are characterized by flat rooftops, smooth and uniform wall surfaces, and large expanses of windows (Blumenson 1981:75). Other character defining features and elements evident in the Steam Turbine Building include a lack of

ornamentation, absence of projecting eaves, multiple roof levels, and no decorative window or door detailing (Ibid: 75). The building retains its original form, footprint, massing, space, and plan.

Setting is defined as the “physical environment of a historic property” (NPS 1997: 45). The setting of the Steam Turbine Building is within a public utility generation facility. The potential resource is surrounded by several non-historic buildings and structures used in conjunction with the Steam Turbine Building. Additionally, open space and rural roads are part of the Steam Turbine Building’s setting. All of these elements are important to the visual feel and quality of the site’s built environment.

Materials are defined as the “physical elements that were combined or deposited during a particular period of time and in a pattern or configuration to form a historic property” (Ibid: 45). Many of the original fabric and materials of the Steam Turbine Building are still evident, such as wall finishes, hardware, windows, and foundation. However, the building’s present and continued use as a functioning Steam Turbine Building have led to the addition of inappropriate physical elements, such as water basins, pipes, and power-generating equipment. In addition, several original and historic physical elements of the building have been removed, such as the west elevation’s catwalk, and several doors and windows (which have been in-filled with concrete).

Workmanship is defined as the “physical evidence of the crafts of a particular culture or people during any given period in history or prehistory” (Ibid: 45). Though the building lacks ornamentation and decorative detailing, a high degree of workmanship is evident in the Steam Turbine Building. Over 55 years after its initial construction (earliest segments of the building as it was built in phases over the course of 10 years), the Steam Turbine Building remains in good condition.

Feeling is defined as the “property’s expression of the aesthetic or historic sense of a particular period of time” (Ibid: 45). The feeling of the building has been affected by the addition of materials that do not reflect those used in the original historic design and the removal of historic features (e.g., the original catwalk and doors to the exterior). The building retains a high level of original design, setting, and workmanship.

Association is defined as the “direct link between an important historic event or person and a historic property” (Ibid: 45). The Steam Turbine Building is directly linked to the IID and the patterns of historic events prompted by the public utility company to provide water and hydroelectric power for the area. The building is intact enough to convey this relationship, and the building’s physical elements communicate the property’s historic character.

### **6.4.3 Environmental Consequences**

Under CEQA Appendix G, a project potentially would have significant impacts if it would cause substantial adverse change in the significance of a historical resource (i.e., a cultural resource eligible to the CRHR, or archaeological resource defined as a unique archaeological resource which does not meet CRHR criteria), or would disturb human remains. A non-unique archaeological resource need to be given no further consideration, other than the simple recording of its existence by the lead agency.

In many cases, determination of a resource’s eligibility to the CRHR (or its uniqueness) can be made only through extensive research, archaeological testing, and other costly and time-consuming methods. To the maximum extent possible, resources should be avoided. If, as the

project proceeds, it proves impossible to avoid cultural resources on a selected project component, formal eligibility evaluation will be undertaken. If the resource meets the criteria of eligibility to the CRHR or is a unique archaeological resource, it will be formally addressed under Sections 15064.5 and 15126.4 of the CEQA guidelines. Resources that are not formally evaluated will be treated as eligible: all mitigation measures pertaining to the avoidance of direct and indirect impacts will apply.

#### **6.4.4 Mitigation Measures**

##### ***6.4.4.1 Mitigation of Adverse Effects Due To Construction Related Impacts***

Mitigation under CEQA Sections 15064.5 and 15126.4 must address impacts to the values for which a cultural resource is considered important. To mitigate adequately, it must therefore be determined what elements make a site eligible for the CRHR. The first line of mitigation is complete avoidance of all cultural resources when feasible.

Measures to ensure avoidance of cultural resources within the APE, and measures to avoid indirect impacts to nearby cultural resources are described below. The mitigation measures and procedures described would apply to any cultural resources in the project's APE, or cultural resources recommended as not significant and such recommendations are concurred with by the CEC, regardless of facility component. With implementation of the measures listed below, no significant impacts to known cultural resources are expected to occur.

