3.1 Introduction

Chapter 3 describes the environmental components in the project area that could be affected by implementation of the OWEF. Chapter 3 describes resources, resource uses, special designations, and other important topics (i.e., public health and safety, social and economic considerations, and environmental justice conditions) that may be impacted by the OWEF. "Resources" include air, climate change, soil, water, vegetative communities, wild horses and burros, wildlife and plant species, wildland fire ecology and management, as well as cultural, paleontological, and visual resources. "Resource uses" include livestock grazing management, minerals, recreation management, transportation and public access, and lands and realty. "Special designations" include areas of critical environmental concern (ACECs), wilderness areas (WAs), and wilderness study areas (WSAs).

Information and data used to prepare this chapter were obtained from the CDCA Plan, various BLM planning and NEPA documents. Information and data were also collected from many other related planning documents and research publications prepared by various federal and state agencies as well as from private sources pertaining to key resource conditions and resource uses found within the project area. The purpose of this chapter is to provide a description of affected resources and BLM program areas within the existing environment of the project area, which will be used as a baseline to evaluate and assess the impact of the alternatives described in Chapter 2. Descriptions and analyses of the impacts themselves are presented in Chapter 4, Environmental Consequences.

3.2 Air Resources

3.2.1 Environmental Setting

3.2.1.1 Meteorological Conditions

The Imperial Valley portion of Imperial County has a subtropical desert climate characterized by low precipitation, hot summers, mild winters, low humidity, and strong temperature inversions. As described in Table 3.2-1, based on historic weather data from El Centro, average summer (June-September) high and low temperatures in the study area range from 107°F to 68°F, respectively. Average winter (December-March) high and low temperatures in the study area range from 79°F to 41°F. Total rainfall in El Centro averages 2.96 inches per year with about 60 percent of the total rainfall occurring during the winter rainy season (November-March) and 35 percent occurring during late summer and early fall desert monsoon season (August-October) (WC, 2010). The Imperial Valley is in the rain shadow of the Santa Rosa and San Jacinto mountains, which greatly reduces the winter season rainfall in comparison with coastal and mountain areas located to the west.

Table 3.2-1. El Centro Monthly Average Temperature and Precipitation

Month	Temperature (°F)		Precipitation (inches)
	Maximum	Minimum	
January	70	41	0.51
February	75	45	0.36
March	79	49	0.31
April	86	54	0.05
May	94	61	0.03
June	103	68	0.01
July	107	76	0.06
August	106	77	0.32
September	101	71	0.36
October	91	59	0.35
November	78	47	0.17
December	70	41	0.43

Source: The Weather Channel, 2010.

The OWEF project site area, although located relatively close to El Centro, is located further from the Salton Sea and the Imperial Valley agricultural areas than it is from El Centro, and so would on average have lower relative humidity than El Centro, has much higher average wind speeds, and would have temperatures that are often influenced from areas west of the project site which could be higher or lower than those occurring in El Centro. However, the generalized weather conditions summarized above (low precipitation, hot summers, mild winters, low humidity, and strong temperature inversions) apply to both the OWEF project site and El Centro.

The project site area, as would be expected for a wind energy project site, is characterized by predominant and strong winds from the southwest and west southwest. Winds from these two directions, as determined by data from Boulevard, located 10 miles west southwest of the project site, occur approximately 53 percent of the time with the average hourly wind speeds of 8.8 miles per hour and 9.1 miles per hour from each direction, respectively (WRCC, 2011). The Applicant also provided over 7,700 hours of wind data collected in 2010 from a monitoring tower at the project site that indicates a median

wind speed of 10.7 miles per hour at a 10-meter height and that the wind direction frequency for winds from the southwest and west southwest occur approximately half of the time.

3.2.1.2 Existing Air Quality

The United States Environmental Protection Agency (USEPA), California Air Resources Board (CARB), and the local air districts classify an area as attainment, unclassified, or nonattainment depending on whether or not the monitored ambient air quality data shows compliance, insufficient data available, or non-compliance with the ambient air quality standards, respectively. The National and California Ambient Air Quality Standards (NAAQS and CAAQS) relevant to the proposed OWEF are provided in Table 3.2-2.

Table 3.2-2. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards
Ozone (O_3)	1-hour	0.09 ppm	—
	8-hour	0.070 ppm	0.075 ppm[a]
Carbon monoxide (CO)	1-hour	20 ppm	35 pm
	8-hour	9.0 ppm	9.0 ppm
Nitrogen dioxide (NO_2)	1-hour	0.18 ppm	0.100 ppm[b]
	Annual mean	0.030 ppm	0.053 ppm
Respirable particulate matter (PM10)	24-hour	50 µg/m^3	150 µg/m^3
	Annual mean	20 µg/m^3	—
Fine particulate matter (PM2.5)	24-hour	—	35 µg/m^3
	Annual mean	12 µg/m^3	15 µg/m^3
Sulfur dioxide (SO_2)	1-hour	0.25 ppm	0.075 ppm[b]
	3-hour	—	0.5 ppm
	24-hour	0.04 ppm	0.14 ppm
	Annual mean	—	0.03 ppm

Source: CARB, 2010a.

ppm=parts per million; µg/m^3= micrograms per cubic meter; "—" = no standard

Notes:

[a] The attainment of this federal standard is based on the three-year average of the fourth-higest daily maximum 8-hour average ozone concentration.

[b] The new federal 1-hour NO_2 and SO_2 standards are based on the 98th and 99th percentile of daily hourly maximum values, respectively.

The proposed OWEF is located north, south, and west of the unincorporated community of Ocotillo, in Imperial County. The project site is located within the Salton Sea Air Basin (SSAB), under the jurisdiction of Imperial County Air Pollution Control District (ICAPCD or District). The project area within the SSAB is designated as non-attainment for the federal and state ozone and PM10 standards. In 2009 the USEPA determined that Imperial County had attained the federal 1997 8-hour ozone standard, but the official redesignation to attainment is awaiting approval of the ozone maintenance plan. The project area is designated as attainment or unclassified for the state and federal CO, NOx, SOx, and PM2.5 standards. An area approximately 10 miles east of the OWEF project site in Imperial County surrounding the more urbanized cities of El Centro and Calexico is designated as nonattainment for the 24-hour PM2.5 standard. Table 3.2-3 summarizes the federal and State attainment status of criteria pollutants for the project site area based on the NAAQS and CAAQS, respectively.

Table 3.2-3. Attainment Status for the Project Area within the Salton Sea Air Basin		
Pollutant	Attainment Status	
	Federal	State
Ozone	Moderate Nonattainment	Moderate Nonattainment
CO	Attainment[a]	Attainment
NO_2	Attainment[b]	Attainment
PM10	Serious Nonattainment	Nonattainment
PM2.5	Attainment[c]	Attainment[a]
SO_2	Attainment	Attainment

Source: CARB, 2010b; EPA, 2010

Note:

[a] Attainment = unclassified

[b] The federal 1-hour NO_2 standard attainment/nonattainment designation will not be completed until 2012.

[c] Areas east of the site surrounding El Centro and Calexico are designated as nonattainment of the federal PM2.5 standard.

3.2.1.3 Criteria Air Pollutants

The following is a general description of the criteria air pollutants that would be emitted by the project's construction and operation and a summary of the monitored concentrations for each pollutant at sites near to the project site. The SSAB has nine- monitoring stations to measure air quality. The most representative monitoring site, the El Centro 9th Street Station, within the SSAB has been used to represent the background air quality conditions for the proposed project site. Table 3.2-4 provides a summary of the last three years of available ambient monitoring data.

Table 3.2-4. Background Ambient Air Quality Data – El Centro 9th Street Monitoring Station									
CARB Air Monitoring Station	Number of Days Exceeding NAAQS			Number of Days Exceeding CAAQS			Maximum Concentration (ppm or µg/m³)[a]		
	2008	2009	2010	2008	2009	2010	2008	2009	2010
1-Hour Ozone	1	0	0	4	9	3	0.135	0.111	0.122
8-Hour Ozone	2	11	10	9	30	29	0.084	0.085	0.082
8-Hour CO	0	0	1	0	0	1	1.71	3.20	9.69
1-Hour NO_2	--	--	--	0	0	0	0.081	0.122	0.141
1-Hour NO_2 [b]	--	--	--	--	--	--	0.047	NA	NA
Annual NO_2	--	--	--	--	--	--	0.009	0.008	0.004
24-Hour PM10 - Federal	0	13.1	13.1	--	--	--	88.2	243.1[c]	69.4
24-Hour PM10 – State	--	--	--	25.5	104.6	NA	88.7	233.7[c]	70.2
Annual PM10 - State	--	--	--	--	--	--	32.7	47.9	NA
24-Hour PM2.5 - Federal [d]	0	3.1	0.0	--	--	--	ND	17.9	13.4
Annual PM2.5 - Federal	--	--	--	--	--	--	ND	7.9	6.5
Annual PM2.5 - Sate	--	--	--	--	--	--	ND	8.0	6.6

Source: CARB, 2011; CARB, 2010c;

NA = Not Available; ND = No Reported Data; "--" = Not Applicable

Notes:

[a] Gaseous pollutant (ozone, NO_2, and CO) concentrations are shown in ppm and particulate (PM10 and PM2.5) concentrations are shown in µg/m³.

[b] 98th percentile of maximum daily 1-hour concentrations.

[c] These data may represent exceptional natural events (high wind or fire.)

[d] 98th percentile of federal 24-hour PM2.5.

Ozone (O_3)

In the presence of ultraviolet radiation, both nitrogen oxides (NOx) and volatile organic compounds (VOCs) go through a number of complex chemical reactions to form ozone. Table 3.2-4 includes the maximum hourly concentration of O_3 and the number of days O_3 exceeds the federal and State standards. As shown in Table 3.2-4, ozone continues to exceed the State 1-hour standard and both the federal and State 8-hour ozone standards. The project site area is designated nonattainment for the federal and State ozone standards.

Carbon Monoxide (CO)

CO is primarily a byproduct of motor vehicle exhaust, which contributes more than two-thirds of all CO emissions nationwide. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources of CO emissions include industrial processes and fuel combustion in sources such as boilers and incinerators. Despite an overall downward trend in concentrations and emissions of CO, some metropolitan areas still experience high levels of CO. Table 3.2-4 summarizes the CO monitoring data collected over the past three years. The project site area is designated attainment of the State and federal CO standards.

Nitrogen Dioxide (NO_2) and Nitrogen Oxides (NOx)

Nitrogen dioxide is a reddish brown, highly reactive gas that is formed in the ambient air through the oxidation of nitric oxide. NOx, the generic term for a group of highly reactive gases that contain nitrogen and oxygen in varying amounts, plays a major role in the formation of ozone, particulate matter (PM), and acid rain. NOx emissions result from high-temperature combustion processes such as vehicle exhaust emissions and power plants. Home heaters and gas stoves can also produce substantial amounts of NO_2 in indoor settings. The majority of the NOx emitted from combustion sources is in the form of NO, while the balance is mainly NO_2. NO is oxidized by O_3 in the atmosphere to NO_2 but some level of photochemical activity is needed for this conversion. Table 3.2-4 summarizes the NO_2 monitoring data collected over the past three years. The project site area is designated attainment of the State and federal NO_2 standards. It is expected that the site area would also be designated attainment of the new federal 1-hour standard.

Particulate Matter (PM)

PM pollution consists of very small aerosol and solid particles floating in the air. PM is a mixture of materials that can include smoke, soot, dust, salt, acids, and metals. Some PM, such as pollen, is naturally occurring. PM also forms when gases emitted from motor vehicles and industrial sources undergo chemical reactions in the atmosphere. The USEPA currently regulates two types of PM emissions, PM10 and PM2.5. PM10 refers to particles less than or equal to 10 microns in diameter and PM2.5 refers to particles less than or equal to 2.5 microns in diameter.

Respirable Particulate Matter (PM10). PM10 can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. Gaseous emissions of pollutants like NOx, sulfur oxides (SOx), VOCs, and ammonia, given the right meteorological conditions, can form PM in the form of nitrates (NO_3), sulfates (SO_4), and organic particles. These pollutants are known as secondary particulates, because they are not directly emitted, but

are formed through complex chemical reactions in the atmosphere. Table 3.2-4 summarizes the ambient PM10 monitoring data collected over the past three years. The table includes the maximum 24-hour and annual arithmetic average concentrations and the number of days above the federal and State standards. The project site area is designated nonattainment of the State and federal PM10 standards.

Fine Particulate Matter (PM2.5). Fine particulate matter, or PM2.5, is derived mainly from either the combustion of materials, or from precursor gases (SOx, NOx, and VOCs) through complex reactions in the atmosphere. PM2.5 consists mostly of sulfates, nitrates, ammonium, elemental carbon, and a small portion of organic and inorganic compounds. Table 3.2-4 summarizes the ambient PM2.5 monitoring data collected over the past three years. The project site area is designated attainment of the State and federal PM2.5 standards.

Sulfur Dioxide (SO_2)

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Fuels such as natural gas contain very little sulfur and consequently have very low SO_2 emissions when combusted. By contrast, fuels high in sulfur content such as coal or heavy fuel oils can emit very large amounts of SO_2 when combusted. Sources of SO_2 emissions come from every economic sector and include a wide variety of fuels, gaseous, liquid and solid.

As shown in Table 3.2-4, the ICAPCD is designated attainment or unclassified for all SO_2 State and federal ambient air quality standards. Due to the restrictions for the use of high sulfur fuels, reduction in gasoline and diesel sulfur contents and reduction in SO_2 emissions from other industrial sources (such as refineries), SO_2 pollution is no longer a major air quality concern in most of California including the project site area, which is designated attainment of the State and federal SO_2 standards. SO_2 monitoring data is only collected at the Calexico-Ethel Street monitoring station within the SSAB. SO_2 monitoring data collected at this monitoring station does not represent the SO_2 emissions in the project site area since the Calexico-Ethel Street monitoring station is greatly affected by SO_2 emissions from Mexicali, Mexico. Therefore, no SO_2 monitoring data is presented in Table 3.2-4.

Summary

As discussed above and presented in Table 3.2-3 and Table 3.2-4, the project area is designated nonattainment for the State and the federal ozone and PM10 standards. The project area is designated as attainment for the PM2.5, CO, NO_2, and SO_2 federal and State standards.

3.2.1.4 Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill and the chronically ill, especially those with cardio-respiratory diseases.

Residential areas are also considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure

periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

The nearest residential receptors for the project are located immediately south of the northeastern portion of the project site in the unincorporated community of Ocotillo and east of the southeast portion of the project in the unincorporated community of Coyote Wells. There are no other types of sensitive receptors (schools, hospitals, etc.) located near the project site.

3.2.2 Applicable Regulations, Plans, and Standards

3.2.2.1 Federal

The District is responsible for issuing federal New Source Review (NSR) permits and has been delegated enforcement of the New Source Performance Standards (NSPS). The federal NSR program requires air quality construction and operating permits for stationary sources when they exceed specific emissions thresholds for nonattainment pollutants, NSR air quality permits, and for attainment pollutants, Prevention of Significant Deterioration (PSD) air quality permits. The NSPS are emission control/performance standards for specific types of stationary sources, such as boilers, cement kilns, gas turbines, etc. However, this project does not include stationary sources of air pollution that would have emissions high enough to trigger federal air quality permitting, or that would be subject to any of the NSPS.

The proposed OWEF is located in a federal nonattainment area and requires the approval of a federal agency (BLM). Therefore, the proposed project is subject to the general conformity regulations (40 CFR Part 93). The project area is classified as moderate nonattainment of the federal ozone ambient air quality standard and serious nonattainment of the federal PM10 ambient air quality standard. The general conformity emissions applicability thresholds for these nonattainment classifications are 100 tons/year of ozone precursor emissions (NOx and VOCs), and 70 tons/year of PM10 emissions.

The USEPA has set emission standards for nonroad diesel engines, including those used on construction cranes. These standards are published in the US Code of Federal Regulations, Title 40, Part 89 *[40 CFR Part 89]*.

3.2.2.2 State

As discussed above in Section 3.2.1.2, CARB has established CAAQS for many of the same pollutants covered under the federal NAAQS that are as stringent as or more stringent than the NAAQS. Pollutants regulated under these standards include O_3, NO_2, CO, PM10, PM2.5, SO_2, lead, sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. Additional information regarding the CAAQS that are relevant to the project is provided Section 3.2.1.2.

CARB also has on-road and off-road engine emission reduction programs that indirectly affect the project's emissions through the phasing in of cleaner on-road and off-road equipment engines. Additionally, CARB has a Portable Equipment Registration Program that allows owners or operators of portable engines and associated equipment to register their units under a statewide portable program to operate their equipment, which must meet specified program emission requirements, throughout California without having to obtain individual permits from local air districts.

The State has also enacted a regulation for the reduction of diesel particulate matter (DPM) and criteria pollutant emissions from in-use off-road diesel-fueled vehicles (CCR Title 13, Article 4.8, Chapter 9, Section 2449). This regulation provides target emission rates for PM and NOx emissions from owners of fleets of diesel-fueled off-road vehicles and applies to equipment fleets of three specific sizes and the target emission rates are reduced over time (CARB, 2007).

3.2.2.3 Local

Imperial County Air Pollution Control District (ICAPCD) Rules and Regulations

The ICAPCD has primary responsibility for regulating stationary sources of air pollution situated within its jurisdictional boundaries. To this end, the ICAPCD implements air quality programs required by State and federal mandates, enforces rules and regulations based on air pollution laws, and educates businesses and residents about their role in protecting air quality. The ICAPCD is also responsible for managing and permitting existing, new, and modified sources of air emissions within the County. The project would include one small propane or natural gas fired emergency generator that would require permitting, and would include short term stationary sources during construction, such as the temporary concrete batch plant, that would require permitting through the construction contractor.

The applicable rules and regulations include:

- **Rule 201 – Permits Required.** This rule requires an Authority to Construct and Permit to Operate before the construction or operation, respectively, of non-exempt emission sources. The only known stationary source that will require permitting is the proposed small propane or natural gas fired emergency generator that would be located at the project's new substation. It is also likely that the temporary concrete batch plant that will operate during construction will require permits from the ICAPCD. It is assumed that these permits will be the responsibility of the construction contractor.
- **Rule 207 – New and Modified Stationary Source Review.** This rule establishes the stationary source requirements that must be met to obtain a Permit to Operate, including the requirement to comply with best available control technology (BACT), and provide emission offsets for emission increases above the following thresholds:
    - 137 lbs/day for ROC, NOx, SOx, PM10 and CO
- **Rule 401 – Opacity of Emissions.** Rule 401 limits visible emissions from emissions sources. This rule prohibits discharge of any emissions, other than uncombined water vapor, for more than three minutes in any hour.
- **Rule 407 – Nuisance.** This rule restricts emissions that would cause nuisance or injury to people or property (identical to California Health and Safety Code 41700).
- **Rule 800 – General Requirements for Control of Fine Particulate Matter.** Specifies the types of chemical stabilizing agents and dust suppressant materials that can (and cannot) be used to minimize fugitive dust from anthropogenic (man-made) sources. The rule also specifies test methods for determining compliance with visible dust emission (VDE) standards, stabilized surface conditions, soil moisture content, silt content for bulk materials, silt content for unpaved roads and unpaved vehicle/ equipment traffic areas, and threshold friction velocity.

- **Rule 801 – Construction and Earthmoving Activities.** Requires fugitive dust emissions throughout construction activities (from pre-activity to active operations and during periods of inactivity) to comply with the conditions of a stabilized surface area and to not exceed an opacity limit of 20 percent, by means of water application, chemical dust suppressants, or constructing and maintaining wind barriers. A Dust Control Plan is also required and shall be submitted to the Air Pollution Control Officer (APCO) at least 30 days prior to the start of any construction activities on any site that will include 10 acres or more of disturbed surface area for residential developments, and 5 acres or more of disturbed surface area for non-residential development.
- **Rule 802 – Bulk Materials.** Limits the fugitive dust emissions from the outdoor handling, storage and transport of bulk materials. Requires fugitive dust emissions to comply with the conditions of a stabilized unpaved road surface and to not exceed an opacity limit of 20 percent. It specifies that bulk materials be transported using wetting agents, allow appropriate freeboard space in the vehicles, or be covered. It also requires that stored materials be covered or stabilized.
- **Rule 803 – Carry-out and Track-out.** Limits carry-out and track-out during construction, demolition, excavation, extraction, and other earthmoving activities (Rule 801), from bulk materials handling (Rule 802), and from paved and unpaved roads (Rule 805) where carry-out has occurred or may occur. Specifies acceptable (and unacceptable) methods for cleanup of carry-out and track-out.
- **Rule 805 – Paved and Unpaved Roads.** Specifies the width of paved shoulders on paved roads and guidelines for medians. Requires gravel, roadmix, paving, landscaping, watering, and/or the use of chemical dust suppressants on unpaved roadways to prevent exceeding an opacity limit of 20 percent.

Imperial County Air Pollution Control District (ICAPCD) Plans

The ICAPCD has recently adopted a modified Ozone Air Quality Management Plan (AQMP) and a PM10 State Implementation Plan (SIP) to meet attainment for those pollutants that are designated nonattainment (ICAPCD, 2009a; ICAPCD 2009b). These lastest air quality plans have not yet been approved by USEPA. The ICAPCD also adopted Final ICAPCD 2009 Reasonably Available Control Technology (RACT) SIP (ICAPCD, 2009c) to require implementation of VOC and NOx emission controls that are economically and technologically feasible assuring that major sources of ozone precursor emissions are controlled to a reasonably possible extent. These measures are essentially to control emissions from the stationary sources; however, the proposed project does not include any major stationary source. Therefore, the ICAPCD RACT SIP is not applicable to the proposed project.

The applicable plans include:

- **ICAPCD Ozone Air Quality Management Plan.** The current federally approved ozone plan for Imperial County is the 1991 Air Quality Attainment Plan (ICAPCD, 1991). This plan includes recommendations for measures to control stationary source and mobile source Reactive Organic Gases (ROG) and NOx emissions. Measures applicable to the proposed project include additional NOx control for internal combustion engines (ICEs). The proposed project's equipment would comply with the measures listed in the 1991 plan.

  Imperial County failed to meet federal attainment for the 8-hour ozone NAAQS, and was formally reclassified as moderate nonattainment of the federal 8-hour ozone standard in 2008. USEPA issued a final ruling determining that Imperial County moderate 8-hour ozone nonattainment area has attained

the 1997 8-hour standard. In the final ruling issued on December 3, 2009, USEPA specifies that this determination does not constitute a redesignation to attainment, but the area still remains as moderate nonattainment for 1997 8-hour ozone standard until the ICAPCD provides an ozone maintenance plan as part of the ozone AQMP. Imperial County formally approved a modified AQMP that includes the required ozone attainment maintenance plan on July 13, 2010. This final ozone plan contains control measures or strategies for the reduction of NOx and ROG emissions from stationary and mobile sources. The only measures potentially applicable to the proposed project would include transportation control measures listed in the County's CEQA Handbook to reduce trips to and from the site; including carpool/vanpool measures and facility design measures to enable the use of public transportation; and reducing trips to and from the site during shift changes and lunch. The Applicant has proposed several transportation control measures including vanpools and the use of low emission electric-hybrid vehicles, as appropriate.

- **ICAPCD Particulate Matter 10 State Implementation Plan (SIP).** The current federally approved PM10 plan for Imperial County is the 1993 State Implementation Plan for PM10 in the Imperial Valley (ICAPCD, 1993). This plan focuses on the reduction of fugitive dust emissions from wind erosion, agricultural operations including open burning, unpaved roads, and construction activities. The recommended mitigation measures for project construction and operation would comply with the recommended PM10 mitigation measures in this plan.

  USEPA reclassified Imperial County from "moderate" to "serious" non-attainment of the 24-hour PM10 NAAQS on August 11, 2004. As part of this re-classification, Imperial County is required to develop a new PM10 Attainment Plan that provides attainment and at least 5 percent annual reduction in PM10 or PM10 precursor emissions until the area reaches attainment status. Imperial County completed a new PM10 Attainment Plan on August 11, 2009, that addresses impacts of PM10 transport from Mexicali, Mexico, impacts of PM10 generated by natural events such as wind and wildfire, and impacts from local sources. This plan states that the PM10 NAAQS has been attained but for international emissions. The plan relies on control measures already adopted as District rules. The core of the PM10 control program is based on the Imperial County Regulation VIII fugitive dust rules, most provisions of which were effective January 2006. Regulation VIII includes Rule 801 Construction and Earthmoving Activities, Rule 802 Bulk Materials, Rule 803 Carry-out and Track-out, Rule 804 Open Areas, Rule 805 Paved and Unpaved Roads, and Rule 806 Conservation Management Practices. USEPA approval of this plan is pending.

3.3 Climate Change

3.3.1 Environmental Setting

3.3.1.1 Climate Change

There is general scientific consensus that climate change is occurring and that human activity contributes in some measure (perhaps substantially) to that change. Man-made emissions of greenhouse gases (GHGs), if not sufficiently curtailed, are likely to contribute further to continued increases in global temperatures. Increases in global temperature will cause a reduction in the polar ice caps and increase sea level, which will flood low lying areas of the world. Additionally, climate change will shift rainfall patterns that will cause significant impacts to agriculture and fresh water availability worldwide.

3.3.1.2 Greenhouse Gases

Generation of electricity can produce GHGs in addition to the criteria air pollutants that have been traditionally regulated under the federal and state Clean Air Acts. GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6), and are so named because of their ability prevent heat from the surface of the earth from escaping to space. The principal climate-change gases resulting from human activity that enter and accumulate in the atmosphere are listed below.

- Carbon Dioxide (CO_2): CO_2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and chemical reactions (e.g., the manufacture of cement). CO_2 is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- Methane (CH_4): CH_4 is emitted during the production and transport of coal, natural gas, and oil. CH_4 emissions also result from livestock and agricultural practices and the decay of organic waste in municipal solid waste landfills.
- Nitrous Oxide (N_2O): N_2O is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.
- Fluorinated Gases: HFCs, PFCs, and SF_6 are synthetic, powerful climate-change gases that are emitted from a variety of industrial processes. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrochloro-fluorocarbons, and halons). These gases are typically emitted in smaller quantities, but because they are potent climate-change gases, they are sometimes referred to as high Global Warming Potential (GWP) gases.