##### ***Avoidance***

**CUL-1:** If a potentially significant cultural resource is discovered, if feasible, the route/temporary use area will be modified to avoid that resource. If there are no feasible means to avoid the resource, the cultural resource will be tested; if found significant, the following mitigation measures will be implemented. These will be performed in consultation with the CEC.

- Physical demarcation and protection
- Crew education
- Archeological and/or Native American monitoring
- Formal Compliance with CEQA Section 15064.5 and 15126.4

##### ***Physical Demarcation and Protection***

There are no instances where components of the Project will be placed within 100 feet of a known cultural resource not previously found to be ineligible for inclusion on the CRHR. Therefore, no temporarily fencing or ground demarcation to designate an environmentally sensitive area for the cultural resource is required at this time. However, if a cultural resource is discovered during construction temporary fencing will be placed around the area and construction equipment will be directed away from the cultural resource and construction personnel will be directed to avoid entering the area.

### *Crew Education*

Since no sensitive archaeological resources have been identified within the Project Site or ECGS Site (Area F) training of the construction crew is not being proposed. If sensitive cultural resources are identified during construction excavations, the Applicant would implement the following training program. The construction crew will be informed of the resource values involved and of the regulatory protections afforded those resources. The crew will also be informed of procedures relating to designated culturally sensitive areas, and cautioned not to drive into these areas or to park or operate construction equipment in these areas. The crew will be cautioned not to collect artifacts, and asked to inform a construction supervisor in the event that cultural remains are uncovered.

### *Archaeological Monitoring*

The area to be affected by the undertaking has been largely developed and subsurface ground disturbance is not expected below a level that has not already been disturbed. Therefore, archaeological resources are not anticipated and therefore, no archeological monitoring is proposed by the Applicant. However, if any grading or excavation activities encounter subsurface archaeological resources, an archaeologist who meets the Secretary of Interior standards will be contacted to assess the resource and make a determination of the resources significance. If unanticipated resources are discovered during construction, construction work in the immediate vicinity will be halted and the resources will be addressed under the procedures set forth at CEQA Section 15064.5.

### *Native American Monitoring*

The area to be affected by the undertaking has been largely developed and subsurface ground disturbance is not expected below a level that has not already been disturbed. Therefore, Native American resources are not anticipated and therefore, no Native American monitoring is proposed by the Applicant. However, if any grading or excavation activities encounter subsurface Native American resources, an archaeologist who meets the Secretary of Interior standards will be contacted to assess the resource and make a determination the resources significance. If unanticipated resources are discovered during construction, construction work in the immediate vicinity will be halted and the resources will be addressed under the procedures set forth at CEQA Section 15064.5.

### Formal Compliance with CEQA Section 15064.5 and 15126.4

In the event that a resource is encountered during excavation and cannot be avoided during the placement of any Project component, further archaeological work will be undertaken as appropriate to assess the importance/significance of the resource prior to the Project continuing with construction in that area.

#### *6.4.4.2 Mitigation for Resources Discovered During Construction*

If unanticipated resources are discovered during construction, they will be addressed under the procedures set forth in CEQA Sections 15064.5 and 15126.4. If possible, the resource will be avoided through design modification, or protective measures as described above. If the resource

cannot be avoided, the Project Archaeologist will consult with the CEC. If it is determined that the resource is significant, measures to mitigate impacts will be devised in consultation with the CEC, and will be carried out by the Applicant.

#### ***6.4.4.3 Protection of Resources During Operation and Maintenance***

Emergency maintenance and repair, and routine inspection have no potential to cause impacts to cultural resources, since the area to be affected by the undertaking has been largely developed and subsurface ground disturbance is not expected below a level that has not already been disturbed.

#### **6.4.5 Specific Archaeological Mitigation Measures**

The area to be affected by the undertaking has been largely developed and subsurface ground disturbance is not expected below a level that has not already been disturbed. Therefore, archaeological resources are not anticipated and therefore, the Applicant proposes no archaeological mitigation measures. However, if any grading or excavation activities encounter subsurface archaeological resources, a SOI-qualified archaeologist will be contacted to assess the resource and make a determination of the resources significance. If unanticipated resources are discovered during construction, construction work in the immediate vicinity will be halted and the resources will be addressed under the procedures set forth at CEQA Section 15064.5.