GHG emissions in the United States come mostly from energy use. Energy-related carbon dioxide emissions, resulting from fossil fuel exploration and use account for approximately three-quarters of the human-generated GHG emissions in the United States, primarily in the form of carbon dioxide emissions from burning fossil fuels. More than half the energy-related emissions come from large stationary sources such as power plants; approximately a third comes from transportation; while industrial processes, agriculture, forestry, other land uses, and waste management make up a majority of the remainder of sources (EPA, 2010). For wind power energy generation facilities the stationary source GHG emissions are much smaller than fossil fuel-fired power plants.

Global warming potential is a relative measure, compared to carbon dioxide, of a compound's residence time in the atmosphere and ability to warm the planet. Mass emissions of GHGs are converted into carbon dioxide equivalent (CO2e) emissions for ease of comparison.

3.3.2 Applicable Regulations, Plans, and Standards

3.3.2.1 Federal

U.S. Environmental Protection Agency (EPA)

On April 2, 2007, in *Massachusetts v. EPA*, 549 U.S. 497 (2007), the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act. The Court held that the EPA must determine whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, the EPA is required to follow the language of section 202(a) of the Clean Air Act. The Supreme Court decision resulted from a petition for rulemaking under section 202(a) filed by more than a dozen environmental, renewable energy, and other organizations.

On April 17, 2009, the Administrator signed proposed endangerment and cause or contribute findings for GHGs under Section 202(a) of the Clean Air Act. The EPA held a 60-day public comment period, which ended June 23, 2009, and received over 380,000 public comments. These included both written comments as well as testimony at two public hearings in Arlington, Virginia, and Seattle, Washington. The EPA carefully reviewed, considered, and incorporated public comments and has now issued these final Findings.

The EPA found that six GHGs taken in combination endanger both the public health and the public welfare of current and future generations. The EPA also found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the greenhouse as air pollution that endangers public health and welfare under CAA section 202(a). These Findings were based on careful consideration of the full weight of scientific evidence and a thorough review of numerous public comments received on the Proposed Findings published April 24, 2009. These Findings became effective on January 14, 2010 (EPA, 2011a).

Specific GHG Regulations that the EPA has adopted to date are as follows:

40 CFR Part 98. Mandatory Reporting of Greenhouse Gases Rule

This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO2e emissions per year (EPA, 2009). The proposed project would not trigger GHG reporting as required by this regulation.

40 CFR Part 52. Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule

U.S. Environmental Protection Agency recently mandated to apply Prevention of Significant Deterioration (PSD) requirements to facilities whose stationary source CO2e emissions exceed 75,000 tons per year (EPA, 2011a). The proposed project would not trigger PSD permitting as required by this regulation.

3.3.2.2 State

There are a variety of statewide rules and regulations which have been implemented or are in development in California that mandate the quantification or reduction of GHGs. Under CEQA, an analysis and mitigation of emissions of GHGs and climate change in relation to a proposed project is required where it has been determined that a project will result in a significant addition of GHGs to the atmosphere.

Executive Order S-3-05

Executive Order S-3-05 was established by Governor Arnold Schwarzenegger in June 2006. Executive Order S-3-05 establishes statewide emission reduction targets through the year 2050:

- by 2010, reduce GHG emissions to 2000 levels;
- by 2020, reduce GHG emissions to 1990 levels; and
- by 2050, reduce GHG emissions to 80 percent below 1990 levels.

This Executive Order does not include any specific requirements that pertain to the Proposed Action. However, actions taken by the State to implement these goals may affect the Project, depending on the specific implementation measures that are developed.

California Renewable Portfolio Standard Program

Senate Bill (SB) 1078 established California's Renewable Portfolio Standard (RPS) program in 2002. The RPS program requires electrical corporations and electric service providers to purchase a specified minimum percentage of electricity generated by eligible renewable energy resources. The bill requires the California Energy Commission to certify eligible renewable energy resources, to design and implement an accounting system to verify compliance with the RPS by retail sellers, and to allocate and award supplemental energy payments to cover above-market costs of renewable energy. Under SB 1078, each electrical corporation was required to increase its total procurement of eligible renewable energy resources by at least one percent (1%) per year so that 20 percent of its retail sales were procured from eligible renewable energy resources.

In 2006, SB 107 accelerated the RPS program by establishing a deadline of December 31, 2010, for achieving the goal of having 20 percent of total electricity sold to retail customers in California per year generated from eligible renewable energy resources.

The RPS goal was increased to 33 percent when Governor Schwarzenegger signed Executive Order S-14-08 in November 2008. Executive Order S-14-08 was later superseded by Executive Order S-21-09 on September 15, 2009. Executive Order S-21-09 directed the CARB to adopt regulations requiring 33 percent of electricity sold in the State come from renewable energy by 2020. On September 23, 2010, the CARB approved a Renewable Electricity Standard regulation.

The 33 percent RPS goal became law when SB X1-2 was signed into law by Governor Brown in April 2011. SB X1-2, which will be codified into the California Public Resources Code, requires that all electricity retailers in the state meet a 33 percent RPS by the end of 2020, and also requires that they meet a 20 percent RPS by 2013, and a 25 percent RPS by 2016. This law does not specifically apply to the project, but the project would help electricity retailers to meet their RPS obligations required under this law.

Senate Bill 1368

Senate Bill 1368 (SB 1368) was enacted in 2006, and required the California Public Utilities Commission (CPUC) to establish a CO_2 emissions standard for base load generation owned by or under long-term contract with publicly owned utilities. The CPUC established a GHG Emissions Performance Standard (EPS) of 1,100 pounds of CO_2 per megawatt-hour. SB 1368 also requires the posting of notices of public deliberations by publically owned companies on the PUC website and establishes a process to determine compliance with the EPS. The proposed project, as a renewable energy generation facility, is determined by rule to comply with the GHG Emission Performance Standard requirements of SB 1368.

Assembly Bill 32

AB 32, also known as the California Global Warming Solutions Act of 2006, was established in 2006 to mandate the quantification and reduction of GHGs to 1990 levels by 2020. The law establishes periodic targets for reductions, and requires certain facilities to report emissions of GHGs annually. The bill also reserves the ability to reduce emissions targets lower than those proposed in certain sectors which contribute the most to emissions of GHGs, including transportation.

Additionally, the bill requires:

- GHG emission standards to be implemented by 2012; and
- CARB to develop an implementation program and adopt GHG control measures "to achieve the maximum technologically feasible and cost-effective GHG emission reductions from sources or categories of sources." CARB issued a draft Climate Change Scoping Plan in December 2008.

The Assembly Bill 32 Scoping Plan contains the main strategies California will use to reduce the GHG that cause climate change. The scoping plan has a range of GHG reduction actions which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 cost of implementation fee regulation to fund the program. These measures have been introduced through four workshops between November 30, 2007, and April 17, 2008. A draft scoping plan was released for public review and comment on June 26, 2008, followed by more workshops in July and August 2008. The proposed scoping plan was released on October 15, 2008, and approved at the Board hearing on December 12, 2008.

Per CARB's Updated Scoping Plan Fact sheet January 21, 2010 (http://www.arb.ca.gov/cc/facts/scoping_plan_fs.pdf), the following has occurred:

- 12 of 30 ARB regulations approved, including all nine Discrete Early Actions;
- Approved measures provide approximately 70 million metric tons (MMT) CO2e in 2020, 40% of the 2020 goal of reducing 169 MMTCO2e; and
- First year of Mandatory Reporting complete - 97% compliance rate.

The mandatory reporting requirements are effective for electric generating facilities with a nameplate capacity equal or greater than 1 megawatt (MW) capacity if their emissions exceed 2,500 metric tonnes per year. However, the proposed project, as a wind energy generation project, is exempt from the mandatory GHG emission reporting requirements for electricity generating facilities as currently required by the CARB for compliance with the California Global Warming Solutions Act of 2006 (AB 32 Núñez, Statutes of 2006, Chapter 488, Health and Safety Code sections 38500 et seq.).

On December 16, 2010, the structure of the cap and trade regulations were adopted and specific enabling regulations must be adopted by CARB by October 2011 to allow these requirements to become effective January 2012. The approved GHG cap and trade regulations still have several remaining action items and will have several amendments until they will have final state approval by the end of 2011. However, the project would not be subject to this regulation since the project's regulated operating emissions would be well below the regulation's 25,000 MTCO2e annual emissions applicability threshold.

Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulating Gear

This new CARB regulation became effective on June 17, 2011. This regulation requires that owners of SF_6 containing gas insulating gear meet annual leakage rate limits, and requires that they measure, record, and report annual SF_6 emissions.

3.3.2.3 Local

Certain Air Pollution Control Districts (APCDs) have proposed numerical or other GHG significance criteria. The ICAPCD, which has local regulatory authority over the air pollutant emissions, has not established guidance or methods to address GHG emissions and impacts. However, ICAPCD on its CEQA webpage identifies the California Air Pollution Control Officers Association (CAPCOA) report, titled "Quantifying Greenhouse Gas Mitigation Measures" (CAPCOA, 2010) as a guidance document for quantification and project-level mitigation of GHG emissions.

3.4 Cultural Resources

Cultural resources are locations of human activity, occupation, or use. They include expressions of human culture and history in the physical environment, such as archaeological sites, buildings, structures, objects, districts, works of art, architecture, and natural features that were important in past human events. They may consist of physical remains or areas where significant human events occurred, even though evidence of the events no longer remains. Cultural resources also include places that are considered to be of traditional cultural or religious importance to social or cultural groups.

Prehistoric resources are recognized as those attributed to Native American groups who occupied the region before contact with Europeans; historic resources are those associated primarily with Europeans and Americans but may also include resources of Native Americans following contact. These resources are more than 50 years old but date to after the time of contact between Native Americans and Europeans. Although a few explorers traversed the region earlier, in extreme southern California, the time of contact between Native Americans and Europeans is generally identified as the 1770s.

Ethnographic resources represent the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, shrines, or ethnic neighborhoods and structures. Sites, artifacts or other ethnographic resources of particular significance to modern Native Americans are often kept confidential by those groups in order to protect such places from disturbance, looting, overuse, or other degradation. Ceremonial sites or objects, burials and associated funerary objects, or places referred to in traditional oral histories are often considered sacred to these groups.

Sacred sites and other places of traditional cultural importance, sometimes called traditional cultural properties (TCPs), are associated with the cultural practices or beliefs of a living community. TCPs are rooted in the community's history and are important in maintaining cultural identity. Such places may be eligible for the National Register of Historic Places (NRHP). Examples of TCPs for Native American communities may include natural landscape features, trail systems, places used for ceremonies and worship, places where plants are gathered that are used in traditional medicines and ceremonies, places where artisan materials are found, and places and features of traditional subsistence systems, such as hunting areas. Given the nature of these resources, they may not necessarily be identified during conventional archeological, historical, or architectural surveys. As a result, the existence and/or significance of such locations often requires input from the tribes that view them is significant. Guidelines for evaluating and documenting traditional cultural properties are provided in the National Park Services' *National Register Bulletin 38* (Parker and King, 1998).

Several cultural resource studies have been completed in support of this EIS. These include a Class II and Class III Inventory Research Design and Work Plan (Tierra, 2010), an archaeological survey (Tierra, 2012a); and a built environment study (Moomjian, 2012). In addition, the BLM has initiated consultation with Indian tribes to identify traditional resources that may otherwise be left unidentified by these studies. Chapter 5 provides a discussion of the BLM's tribal consultation process.

Area of Potential Effects

For purposes of complying with Section 106, the APE for this project generally consists of the following:

1. For archaeological resources, the horizontal APE is defined as the entire 12,436-acre area included within the right-of-way grant. The vertical APE is defined by the depth of ground disturbance associated with the construction of the project and the height of the turbines. For the purpose of the archaeological study, the APE was divided into the direct and indirect impact APEs:
   - The direct impact APE includes all areas where ground-disturbing activities may take place, including turbine locations, transmission corridors, staging areas, access roads, and other supporting infrastructure and improvements, along with a 500-foot buffer surrounding all facilities.
   - The indirect impact APE is defined as those areas within the ROW grant that might be subject to indirect impacts and all portions of the ROW grant that will not be subject to direct impacts.
2. For ethnographic resources, the APE takes into account traditional use areas and traditional cultural properties (TCP) which may be far-ranging, including views that contribute to the significance of the property. These resources are often identified in consultation with Native Americans and other ethnic groups, and issues that are raised by these groups may define the area of analysis. Representatives of some of the Tribes have informed the BLM of a TCP which encompasses the project area and the surrounding region. However, the information provided to date about the characteristics of the TCP only allows the BLM to assume the eligibility of certain portions of it for the National Register of Historic Places (36 CFR 800.4(c)(1)) pursuant to 36 CFR § 800.4. Accordingly, the APE for the TCP is the portion of it that falls within the project footprint and the viewsheds toward Mount Signal, Sugarloaf and Coyote Mountains.
3. For built-environment resources, the APEs are the project area plus a 1-mile buffer. The APE for built-environment resources also includes the community of Nomirage and the Desert View Tower, to account for possible visual impacts.

For the purpose of the present discussion and analysis, the project area of analysis for NEPA and CEQA is equivalent to the APE. The current APE plus a 10-mile buffer is illustrated on Figure 3.4-1 (Area of Potential Effects).

3.4.1 Environmental Setting

Understanding the historic and environmental context in which cultural resources exist is imperative to evaluating impacts of projects on those resources. Descriptions provided in this section are based on information from the *Archaeological Survey Report for the Ocotillo Express Wind Energy Project, Imperial County, California* (Tierra, 2012a).

The project area is located in the westernmost portion of the Colorado Desert in Imperial County. It lies on both sides of Interstate 8 and Highway 98, and surrounds much of the small community of Ocotillo. The project area is relatively flat but slopes down slightly towards the southeast. Elevation of the project area varies from about 300 to 1,400 feet above mean sea level (amsl). West of the project area are the Jacumba Mountains and the In-Ko-Pah Mountains. To the north are the Coyote Mountains and the Carrizo Badlands. The project area lies in what is known as the Yuha Desert, or West Mesa. This is the

southwestern portion of the Colorado Desert (i.e., the desert surrounding the lower Colorado River). The Colorado Desert is, in turn, the northwestern portion of the much larger Sonoran Desert which, as the name suggests, is centered in the Mexican state of Sonora.

During the late Cretaceous (>100 million years ago) a granitic and gabbroic batholith was being formed under and west of the project area. This batholith was uplifted over time and now forms the granitic rocks and outcrops of the Peninsular Range. This range forms the backbone of the Baja California peninsula and coastal southern California. In the early Pliocene, at about 7 million years ago, Baja California and that portion of Alta California, west of the San Andreas Fault System, began moving northwest away from mainland Mexico. This northwest movement along this massive fault zone, known as the East Pacific Rise, created the Sea of Cortez or the Gulf of California. The northern portion of the East Pacific Rise is known as the San Andreas Fault System (Alles, 2004; Singer, 2011).

The Colorado River began carving out the Grand Canyon and depositing prodigious amounts of silt and sand in the Salton Sink as early as 5½ million years ago (Middle Pliocene) (Alles, 2004). At about 2 million years ago (Early Pleistocene), the Sea of Cortez extended north to about where the community of Indio is today. The Colorado River delta and the Salton Trough continued filling with sediments from the Colorado River. These sediments are thought to be as much as 25,000 to 30,000 ft deep in some places (Singer, 2011). By perhaps one million years ago (Mid-Pleistocene), the river had deposited a sufficient amount of sand and silt across the Salton Trough south of the International Border to form a dam that separated the northern Salton Trough from the Gulf of California. The delta area, and what is now Imperial County, became dry land. The Colorado River continued to transport huge amounts of silt. Occasionally, the river shifted course from its silt-elevated river bed near its mouth at the Gulf of California and flowed west and north into the Salton Trough basin periodically throughout the Pleistocene and Holocene periods. This cyclic shift in the course of the river formed freshwater Lake Cahuilla (Alles, 2004; Singer, 2011; Waters, 1983; Wilke, 1978). A significant source of freshwater and lacustrine biotic resources during several periods in prehistory, Lake Cahuilla's shoreline, when it existed, was about 10 miles east of Ocotillo. Lake Cahuilla filled and dried up a number of times over the last 2,000 years. Inundating the entire lower portion of the Coachella Valley, Lake Cahuilla was approximately 115 miles long, about 34 miles wide, and nearly 320 ft deep; during these periods, the elevation of the lake was 40 ft amsl.

Today, the project area consists of a relatively flat basin surrounded by rugged hills and mountains. For the most part, the project area is primarily an alluvial deposit deriving from the Jacumba Mountains to the west, which is part of the granitic Peninsular Range and the Coyote Mountains to the north. These alluvial areas, generally trending to the north-northeast, consist primarily of granitic gravels, sands, and silts. Also on these alluvial fans are clasts of quartz, basalt, and metavolcanic rocks. These rock types were favored by the prehistoric Indians for use as tool stone. The vast majority of archaeological sites in the project area consist of lithic procurement and processing sites on alluvial fans and terraces. Extensive patches of poorly sorted, unpatinated desert pavement also exist here. Covered by a thin layer of gravel and pebbles, these desert pavements form a sort of armor over the silty substrate that protects the land beneath it from wind and water erosion. They form geologically stable areas in which vegetation is minimal and archaeological evidence remains well-preserved. They also appear to have been attractive camping places for prehistoric populations (Rogers, 1966). The alluvium and desert pavements are

dissected by seasonally active arroyos, some of which are deeply incised. In other areas, windblown sands gather against obstacles (e.g., creosote bushes), forming large expanses of active dunes.

In addition to Lake Cahuilla, mentioned above, other freshwater sources in both prehistoric and historic times in the project vicinity may have included:

- Coyote Wells, which were Indian-dug wells, approximately two miles east of the town of Ocotillo.
- Yuha Wells, which were Indian-dug wells, nearly six miles southeast of the town of Ocotillo.
- At least four springs at the base of the Jacumba Mountains, about 8-10 miles west of the Project area.
- New River, approximately 18 miles east of Ocotillo. There was a large Kamia planting area and rancheria along New River called Xachupai in the general vicinity of Seeley and extending south to perhaps below the Mexican Border. New River was a slough of the Colorado River and it was often dry.
- Springs in the Jacumba Valley about 14 miles west of Ocotillo.
- Springs and wells northwest of the Project area along the Southern Emigrant Trail (currently County Route S2 [CR-S2]) at the foot of the Tierra Blanca Mountains. For example, in Carrizo Valley some 14 miles northwest of Ocotillo.
- In addition, numerous large washes draining to the east and south from the Jacumba Mountains to the west and the Coyote Mountains to the north, respectively. Although these washes were only occasional sources of water, they provided important access to and from the upland regions adjacent to the valley areas.

Climate

Prior to the mid-1900s, the climate of the greater Salton Sea Basin was characterized by low relative humidity (10–40%), very low rainfall, high summer temperatures of up to 52° C (125° F), and mild winters. Hard freezes were infrequent (Turner and Brown, 1994). Since the mid-1900s, the relative humidity in the region has risen gradually as more and more agricultural tracts have been developed in the greater Ocotillo area. Precipitation derives mainly from the subtropical monsoons originating in the gulfs of California and Mexico during the summer months (Hall, 1993:7), resulting in violent rainstorms within the upland areas which, in turn, create vigorous runoff resulting in the occurrence of alluvial fans, braided drainages, intermittent streams, and wetland features on the valley floors. Pacific maritime air masses during the winter months account for the remainder of the precipitation. Within the desert areas, the average annual rainfall is as sparse as 6 cm (2.5 in.) per year; however, at the higher elevations the average annual precipitation may range from 10 inches to as much as 30 inches per year. During the spring and late fall, strong winds prevail, occasionally resulting in violent dust storms which move sand and other sediments over the project area.

Flora and Fauna

As the climate of the region is largely determined by topographic features, climate, in turn, largely dictates the character of the biotic environment exploited by native populations. Bean and Saubel (1972) describe three primary life zones that were exploited by the native inhabitants of the Salton Sea Basin: Lower Sonoran, Upper Sonoran, and Transitional. Characteristic plants and animals found in these life zones are listed below.

The Lower Sonoran life zone, which extends from the desert floor to approximately 3,500 ft amsl, is characterized by low rainfall (about 4 inches per year), fine-textured alluvial to sandy soils, and xerophytic plant communities. Creosote bush (*Larrea tridentata*) and bur-sage (*Ambrosia dumosa*) are the dominant plants, replaced by saltbush (*Atriplex* spp.) in areas of more saline or alkaline soils. Adjacent to washes and ephemeral streams, desert willow (*Chilopsis linearis*), smoke tree (*Dalea spinosa*), palo verde (*Cercidium floridum*), desert ironwood (*Olneya tesota*), and catclaw (*Acacia greggii*) are found; mesquite (*Prosopis juliflora*), screwbean (*Prosopis pubescens*), and arrowweed (*Pluchea sericea*) occur adjacent to more permanent water sources and in areas with a very shallow groundwater table such as are found in the more dune-like areas of the project area. Frost-sensitive plants such as ocotillo (*Fouquieria splendens*), barrel cactus (*Ferocactus splendens*), cholla (*Opuntia* spp.), century plant/agave (*Agave deserti*), creosote bush, and Mojave yucca (*Yucca schidigera*) grow on the well-drained slopes adjacent to the desert floor. Approximately 40 percent of the plant species exploited by the Cahuilla are found in this biotic region; the fruits of the fan palm and the flowers and pods of mesquite and screwbean were highly favored (Bean and Saubel, 1972:13). Economically important animals found in this life zone include kangaroo rats (*Dipodomys*), ground squirrels (*Citellus*), wood rats (*Neotoma*), desert cottontail (*Sylvilagus audubonii*), and black-tailed jackrabbit (*Lepus californicus*); desert bighorn sheep (*Ovis canadensis*) is found at the upper reaches of this life zone (Bean and Saubel, 1972; Minckley and Brown, 1994; Turner and Brown, 1994). Sonoran pronghorn once roamed the nearby desert, but they are locally extinct. McDonald (1992) found trace proteins of deer, pronghorn, and bighorn sheep in her archaeological excavation at Indian Hill rock shelter a few miles northwest of the project area, demonstrating their importance to prehistoric Indian populations.

Specifically, the project area lies within the Lower Sonoran creosote bush scrub. Sonoran creosote bush scrub is a vegetation community composed of widely spaced shrubs ranging between 0.5 m and 3 m in height which grow during the rainy season, typically from December through March. Shrubs are dormant during the summer and may remain dormant for long periods of time. Most desert plants flower in the late rainy season, February through March. By June, the desert is dry and hot. As noted above, the area occasionally gets Mexican monsoon thunderstorms in the summer. These can provide prodigious amounts of precipitation in a very short time, resulting in flash floods and arroyo cutting. Plant species characteristic of the project area include creosote bush, bursage, brittle bush (*Encelia farimosa*), agave, Indian rice grass (*Oryzopis hymenoides*), indigo bush (*Psorothamnus schottii*), ocotillo, barrel cactus, pencil, chain, and teddy bear cholla, and various annuals. In the northwestern portion of the Project area, there is a dense stand of agave which was heavily utilized by prehistoric populations as food (Balls, 1962; Cornett, 2002; Schultz, Underwood, and Collett, 2007). According to E.W. Gifford, "Baked mescal [agave] root, an important food in the hilly parts of southern California, was not prepared by the Kamia. The Diegueno, however, cooked the plant in the earth oven. It was traded to the Kamia in the form of dried fibrous cakes (Gifford, 1931:23).

The Upper Sonoran life zone, extending from 3,500–5,000 ft, is characterized by warm summers and cold winters with rainfall averaging 38 cm (15 in.) annually. Pinyon pine (*Pinus monophylla, P. quadrofolia*) and California juniper (*Juniperus californica*) are the dominant plant species of this zone. Other species include red shank or ribbonwood (*Adenostoma sparsifolium*), chamise (*A. fasciculatum*), ironwood, antelope bush (Purshia glandulosa), scrub oak (*Quercus dumosa*), ocotillo, manzanita (*Arctostaphylos* spp.), buckthorn (*Rhamnus* spp.), and barrel cactus. Approximately 45 percent of the food plant species used by the Native inhabitants of the region are found in this life zone, with pinyon

pine nuts, manzanita, and elderberry highly favored. Important animal resources found in this life zone include wood rat, kangaroo rat, black-tailed jackrabbit, ground squirrel, desert bighorn sheep, and mule deer (*Odocoileus hemionus*) (Bean and Saubel, 1972; see also reference to McDonald's work at Indian Hill rock shelter above).

The Transitional life zone, ranging from 5,000–7,000 ft, is characterized by relatively cool summers and cold winters with an annual precipitation of 50–76 cm (20–30 in.). This zone is composed primarily of coniferous forests containing scattered oak (*Quercus* spp.) groves; willows (*Salix* spp.) and cottonwood (*Populus* spp.) occur along stream courses. Common species include ponderosa pine (*Pinus ponderosa*), Jeffery pine (*P. jeffreyi*), incense cedar (*Calocedrus decurrens*), bigcone spruce (Pseudotsuga macrocarpa), manzanita, mountain mahogany (*Cercocarpus* spp.), and elderberry (*Sambucus* spp.). Probably the most important plant food species from this life zone are the black oak (*Q. kelloggii*), manzanita, and elderberry. Approximately 15 percent of the plants utilized by the Native inhabitants of the region are found in this life zone. Important animal resources found in this life zone include mule deer and ground squirrel (Bean and Saubel, 1972).

Fauna in the region includes Peninsular big horn sheep, coyotes, fox, skunk, bobcats, rabbits, and various rodent, reptile, and bird species. Survey crews often observed jackrabbits, turkey vultures, dove, and quail. Coyote and golden eagle were occasionally seen.

3.4.1.1 Cultural Setting

In general, the cultural sequence for the Colorado Desert, a portion of the CDCA, is most often viewed in terms of three or more time periods based on the evolutionary stages proposed by Willey and Phillips (1958). Among contemporary archaeologists and heritage resource managers, the Paleoindian and Archaic evolutionary stages of Willey and Phillips (1958) have evolved into time periods and, in southern California, their Formative stage became the Late Prehistoric time period. Within the time periods, are various archaeological complexes that occur on a regional basis.