#### **6.4.6 Mitigation Measures for Built Environment**

CEQA Section 15064 states that in evaluating the significance of effect caused by a project, the Lead Agency shall consider the direct and indirect physical changes in the environment that may be caused by the undertaking. Under CEQA Section 15064.5(b)(1), a project may cause a substantial adverse change in the significance of a historic resource if the change includes “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired.” In other words, a project has a substantial impact on a historical resource if this impact diminishes those qualities that make the resource eligible for the California or National Registers.

In many cases, determination of a resource’s eligibility to the CRHR (or its uniqueness) can be made only through extensive research. As such, the best alternative to preserve historic resources is the “no action alternative.” However, because this alternative is not always feasible, any project should consider alternatives or mitigation measures to lessen the effects to these resources. Where possible, to the maximum extent possible, impacts to resources should be avoided. If, as the project proceeds, it proves impossible to avoid cultural resources, formal eligibility evaluation will be undertaken. If the resource meets the criteria of eligibility to the CRHR, it will be formally addressed under Sections 15064.5 and 15126.4 of CEQA.

Jeremy Hollins, the URS architectural historian, has determined that the Steam Turbine Building is not architecturally significant due to the facts that (1) it does not embody the distinctive characteristics of a type, period, or method of construction, (2) the building does not represent the work of a master, possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction, (3) the building was constructed in segments over the course of 10 years, and (4) modifications were made to the structure and

exterior surface of the building (removal of existing boilers, doorways, windows) as the building evolved over the past 55 years.

However, given IID's historical significance to the Imperial Valley and the age of some sections of the Steam Turbine Building, the Steam Turbine Building is considered to be historically significant. The Steam Turbine Building will be affected by some Project design components such as replacement of a catwalk on the west elevation (approximately 15 feet high), and construction of the CTG/HRSG on the west side of the Steam Turbine Building which will cause modification of a historic landscape viewshed. The Project will affect the building's historical integrity, specifically the aspects of feeling, design, and materials.

To mitigate below a level of less than significant impact, CEQA recommends following the guidelines established by the Secretary of the Interior and published in *Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstruction Historic Buildings* or *Guidelines for Rehabilitating Historic Buildings*. However, mitigation below a level of less than significant impact is not always feasible or practicable. In these instances, the NPS has established guidelines for treating historic properties through the Historic American Building Survey (HABS).

#### 6.4.6.1 Specific Built Environment Mitigation Measures

Past impacts to the Steam Turbine Building include the removal of a catwalk along the western elevation, approximately 15 feet above the ground, as well as the construction of other modern facilities in the building (the inside integrity of the building was not analyzed) and within the ECGS Site. The construction of the Unit 3 Repower Project on the building's west elevation will cause modification of a historic landscape viewshed. Additionally, the Project affects the integrity of the resource, specifically the aspects of feeling, materials, and design. While the building is not significant for its architecture, a HABS should be completed to preserve any remaining historic elements.

In most cases, photo-documentation or archival-quality drawings of historic buildings or structures do not necessarily redress the physical impact caused to a historic resource (14 CCR §15126.4(b)). However, CEQA has determined that this recordation serves a legitimate archival purpose and that the level of documentation should be commensurate with the level of significance of the resource.

**CUL-2:** The Applicant proposes to mitigate the adverse effects to a level of below significant through HABS Level 3 documentation, the lowest and least intensive of the HABS programs. This level of documentation involves photo-documentation, using large format, archival-quality prints; a sketch of the building; and a historic narrative/architectural data form. The HABS documentation will conform to and meet the Secretary of Interior's Guidelines.

**CUL-3:** The Applicant will further mitigate the impact to the Steam Turbine Building by nominating the building to the CRHR as well as erecting a historical marker interpreting the building's significance to the community and the development of the Imperial Valley region. Accordingly, the HABS Level 3 archival and historical research and site evaluations will be performed to complete the CRHR nomination.

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### Approximate Survey Areas

El Centro Unit 3 Repower Project  
Imperial Irrigation District



SOURCE:  
Imperial Irrigation District



NO SCALE

**FIGURE 6.4-1**





**Figure 6.4-2**  
**Photograph of west-facing side of the IID El Centro Steam Turbine Building.**



**Figure 6.4-3**  
**Close-up view of northwest corner of power plant, showing extant doors and covered-over doorways.**