Late Pleistocene

Several researchers posit a Pre-Projectile Point Period that occurred in the late Pleistocene prior to the much better documented Clovis, San Dieguito, Lake Mojave complexes (e.g., Begole, 1974; Childers, 1980; Hayden, 1976). Archaeological material from the Greater Southwest dating to this posited Pre-Projectile Point Period is often called the Malpais Complex. Malpais is a term that was adapted from the early work of Malcolm Rogers, who used it to refer to what is now the first portion of the San Dieguito Lake Mojave Complex. The term was resurrected by Hayden (1976) to refer to a tool assemblage including choppers, scrapers, and other crude, core-based tools typically found on old desert pavements in the Sonoran Desert and in the Sierra Pinacate. These materials generally are heavily weathered, very darkly patinated and found deeply embedded in desert pavements. Lacking subsurface deposits, Hayden depended to a large degree upon the amount of patination and relative dates of geological formations to obtain relative dates. He argued that most of the Malpais Complex dates to some time prior to an altithermal that occurred about 20,000 years ago. At a shell scatter on a sand dune near Adair Bay on the Gulf of California, he was able to obtain two subsurface dates on shell that were greater than 37,000 years before present (B.P.), the limit of radiocarbon dating. He also obtained a surface date there of approximately 33,950 B.P. (corrected) (Hayden, 1976). These very early dates are rather troubling to traditional "Clovis First" archaeologists and many are skeptical of the existence of this period (e.g.,

Schaefer 1994). Obtaining corroborating radiocarbon dates to support or refute this very early age for the Malpais continues to prove elusive.

Terminal Pleistocene-Very Early Holocene

The earliest well-documented sites in the southern Alta California desert region belong to the San Dieguito Complex, which is thought to date from approximately 11,000 to 9,300 B.P. to perhaps as late as 7,500 B.P. (Justice, 2002; Warren et al., 1998). Beginning in 1924, Malcolm Rogers, of the San Diego Museum of Man, conducted surveys in the Colorado Desert during which he noted what became known as the San Dieguito Complex. Eventually, Rogers documented San Dieguito materials in the Mojave Desert, in Arizona, and as far south as San Quintin, in Baja California. The Project area is within Roger's Central Aspect for the San Dieguito (Rogers, 1966).

Closely related to the San Dieguito are materials that have been identified in the Mojave Desert and in the Great Basin called the Lake Mojave Complex (Warren and Crabtree, 1986; Warren et al., 1998). No San Dieguito radiocarbon dates have been published for the Colorado Desert, although many surface sites have been reported (Schaefer, 1994).

Elsewhere, materials associated with human bone excavated on Santa Rosa Island were dated to 11,500 years B.P. (Johnson et al., 1999). Materials at Daisy Cave on San Miguel Island were also radiocarbon dated from approximately 11,600 to 11,000 B.P. (Erlandson, 2007). Radiocarbon dated cultural deposits going back to approximately 15,000 B.P. have just been reported from the Debra L. Friedkin Site in Texas by Michael Waters (Ehrenberg, 2011). The earliest well-documented dates for the West Coast come from the Paisley Caves in eastern Oregon (Jenkins, 2007). Dennis Jenkins obtained radiocarbon dates on DNA-documented human coprolites extending back to 14,280 B.P. He also obtained obsidian hydration data that suggest occupations at the Paisley Caves may go back to between 17,000 and 18,000 B.P. While these scholars have substantiated the notion of terminal Pleistocene occupations in the American West, the relationships among these early sites and the San Dieguito Lake Mojave complex in the Colorado Desert are not yet understood.

The San Dieguito assemblage is typically dominated by finely flaked scrapers, planes, choppers and leaf-shaped projectile points made of slate-green felsite of the Santiago Peak Formation or fine-grained basalt. Evidence of seed grinding technology (manos and metates) is scarce or absent. Desert assemblages often contain Lake Mojave and Silver Lake projectile points that are rare along the coast. These points appear in the California deserts from about 11,000 to about 7,000 B.P. (Justice, 2002:91; Warren and Crabtree, 1986:184). San Dieguito sites in the deserts are typically found around dry Pleistocene playas and above ancient stream channels, not modern water sources. Rogers and many others have found numerous trails and cleared circles that they attribute to the San Dieguito in the Colorado Desert. The cleared circles are typically somewhat circular, but ovals and rectangles are also noted. These are also known as sleeping circles. Despite the problem with geometry, the terms cleared circles and sleeping circles are very well established in the archaeological literature. They are commonly interpreted as house or windbreak remains or just a smooth place to sleep. The desert site locations and assemblages suggest a subsistence emphasis on lacustrine resources, but the coastal San Dieguito sites seem to reflect a more generalized hunting and gathering economy with a special emphasis on marine resources, especially shellfish (Erlandson and Colten, 1991; Warren et al., 1998).

Mid Holocene

During the early and mid-Holocene, a generalized hunting and gathering economy, based to a large degree on collecting and grinding grasses and other hard seeds, appeared in the California deserts and along the coast. Beginning at approximately 8,500 years ago in southern Alta California, the assemblage is dominated by portable basin metates, manos, and crudely-fashioned core-based scrapers, choppers, and hammerstones. In the California deserts, Pinto series projectile points appear at about 8,000 B.P. and continue to about 4,000 B.P. (Justice, 2002:135). Gypsum series points begin to appear in desert sites at approximately 4,000 B.P. with the Elko series appearing shortly thereafter (Justice, 2002: 294, 304). This assemblage suggests the mid-Holocene economy was more diversified and focused on gathering hard seeds and grasses, and hunting small and big game. Near the Project area, McDonald (1992) found mid-Holocene cultural deposits in her excavation of Indian Hill rock shelter. Located in the Jacumba Mountains northwest of the current project area, this is the only published excavation of a mid-Holocene archaeological site in the Colorado Desert. McDonald posits that the site was first occupied at about 5,000 B.P. She recovered 21 Elko dart points, one Gypsum Cave point, and four dart points that she was unable to type. She suggests that Indian Hill rock shelter functioned as a hunting camp for the mid-Holocene occupants (McDonald 1992).

Late Holocene

Around 2,000 B.P., patterns begin to emerge that suggest cultural links to the peoples found in the Colorado Desert at the time of the Spanish explorers (e.g., Alarcón and Diaz, in 1540 A.D.). This Late Holocene period is often referred to as the Late Prehistoric. The archaeological complex at this time in the Colorado Desert is referred to as the Yuman or Patayan Complex. It is recognized archaeologically by the presence of smaller projectile points, signaling the advent of the bow and arrow, the replacement of flexed inhumations with cremations, the introduction of ceramics, and an emphasis on plant food collection and processing, especially acorns and mesquite (Kroeber, 1925; Schaefer, 1994; Schaefer and Laylander, 2007). Semi-sedentary rancherias were established along the Colorado River and around springs. These rancherias were not compact villages, but were loose collections of residences and agricultural plots. Surrounding desert and mountain areas were seasonally occupied to exploit mesquite, acorns, and pinyon nuts. Mortars for mesquite and acorn processing become common for the first time in the area and bedrock milling features (slicks, basins, and mortars) first appear (Schaefer and Laylander, 2007).

The most numerous archaeological resources in the Imperial Valley date to the Late Holocene. Most sites are small processing loci, associated with the grinding of plant resources. Larger habitation sites were less common, but displayed a wider range of activities and longer periods of occupation (Jefferson, 1974; Schaefer and Laylander, 2007). The typical Late Prehistoric assemblage includes Desert Side-Notched series and Cottonwood Triangular arrow points and Lower Colorado Buffware and Tizon Brownware ceramics. In the vicinity of the Project area, Salton Brownware ceramics are also found (Schaefer and Laylander, 2007). Lithic artifacts are typically made from chert, volcanics, metavolcanics, or quartz materials (Jefferson, 1974). The economy along the Colorado River and its sloughs, the Alamo River and New River, was based on mesquite collecting and flood plain horticulture. Corn, beans, and squash were the primary crops, but mesquite was the mainstay of the Kamia diet, even in years of good horticultural production (Castetter and Bell, 1951; Gifford, 1931).

During the Late Holocene, there were four or more events when Lake Cahuilla filled the Salton Sink up to the 40-foot elevation. As noted previously, Lake Cahuilla occurred periodically when the Colorado River filled up its river bed with silt in the area south of Pilot Knob. At these times the river changed course out of its silt-elevated channel and, instead of flowing into the Upper Gulf of California, flowed west down the Alamo River and New River, then north into the Salton Sink (Schaefer 1994; Singer 2011).

When Lake Cahuilla was full or filling, the entire flow of the Colorado River was probably diverted and the area from Pilot Knob south to the Gulf was dry. Since Alarcón estimated (or overestimated) about 20,000 people living south of Pilot Knob in 1540, it was presumably densely populated during the Late Prehistoric as well (Forbes, 1965). These people had to migrate when the Colorado River flowed into Lake Cahuilla, and they may have been the people who left the huge number of archaeological sites around the southern shore of Lake Cahuilla (Schaefer and Laylander, 2007; Underwood, 2007, 2008). The southwestern shoreline of Lake Cahuilla lies approximately 12 miles east of Ocotillo. Although the shoreline of this huge freshwater lake was outside the project area, the lake would have had a profound influence on prehistoric Indians within the project area.

Ethnohistoric Period (Post 1540 C.E.)

According to early ethnographers (e.g., Gifford, 1931; Kroeber, 1925), the project area was in the traditional territory of the Kamia or Desert Kumeyaay. Their neighbors to the north are the Cahuilla whose territory extended to meet the Kamia at the San Felipe or Scissors Crossing area (where CR-S2 meets State Route 78). To the east about 80 miles from the project area are the Quechan who live along the Colorado River just west of Yuma (Forde, 1931). The traditional territory of the Cocopah, their neighbors to the southeast, lies approximately 80 miles from Ocotillo at the head of the Gulf of California (Gifford, 1931; Kelly, 1977); to the west are the Kumeyaay proper.

It is important to understand that the Kamia did not occupy all of their traditional territory at one time. They tended to occupy a few farming rancherias or camping places within their territory at any given time, based largely on the availability of water. The Kamia were quite friendly with the Quechan, who lived in vicinity of Yuma, and some bands occasionally lived with them on the Colorado. They also were very closely related to the Kumeyaay and shared clans or lineages with them (Gifford, 1931). The Kumeyaay rancheria of *Jacum*, near the town of Jacumba today, was perhaps the easternmost Kumeyaay settlement. Jacumba is about 19 miles southwest of Ocotillo. Ethnographic sources indicate that the cold season was a favorite time for the Kumeyaay who lived in the mountains bordering the desert to visit the Kamia (Gifford, 1931:17). Kroeber noted that Diegueno (Kumeyaay) clans spent winter “in mixed groups in the eastern foothills, at the desert’s edge” (Kroeber, 1925”720). Also, the Indians who lived in the Mount Laguna area wintered in the desert around Vallecitos and Agua Caliente, and Mason Valley (Cline, 1979).

The Kamia lived primarily along the Alamo River and New River and along other sloughs of the Colorado River in what is now Mexico as far south as Volcano Lake. The nearest documented Kamia rancheria was *Xachupai*. This was a loose collection of farmsteads scattered along the north-south trending New River for several miles. *Xachupai* extended both north and south of where I-8 intersects the river today (Gifford, 1931; Forbes, 1965; Kroeber, 1925; Shipek, 1982). This is about 18 miles east of Ocotillo. The distribution of ethnographically attested Kamia and Kumeyaay rancherias suggests that the

people who occasionally camped and gathered agave and tool stone in the project area may have been Mountain Kumeyaay who moved into this area during the winter; Kamia who lived primarily at *Xachupai* along New River; or both Kumeyaay and Kamia.

Group size and the degree of social interaction therefore varied over the course of an annual cycle. The basic unit of production was the family, which was capable of great self-sufficiency, but Kamia families moved in and out of extended family camps or rancherias opportunistically. Thus, whereas single families occasionally exploited low-density, dispersed resources on their own, camps or rancherias of several families formed at other times. This occurred particularly when key resources were available, such as water in the sloughs that would allow for planting (Gifford, 1931).

The Kamia, who traced their descent patrilineally (i.e., through one's father) were exogamous, meaning that one had to marry outside one's own lineage. They also practiced patrilocal residence, that is, a married woman lived with her husband's father's relatives. Descent groups apparently "owned" land and certain other resources. Kroeber observed of the Kumeyaay that "it would appear that each 'clan' owned a tract and that each locality was inhabited by members of one clan, plus their introduced wives" (1925:720). Regarding other resources, Spier (1923:307) observed that some Kumeyaay "gens" (i.e., clans) owned patches of certain trees and "each gens owned one or more eyries from which eaglets were taken for use in the mourning ceremony." Apparently, however, resource ownership did not extend to the oak groves in the mountains, which probably reflects the extreme importance placed upon this resource for the adaptation and survival of the entire society. Gifford (1931: 50-51) reported that the Kamia had no clan chiefs, but had a tribal chief like the Quechan; however this form of leadership may have been introduced after European contact.

The Kamia economy was divided between the corn, beans, and squash horticulture typical of the Quechan, Cocopah, and other tribes along the Colorado River and the hunting and gathering of their Kumeyaay and Cahuilla neighbors. Important wild plant foods exploited from the Kamia's diverse habitat included mesquite and screw beans, piñon nuts, and fruits of various cacti and grass seeds. Important but less utilized plants included various wild fruits and berries, tubers, roots, and greens. Women were instrumental in the collection and preparation of vegetal foods. In years when there was an ample Colorado River spring flood, the Kamia planted their crops along the New River and the Alamo River and other sloughs of the Colorado south of the Mexican Border. Like the Quechan, mesquite was the mainstay of the Kamia diet, even in years of good horticultural production (Gifford, 1931).

Kamia culture and society remained stable during the period of missionization on the coast. It was not until the American period that the Kamia were heavily displaced. The introduction of European diseases greatly reduced the native population of southern California and further disrupted the way of life for the native inhabitants. Some people who identify themselves as Kamia, or partly Kamia, live today among the Quechan and Kumeyaay (Gifford, 1931; Kelly, 1977; Preston Arrowweed, personal communication to J. Underwood, 2011). While it is clear from the ethnographic record that the Kamia traded with the Kumeyaay, Quechan, and Cocopah (see, for example, Davis, 1963:24), no ethnographic evidence has been found that tribes other than the closely-related Kumeyaay traditionally shared the project area with the Kamia (see Baksh, 1997:5-9 for a compilation of traditional territory maps for the region).

Little specific recent information is available on the Kamia: "Disease, warfare, drought, white settlement, and assimilation into Anglo Imperial Valley or Indian Reservations brought an end to the Kamia as a

cultural entity by the 20th Century. The last recognized Kamia chief died in 1905" (.Brian F. Mooney Associates, 1993: III-142, III-143). In San Diego County there are twelve Federally recognized Kumeyaay tribes in San Diego County: Barona Band of Mission Indians, Campo Band of Mission Indians, Ewiiaapaayp Band of Kumeyaay Indians, Inaja-Cosmit Band of Indians, Jamul Indian Village, La Posta Band of Kumeyaay Indians, Manzanita Band of Kumeyaay Indians, Mesa Grande Band of Mission Indians, San Pasqual Band of Diegueno Indians, Santa Ysabel Band of Diegueno Indians, Sycuan Band of Kumeyaay Indians, Viejas Band of Kumeyaay Indians, and one non-federally recognized tribe, the Kwaaymii Laguna Band of Indians. These tribes have historically been recognized as being affiliated with much of Imperial County west of the Algodones Sand Hills (in addition to much of San Diego County), which includes the project area. In recent years, the Fort Yuma Quechan in eastern Imperial County and Yuma, Arizona, and the Cocopah Indian Tribe in Somerton, Arizona, have increasingly asserted cultural affiliation with the western portion of Imperial County. The Torres-Martinez Desert Cahuilla Indians are culturally affiliated with the far northwestern portion of Imperial County and southern Riverside County. Because of interests expressed by Kumeyaay tribes, the Quechan, and the Cocopah in the project area, all of these tribes have been invited to consult on the proposed project on cultural resource issues.

Historic Period

The first Spanish exploration of what is now Imperial County occurred in 1540, when Hernando de Alarcón ascended the Colorado River probably up to where Yuma and Winterhaven are today. Juan Cabrillo was the first Spanish explorer to visit coastal southern Alta California, when he anchored in what would become known as San Diego Bay in 1542. Both explorers claimed Alta California for the king of Spain, thus initiating the Spanish Period in Alta California. Spanish explorers visited what was to become Imperial Valley on a sporadic basis from that time on. Travel in the immediate vicinity of the project area began when Juan Bautista de Anza of the Spanish Army and Francisco Garcés of the Franciscan Order established what became known as the Anza Trail in 1774 during the first Anza Expedition. Their guide was Sebastian Taraval, an Indian from Baja California who also served as translator. Captain Juan Bautista de Anza was the commanding officer of the presidio at Tubac, south of TucsonThe Anza trail passed east of the project area. It went northwesterly from Barranca Seca in Baja California south of where Mexicali is today to Yuha Wells. The exact location of the Anza Trail in this area has not been clearly established; however, based on historic journals and maps, the National Park Service has inferred that the probable historic trail corridor is located approximately 8 miles to the east of the project area (National Park Service, 2011).

The Yuha Wells were used by Anza, who called them *Santa Rosa de las Lajas* (Flat Rocks) (Bolton 1930). They are on the southwest side of Dunaway Road about 12 miles east of Ocotillo. Anza's observations establish the fact that prehistoric wells were dug by the Kamia, at least in the Yuha Desert. This suggests that other wells may also have been dug in washes to support prehistoric Indian camps in the Project area

In 1770, Pedro Fages was appointed military governor of California Nueva, which later became known as Alta California. In 1772, he discovered an Indian trail in the mountains of eastern San Diego County near Cuyamaca State Park. It passed down Oriflamme Canyon and then connected with a north trending trail. This trail went north through the Warner's Springs area. Fages continued on to Mission San Gabriel de Arcangel, founded in 1771 in what is now San Gabriel Valley. Later, a trail was discovered that split from the Anza Trail in the vicinity of Yuha Wells and passed north through Vallecito and Agua Caliente.

This linked up with the Fages Trail at the foot of Oriflamme Canyon, southeast of where the town of Julian is today. This combined Fages and Anza Trail became the principal route linking Sonora and Alta California in the late 18th and early 19th centuries. This route, followed today by CR-S2, became known as the Sonora Trail (Guerrero, 2006).

In addition to the well-known Franciscan missions along the coast of Alta California, missions were also founded at Concepción, in the vicinity of present-day Yuma and San Pablo near Pilot Knob in 1780. A number of Spanish settlers accompanied the Franciscans and a small number of Spanish Army personnel; however, no presidio was established. Friction between the Spanish and the Quechan rapidly developed. The missions and settlements were destroyed in the successful Quechan Revolt of 1781. Padre Garcés and some 50 Spanish settlers were killed in that revolt. The dead included Fernando Rivera y Moncada, who led the first overland party of the Portolá Expedition to reach San Diego in 1769 and had been the military governor of Alta California in 1777 (Forbes 1965:185-202).

The Mexican people chafed under Spanish rule in the late 1700s and early 1800s. After a long struggle, the Spanish were expelled from Mexico in 1821. The Mexican Republic retained many Spanish institutions and laws, but they were very concerned about the abuses of the Catholic Church. Several reforms were passed, including the secularization of the mission system in 1834. Large tracts of former church land were granted to individuals and families and the Alta California rancho system flourished. Cattle ranching dominated the economy. The hide and tallow trade with Yankee ships increased during the 1830s. The Pueblo of Los Angeles, established in 1781, began to grow rapidly during this period and Native American influence and control greatly declined (Starr, 2007).

The Mexican Republic had encouraged Americans to settle in Tejas in the 1820s and by the 1830s, the Americans greatly outnumbered the Mexicans. Friction developed between the two cultures and in 1835, Texas fought and won its independence. Disputes continued over the placement of the border and Mexico never recognized the legitimacy of the new Texas Republic. The US Congress admitted Texas to the Union in 1845 and provoked Mexico into a disastrous war. Many Americans, including Abraham Lincoln and John Quincy Adams, denounced the rush to war as a Southern ploy to expand slavery.

Early in the war, Colonel Stephen Watts Kearney was dispatched to take charge of what became known as the Army of the West. After taking Santa Fe without a shot, Kearney headed west at the head of a column of dragoons. Captain Philip St. George Cook took charge of the Mormon Battalion, whose task was to follow behind Kearney's column and build a wagon road from Santa Fe to San Diego (Starr, 2007; Guerrero, 2006).

The dragoons under Kearney and the Mormon Battalion under Cook both used the Old Sonora Trail through the project area in 1846. The war ended with the Treaty of Guadalupe Hidalgo on February 2, 1848, and as part of the treaty, Mexico ceded Alta California to the US. At that time, the Mexican territory of Alta California also included southern Nevada, southern Utah, and most of Arizona. By the time Alta California was admitted to the Union in 1850 as the State of California, it was only a small fraction of its former self. Gold had been discovered in what is now known as the Mother Lode of California prior to the end of the war. However, it was not made public until March 1848, when the Americans were firmly in control. The sudden influx of American and Europeans quickly drowned out much of the old Californio culture of the Spanish-speaking Catholics born in California prior to 1848. Tens of thousands of gold seekers ("49ers") flooded into California over the Old Sonora Trail through the

Project area and through passes in the Sierra Nevada to the north. The Old Sonora Trail became known as the Southern Emigrant Trail during this period. This influx of gold-seekers and adventurers hastened the decline of the Indians, particularly in the Mother Lode area (Phillips, 1996). In southern California, the rancho system prospered for several years by supplying beef to the tens of thousands of "49ers" flooding the Mother Lode (Starr, 2007:111). These little known California cattle drives preceded the better known Texas drives by about 15 years.

In the 1850s, communication and trade between California and the other states remained expensive, time-consuming, and difficult. In 1857, congress authorized the first transcontinental mail, known as the San Antonio and San Diego Mail. Today, it is sometimes called the Birch Overland Mail after its founder James E. Birch (Lake, 1957; Van Wormer et al., 2007). The Birch Overland Mail used the Southern Emigrant Trail (formerly the western reach of the Santa Fe Trail) through the Project area along what is now CR-S2. It branched off of the Southern Emigrant Trail at Oriflamme Canyon and headed west to San Diego. In the next year, a bigger mail contract was awarded to the Butterfield Overland Mail. This bypassed San Diego and continued north through Los Angeles and on to San Francisco. These historic mail and stage lines used the same route in this area passing through the Ocotillo vicinity (Van Wormer et al., 2007).

As mentioned previously, Yuha Wells were first noted by Anza, who called them Santa Rosa de las Lajas. These wells are sometimes confused with Coyote Wells, southeast of Ocotillo. Coyote Wells were "discovered" by James E. Mason of the Birch Overland Mail in 1857 (Lake, 1957; Van Wormer et al., 2007). It is highly likely that these wells were originally dug by the Kumeyaay. Coyote Wells is not listed as a stage stop and presumably was used as an auxiliary water source by the mail lines and packers.

During the American Period, the homestead system rapidly increased American settlement beyond the coastal plain, which subsequently accelerated the decline of the California Indians (Philips, 1996). Under Mexican rule, full property and civil rights were provided for women and people of color including Indians. The Treaty of Guadalupe Hidalgo preserved these rights, although the American and California state governments ignored these provisions completely in the case of the Indians and forced the Californio land holders to abandon their vast landholdings through lengthy, expensive, and complicated legal proceedings. In less than 20 years, very few ranchos in Alta California remained intact (Starr, 2007:104-105). However, Spanish remained one of the two official languages of California until 1879 (Starr, 2007: 93).

The Colorado Desert area remained largely unaffected by the transition to American control until after 1904, when the Imperial Canal brought water to the Imperial Valley. A small boom in farming and homesteading began, but in 1905, the Colorado River breached the head gate of the Imperial Canal and began to fill the Salton Sink. This created the Salton Sea and threatened to fill the entire valley, re-creating Lake Cahuilla. The river was brought under control in 1907 after a heroic effort led by the Southern Pacific Railroad. In 1935, Hoover Dam was completed finally ending the dramatic floods, and containing the Colorado River which paved the way for other dams and more dependable canal systems.

U.S. Route 80 (US-80) linked El Centro and San Diego in 1915, and the portion of the San Diego Eastern and Arizona Railroad between these towns was completed in 1919. Both of these pass through the project area. These developments facilitated the transport of farm products from Imperial Valley and were a benefit to the local economy. The little village of Ocotillo, encompassed by the project area, was founded

as a way station on US-80. In 1940, the modern All-American Canal linked the Colorado River with Imperial Valley. This along with the post WWII boom, attracted more farmers to the area and the Imperial Valley soon became the farming center it remains to this day (Nadeau, 1997). During this time, the Project area was prospected for gold and other minerals. There are the remains of numerous prospect pits and mining claim posts in the project area. The only site of actual mine operations is on the southern slope of Sugarloaf Mountain (site CA-IMP-8806H).

History of the Ocotillo Community

Most of the buildings and structures which are included as part of the potential historical resource reconnaissance survey, are located in, or around, the small town of Ocotillo, California. No definitive written history of the Ocotillo community exists today. What has been published, however, consists of a variety of different source material. Taken collectively, this documentation provides very little detail about the development of the community.

According to *Ocotillo A Place in the Sun* (Bernal, 1986), Ocotillo's first water source, a water well, was drilled by Lloyd James during the 1920s. Beginning in 1933, it is known that Alvin Miller operated a combination garage/restaurant along Old Highway 80 (which was itself completed in 1926). Also in 1933, Ocotillo Townsite, Unit 1 was established. This subdivision was created by John Chalupnik and Mae Marshall who obtained land from the United States Government for .25 cents per acre. The couple then sold 90 lots measuring 90 feet by 120 feet for between $20 and $50 each. In 1947, the first electric wires were introduced to the community.

Historical research indicates that in the mid-1950s, from approximately 1954-1959, the Ocotillo community appears to have experienced modest commercial and residential growth. Review of historic maps does not depict the presence of the community until 1943, at which time it is listed on Blackburn's Map of the Imperial County. Oddly, maps prepared in 1945 and 1956 again fail to list Ocotillo. However, the Coyote Wells USGS Quadrangle Map of 1957 depicts the community with 34 structures within "Section 1" and two (2) structures within "Section 2." Early development, therefore, appears to have occurred largely in "Section 1" most likely due to its close proximity to Old Highway 80 and the center of town. By 1959, the Jacumba USGS Quadrangle Map lists 23 structures within "Section 2." Thus, by the late 1950s, residency was spread fairly evenly between the two sections. In addition, during this period, Weaver's Service Station was built (1954), as well as the Desert Haven (Rock Café) in the mid-1950s, the Pit Stop grocery store (1956-1957), and the Ocotillo Post Office (1957).

Since the 1970s, there has been little development within Ocotillo. Predominantly prefabricated and/or mobile home construction/erection has occurred throughout the community over the past forty years, such that today, the area is largely typified by single-family, prefabricated and mobile home residential development.

3.4.1.2 Cultural Resources Identified Through Native American Consultation

As part of the cultural resources records search conducted prior to the archeological inventory, a Sacred Lands File (SLF) search was conducted by the California Native American Heritage Commission (NAHC). A January 28, 2010, letter from the NAHC states: "The NAHC SLF search did indicate the presence of Native American cultural resources within one-half-mile radius of the proposed project sites (APEs). The letter does not specify the location of the cultural resources referenced. In late 2011 Mr.

David Singleton of the NAHC informed Tierra that since the time of the initial SLF search in January of 2010, Ms. Carmen Lucas requested that the Spoke Wheel Geoglyph (CA-IMP-6988), located in the Project area, be included in the Sacred Lands Inventory along with four other sites not in the Project area. In an August 17, 2011, comment letter to the Draft EIS/EIR, the NAHC again affirmed that Native American cultural resources were identified within the APE, and also noted that the NAHC had been notified that there are reports of human remains, apparently of ancient origin, at six locations within the project area.

The BLM invited Indian Tribes to consult on the OWEF on a government-to-government basis and as part of Section 106 consultation and other relevant laws, policies and regulations at the earliest stages of project planning by letter on February 4, 2010. The letters requested assistance from the Tribes in identifying any issues or concerns about the project, including the identification of sacred sites and places of traditional religious and cultural significance which might be affected. Since February 2010, the BLM has continued to send correspondence and hold Section 106 group meetings seeking input from Tribes and other consulting parties on the all phases of the project's environmental review, the archaeological inventory report, and other issues of concern. At the same time numerous government-to-government meetings took place between the BLM and individual Tribes. While Section 106 consulting party group meetings provide a forum for presenting project updates, presenting the results of cultural resources studies, and open discussion and sharing of ideas about information and concerns with the proposed undertaking, the individual government-to-government meetings with Indian Tribes provide a forum for Tribes to share information and concerns in an individual context with the BLM, apart from other consulting parties and on other matters that may or may not be related to Section 106 issues. The names of Tribes and the dates of these individual meetings are presented in Tables 5-2 and 5.3 (See Section 5.2, Tribal Consultation). In addition, Tribes were encouraged to send designated tribal consultants to participate during the archaeological survey completed for the OWEF. Many Tribes did so and were able to provide important feedback in that manner as well.

During the BLM's ongoing Section 106 consultation process, representatives of some of the Tribes have informed the BLM of a TCP which in their view encompasses the project area and the surrounding region and that this area comprises a landscape which is historically, culturally, religiously and spiritually important. Very strong concern about the project and potential effects to the newly recorded archaeological sites including but not limited to trails, geoglyphs, rock features, habitation areas, previously documented enthographic resources, the viewshed from the Spoke Wheel Geoglyph and other geoglyphs and sacred sites within the project area, and both known and unknown cremations has been expressed to the BLM during Section 106 consultation meetings and government-to-government meetings with Tribal Governments and/or their representatives.

A TCP may be subject to evaluation to determine its eligibility for listing in the National Register based on its "association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (US Department of the Interior, 1990).

The first step in determining whether an entity is eligible for inclusion in the National Register is to ensure that it is a tangible property. The second step in determining eligibility for the National Register is to assess "the integrity of the relationship between a property and the beliefs or practices that may give it significance" (US Department of the Interior, 1990). In addition, the condition of the property must be

such that the relevant relationships between a property and the beliefs or practices that give it significance survive (US Department of the Interior, 1990); National Park Services, *National Register Bulletin 38* (Parker and King, 1998).

As with other historic properties, a TCP may be evaluated against the four National Register criteria for eligibility:

(a) Association with events that have made a significant contribution to the broad patterns of our history;

(b) Association with the lives of persons significant in our past;

(c) Embodiment of the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) History of yielding, or potential to yield, information important in prehistory or history.

It may be difficult or impossible to demonstrate that a particular property existed at the time a traditional event took place. In the case of this particular TCP, according to government-to-government consultation with BLM, some events which make this property significant appear to have taken place in a time before the creation of the world as we know it, or at least before the creation of people. Using the techniques of science and history to demonstrate that a given location existed at a given time and place is unneccesary for the purposes of eligibility determination. As long as the "tradition itself is rooted in the history of the group that associates the property with traditional events, the association can be accepted" (Parker and King 1998: 13). Therefore, the period of significance for the proposed TCP/historic district ranges between the creation of humans and the current era.

In consultation with the Tribes, Advisory Council on Historic Preservation (ACHP), and State Historic Preservation Officer (SHPO), the BLM has acknowledged that the TCP is of significant cultural and religious importance to at least some Tribes, and that the project will occur in an environmental setting that includes the TCP as identified by the Tribes and its relationship and association to other sites, and viewsheds including those towards Coyote, Signal and Sugarloaf Mountains.

The tribes have provided some general information about the characteristics of some portions, but not all, of the TCP that make it eligible for the National Register. Based on the applicable guidance, for the purposes of the NEPA/NHPA process for this project, the BLM assumes that the part of the TCP that is within the project APE as described above is eligible for the National Register under Criterion A for its traditional and cultural importance to the Tribes because it is assumed to be:

1) A location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world (geoglyphs and trails);

2) A location where Native American religious practitioners have historically gone, and are known or thought to go today, to perform ceremonial activities in accordance with traditional cultural rules of practice (geoglyphs, trails, cremations, prayer sticks); and

3) A location where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity (village sites, agave procurement sites, camp sites, rock shelters, ceramic and lithic scatters, rock features).

The characteristics that make up this TCP for purposes of this analysis, based on the information provided through tribal consultation, include:

- Viewsheds towards the portions of the natural landscape that surround the project site, including Coyote, Signal, and Sugarloaf Mountains (all of which are outside the APE). These mountains have been identified as sacred corner markers in several Native American belief systems, corridors between the mountains and the proposed project area were part of a corridor used by native peoples in the past, and that these moutains form a key part of their strong connection to the land and the power received from the land.
- Many of the identified archaeological resources within the APE including the other geoglyphs, trails, cremations and other habitation and rock feature sites that are culturally significant (see notations in Table 3.4-3).

Together these features and sites are assumed to have a connection or linkage which makes them a "culturally significant entity." For purposes of the application of Criteria A, "our" may be taken to refer to "the group to which the property may have traditional cultural significance, and the word "history" may be taken to include traditional oral history as well as recorded history" (Parker and King, 1998: 12). The BLM recognizes that the tribes have identified a larger area as being part of the TCP; however, available information about the characteristics of this TCP only allows the BLM to assume the eligibility of certain portions of the identified TCP for the National Register (36 CFR 800.4(c)(1)) pursuant to 36 CFR § 800.4. The tribes will need to provide additional information in order for the BLM to assess and understand the remainder of the TCP including its boundaries, its characteristics and use and potential contributing properties. The BLM acknowledges that further research may also reveal the potential for there to exist within the proposed OWEF a cultural landscape, which may or may not be identified with the TCP as described above. Further discussion about the TCP and the Tribal consultation process for the project is provided in Chapter 5.

3.4.1.3 Identified Archaeological Resources

Previous Research

The archaeological survey for the OWEF began with a records search at the South Coastal Information Center (SCIC) of the California Historical Resources Information System (CHRIS) located at San Diego State University. The purpose of the records search was to identify any previously-recorded cultural resources which may be located within the project area and within a one-mile area surrounding the project area. The record search revealed 39 previous studies conducted within one-mile of the project area; these include 14 studies conducted partially or completely within the project area. Together these 14 studies cover less than ten percent of the project area. The SCIC reported that three other studies have been conducted within the records search area, but these studies are not on file at the SCIC and no information is available.

Previously Recorded Resources

The records search revealed that a total of 210 cultural resources had been previously recorded within the records search study area. Of these 210 resources, 47 were recorded as isolates and 163 were recorded as either archaeological sites or built resources. Of the 210 previously recorded cultural resources, 83 are within the project area. Sixty of these resources were recorded as archaeological sites, 21 were recorded

as isolates, and and two resources were recorded as built resources (U.S. Highway 80 [CA-IMP-7886] and the San Diego Eastern and Arizona Railroad [CA-IMP-8489H]; these are addressed in section 3.4.1.3 below). Of the 60 archaeological sites recorded within the project area, six (CA-IMP-3387H thru CA-IMP-3392H) were previously documented from the 1880 General Land Office (GLO) surveyor notes rather than from physical archaeological evidence. While it is possible the resources were present in 1880, the anonymous recorder of these "sites" did not ground truth them, but used only written notes to develop the site records.

Recent studies conducted in support of the Sunrise Powerlink Project cross the project area but, at the time of the records search, these data were not available at the SCIC. However, Tierra subsequently obtained site forms for the Sunrise Powerlink Project as they became available.

NRHP Eligibility of Previously Recorded Resources in the Project Area Identified in the Records Search

The records search conducted for the OWEF indicates that most 59 of the 83 previously recorded resources located within the project area have not been evaluated for eligibility for the National Register of Historic Places (NRHP) or recommended as eligible or ineligible by archaeological consultants. Nineteen of the resources have been previously recommended as not eligible for listing in the NRHP. Two resources, CA-IMP-6920 (Lithic Scatter) and CA-IMP-8806H (Historic Foundations, Mines, Refuse), have been recommended eligible for the NRHP by previous consultants. Two resources, CA-IMP-7886H (Old Highway 80) and CA-IMP-8489H (San Diego Eastern & Arizona Railroad), have been determined eligible for the NRHP by a consensus determination through the Section 106 process. One resource, CA-IMP-6988 (Spoke Wheel Geoglyph), was listed on the NRHP in 2003. The five eligible or listed resources are briefly discussed below.

- **CA-IMP-6920 (Previously Recommended Eligible).** Resource CA-IMP-6920 is an extensive lithic scatter located near the town of Ocotillo and south of Highway 98 within the project area. Schaefer and Moslak (2000) suggest that it was a quarry site with the potential to yield substantial information regarding lithic procurement patterns and lithic reduction. They recommended that the site be determined eligible for inclusion in the NRHP under Criterion D (Schaefer and Moslak, 2000; Schaefer, 2000).
- **CA-IMP-8806H (Previously Recommended Eligible).** Resources CA-IMP-8806H is an historic mine excavated into the south side of Sugarloaf Mountain just north of I-8. It is often referred to as the Sugarloaf Mine. Associated with the mine are tailing piles, concrete foundation pads, rusted metal hardware, and refuse deposits (Gunderman and Dalope 2009). The site was previously recommended eligible for inclusion in the NRHP under Criterion D (Burkard, Connell and Covert, 2007). The site is in the project area, but is outside of the direct impact APE, with much of it located outside of the project area altogether.
- **CA-IMP-7886H (Previously Determined Eligible by Consensus**). Resource CA-IMP-7886H is the remnant of U.S. Highway 80, or often referred to as "Old Highway 80" or "Evan Hewes Highway." Please see Section 3.4.1.4, Built Environment, for a discussion of this resource.
- **CA-IMP-8489H (Previously Determined Eligible by Consensus**). Resource CA-IMP-8489H is a small (300') segment of the San Diego Eastern and Arizona Railroad that lies within the Project area. Please see Section 3.4.1.4, Built Environment, for a discussion of this resource.
- **CA-IMP-6988 (NRHP Listed in 2003).** Resource CA-IMP-6988 is what is locally known as the Spoke Wheel Geoglyph and was originally recorded in 1994 by personnel from Imperial Valley College Desert Museum (von Werlhof, 1994). This site has been listed in the NRHP under Criterion C and D since 2003. It consists of a cobble alignment in the shape of a spoke wheel, approximately 8m in diameter. Associated with the geoglyph are artifacts, trail segments, and cairns.

Resource Types

What follows is a summary of the major types of archaeological sites identified within and in the vicinity of the project area (Tierra, 2012a).

Prehistoric Resources

Prehistoric resources are those resources that typically predate AD 1540 in the Colorado Desert. The resources may include those centered around food production, tool stone acquisition and reduction or even temporary camps where small family groups may have spent the night. Prehistoric archaeological resources included artifact scatters, agave processing areas, camp sites, ceramic scatters, lithic scatters, rock feature sites, rock shelters, trails, village sites, geoglyphs and rock art, and cremations.

Artifact Scatters. Artifact scatters lack features and may consist of more than one artifact type. They are usually indicative of short term occupation and may consist of a range of artifact types and materials and, or conversely, be relatively homogeneous. Artifact scatters may include lithic scatters, ceramic scatters, groundstone artifacts, flaked stone artifacts such as multi-functional tools (chopper/scrapers, chopper/hammerstones, scraper/hammerstones, chopper/scraper/hammerstones, etc.), digging tools (described as having one end for grip and use wear on the opposite end consistent with digging), and polishing tools (a rounded cobble with ground polished facet on one face), or any combination of the above.

Agave Processing Areas. This is a relatively common type in the northwestern portion project area. The features are often called agave roasting pits or platforms. Most often they appear physically as a large hearth, i.e., a cluster of cobbles, many of which are fire-affected and often charcoal or charcoal stains are visible. Agave roasting features are typically three or four meters in diameter, while the remains of prehistoric hearths are usually one to two meters in diameter.

Camp Sites. Camp sites represent short periods of occupation and contain fewer artifacts and less artifact diversity than villages. However, camp sites are general use sites. For the purpose of this study, a camp site is defined as a site with evidence of both hunting and gathering activities (e.g., flaked stone artifacts and milling equipment) or a site with a hearth feature (evidence of a camp fire). The presence of a cleared circle or sleeping circle also suggests a camp site. Camp sites rarely have associated midden deposits in dry desert environments.

Ceramic Scatters. Ceramic scatters do not include lithics and generally consist of three or more ceramic sherds within 50 m. They are often from the same vessel and are typically the result of accidental breakage. In rare contexts, it is possible to detect ritual-ceremonial breakage. Urn burials are an example. In this case, cremated remains were gathered up and placed in a vessel that was later buried or cached above ground. These urn burials can be differentiated from broken utilitarian vessels by the presence of calcined bone fragments and/or ash. Ceramic scatters that contain the remains of a single vessel are sometimes referred to as “pot drops” as a way of distinguishing them from scatters of more than one vessel.

Lithic Scatters. Lithic scatters are characterized by waste flakes or by products of tool production or modification, but they may include flaked tools such as cores, bifaces, scrapers, and the like. Lithic scatters may have been created over one or more episodes of lithic reduction. When no subsurface

component is present and the density of artifacts is low, lithic scatters are referred to as "sparse lithic scatters."

Rock Feature Sites. There are a few sites in the project area that consist of collections or piles of cobbles that cannot be assigned to other site types. In this example, sites labeled as rock feature sites represent general cobble features whose purpose or function remains unknown.

Rock Shelters. In the Colorado Desert, there are occasional rock overhangs and small dry caves that are collectively referred to as rock shelters. Sometimes they contain the remains of prehistoric camp sites. The interiors of nearly all rock shelters are completely dry, so archaeological materials are often naturally mummified and the preservation of perishable fibers, wood, and leather is excellent.

Trails. Trails refer to paths created by humans through either intentional clearing or repeated travel. Prehistoric and historic trails tend to be approximately 35 to 40 cm wide, while animal trails in the Project vicinity are typically narrower. Human trails tend to link places that people traveled to, whereas animal trails do not, although both can go to springs or other water sources. Human trails also tend to have artifacts or trail features, but these tend to be widely dispersed, so if only a small trail segment is extant, it may lack artifacts and/or features.

Village Sites. Village sites are major habitation sites and have a wide variety of artifacts and ecofacts demonstrating that a wide range of domestic activities took place. They may include hearth features, roasting pits, cleared circles, and/or rock rings. Cleared circles, or sleeping circles, and rock rings are thought to be places where people slept or where windbreaks or temporary roofed shelters with materials of local availability were constructed. Major habitation sites may also have midden deposits, although as described previously, in desert environments, it is not frequently found. There are no recorded village sites in the Project area.

Geoglyphs and Rock Art. Geoglyphs and rock art in the Colorado Desert include geometric shapes, anthromorphs, zoomorphs, and amorphous shapes. They always have spiritual and cultural significance to Native peoples. There are three basic types of geoglyphs or ground figures (intaglios, dance patterns, and rock alignments). They are distinguished by the way they were formed (Tierra Environmental Services, 2010:20):

- *Intaglios* are ground figures created by scraping away the desert pavement of dark pebbles to reveal lighter colored sediment underneath.
- *Dance Patterns* are typically preserved on desert pavement surfaces. They are irregular patterns created by dancing.
- *Rock Alignments* are the third type of geoglyph. They consist of aligned cobbles.

Rock art refers to figures and abstract designs left on cliffs, rock outcrops, or boulders. There are two basic types of rock art based on the method they were made, pictographs and petroglyphs. Pictographs are painted designs, whereas petrogylphs are pecked or scratched designs or figures.

Cremations. Cremations are a special case. There are remains that may be cremations recorded in the Project area, but they are not sites that we would type as cremation sites. Cremations often occur as features within other site types. Cremations have a great deal of spiritual and cultural significance to Native people of the region. Secondary burials of cremated remains in pots occur in the area as well as some cremated remains without funerary urns. Cremations are sometimes associated with "killed" metates. These are metates that have been intentionally broken or have a hole punched through the

bottom. Cremations are also sometimes found under overturned (face down) metates. However, a common way for Indians to store metates for future use was to place them upside down. Therefore, while cremations are sometimes found beneath overturned metates, an overturned metate does not necessarily mean cremated remains are nearby.

Cremated remains are typically very small and misshapen, and damaged from being burned at very high heat. This high temperature burning leaves some bone fragments with a blue-white hue; this is referred to as calcined bone. Cooking fires typically burn bone with much less intensely, so most burned bone is charcoal grey. During the archaeological survey, any calcined or charred bone that looked to field archaeologists as if it might be human was treated with a great deal of respect as if they were human remains. Furthermore, all bone that the field archaeologists or Native Americans suggested might be human was examined by Dr. Madeleine Hinkes, a highly qualified anthropological osteologist who is the San Diego County Medical Examiner's representative for potential Native American remains.

Historic-era Resources

Historic-era resources are those resources from the post-contact period after AD 1540 in the Colorado Desert, but to be historic, must be 50 years or older. Historic-era sites and artifacts tend to be more readily visible and interpreted than prehistoric sites since they have not been exposed to the elements for as long. Historic-era resources generally include the refuse deposits or the remnants or runis of historic-period buildings, structures, and objects.

Types of historical resources that may be present in the Colorado Desert include mining sites, railroad sites, refuse scatters, roads, and survey markers and are described below.

Mining Sites. Mines are areas that are used for extracting natural resources. They tend to have associated buildings or foundations and various supporting structures and features. There is evidence of historic calcite and gypsum mining occurring in the general vicinity of the project area. Quarries also fall under this category. The most common types of mining sites in the project area are prospect pits or mining claim posts.

Railroad Sites. The San Diego Eastern and Arizona Railroad runs through part of the project area. Sites associated with this railroad are listed under this site type. Portions of the original track are still being used as a railroad; therefore it is not a true archeological site even though it has been recorded on an archaeological site record.

Refuse Scatters. These sites consist of refuse left behind prior to 1960 that are usually associated with temporary camps of hunters or workers such as crews who installed the railway through the desert. The scatters often consist of glass, cans, nails, scrap metal, and other artifacts.

Roads. This category consists of roads and highways older than 50 years including wagon roads and trails, and associated features and structures such as fords (vados), bridges, and retaining walls.

Survey Markers. This type of resource may be known by several designations (geodetic mark, survey monument, benchmark, etc.) and can be constructed from stamped metal discs to modified boulders in their earliest incarnations. The stamped disks that are common to the area provide information on township and range, section number, and possibly elevation. Many of them include the year they were established as well. Several organizations have been responsible for their placement and are stamped on the mark as well. These may include, U.S. Coast & Geodetic Survey, U.S Department of Interior, Corps

of Engineers - U.S. Army Survey Mark, U.S. Geological Survey, and U.S. General Land Office Survey. Marks may be set in concrete, drilled into bedrock, or placed within existing structures and objects. Many have associated rock cairns or posts to facilitate relocation of the mark in subsequent years.

3.4.1.4 Archaeological Survey

Survey Methods

A BLM Class III intensive archaeological survey was conducted for the entire direct impact APE. Intensive surveys were used to methodically inventory these areas and to record the archaeological resources identified therein. Recordation included the detailed documentation of all identified resources, their boundaries and locations, potential significance, appearance and integrity of each resource, and the method of survey. As archaeological resources were identified within the direct impact APE, the locations of turbines were modified in response for the purposes of avoidance and new direct impact APE areas were surveyed and substituted for the avoided areas.

Within the indirect impact APE, a sample survey was conducted of 20 percent of the initially-defined indirect impact APE, or about 1,400 acres. This sample was subjected to an intensive survey using the same standards as those for the BLM Class III survey.

At the most basic pragmatic level, the primary goals of the archaeological survey were to detect prehistoric and historical archaeological resources in the survey area; document these archaeological resources in detail; offer preliminary evaluations for significance based on surface manifestations; and place the new information gained from the survey into the regional research context.

Archaeological fieldwork in support of the proposed Project was conducted between September 2010 and August 2011. The systematic pedestrian survey was conducted with transect intervals no greater than 15 meters. When a site was found, transect intervals were reduced to 5 meter spacing during recordation to fully document the site's features, artifacts and boundaries. The transect intervals were adequate for the identification of archaeological sites, particularly given the excellent ground visibility throughout the project area. Each survey crew consisted of a field director or crew chief plus one to three field archaeologists. Native American consultants were invited to participate in the survey and were present during the entire survey effort (on some occasions there were more than one Native American consultant per crew and on others there were not any).

Both prehistoric and historic sites were defined as three or more artifacts located within 50 m or a single archaeological feature. The archaeological remains of historic features, buildings, and structures older than 50 years in age were considered sites. No artifacts were collected.

Survey Results

Tierra surveyed approximately 11,332 acres during the project's planning and design process. Ground visibility was nearly 100 percent throughout the project area. A total of 287 archaeological sites have been documented within the project area (see Table 3.4-1). Of these 287 sites, 229 are prehistoric sites, 29 are historic-era sites, and 29 are multi-component sites (sites containing both prehistoric and historic-era components).

Table 3.4-1. Archaeological Resources Eligibility and Management Summary

Resource Designation	Site Type	Dimensions (N/S x E/W)	Recommended Eligibility
CA-IMP-008/H	Camp Site, Agave Processing Area, Rock Features & Historic Refuse Scatter	4024 m (NE/SW) by 1610 m (NW/SE)	Eligible (Criterion D)
CA-IMP-055	Artifact Scatter & Rock Feature	140 m by 140 m	Not Eligible
CA-IMP-103/H	Artifact Scatter, Historic Mining Site & Refuse Scatter	1170 m by 1180 m	Eligible (Criterion D)
CA-IMP-443	Lithic Scatter & Rock Features	286 m by 81 m	Eligible (Criterion D)
CA-IMP-1427	Lithic Scatter & Rock Feature	900 m by 1,800 m	Eligible (Criterion D)
CA-IMP-1431/H	Artifact Scatter, Rock Features & Historic Mining Site	800 m by 500 m	Eligible (Criterion D)
CA-IMP-2430	Camp Site	288 m by 226 m	Eligible (Criterion D)
CA-IMP-2471/H	Camp, Cremation, Trail & Historic Refuse Scatter	229 m by 421 m	Eligible (Criterion D); contributor to identified TCP (Criterion A)
CA-IMP-2488	Lithic Scatter & Rock Features	393 m (NE/SW) by 259 m (NW/SE)	Eligible (Criterion D)
CA-IMP-3705/H	Artifact Scatter & Historic Refuse Scatter	367 ft (NW/SE) by 625 ft (NE/SW)	Not Eligible
CA-IMP-3712	Lithic Scatter	154 m by 79 m	Eligible (Criterion D)
CA-IMP-3720H	Historic Mining Site	248 ft (NW/SE) by 188 ft (NE/SW)	Not Eligible
CA-IMP-6508/H	Artifact Scatter, Rock Features & Historic Refuse Scatter	294 m by 84 m	Not Eligible
CA-IMP-6915	Camp Site	354 m (NE/SW) by 525 m (NW/SE)	Eligible (Criterion D)
CA-IMP-6919	Artifact Scatter	129 m by 565 m	Eligible (Criterion D)
CA-IMP-6920	Lithic Scatter &Trail/ Geoglyph	520 m by 510 m	Eligible (Criteria C & D); contributor to identified TCP (Criterion A)
CA-IMP-6921/H	Lithic Scatter, Rock Features, Historic Foundations & Refuse Scatter	70 m by 80 m	Not Eligible
CA-IMP-6922	Lithic Scatter	130 m by 330 m	Not Eligible
CA-IMP-6923/H	Lithic Scatter, Historic Refuse & Road	270 m by 180 m	Eligible (Criterion D)
CA-IMP-6924	Lithic Scatter	131 m by 90 m	Not Eligible
CA-IMP-6988	Artifact Scatter, Agave Processing Area & Geoglyph	920 m by 410 m	Listed (Criteria C & D); Eligible contributor to identified TCP (Criterion A)
CA-IMP-10885/H	Artifact Scatter & Mining Site	132 m (NW/SE) by 60 m (NE/SW)	Not Eligible
OCO-003	Camp Site, Rock Feature & Modern Geoglyph	56 m by 350 m	Eligible (Criterion D)
OCO-008	Lithic Scatter & Rock Feature	380 m by 230 m	Eligible (Criterion D)
OCO-011	Lithic Scatter & Agave Processing Area	12 m by 38 m	Not Eligible
OCO-012	Lithic Scatter & Agave Processing Area	92 m by 59 m	Eligible (Criterion D)
OCO-014	Lithic Scatter & Agave Processing Area	240 m by 91 m	Eligible (Criterion D)
OCO-019	Lithic Scatter & Agave Processing Area	34 m by 29 m	Eligible (Criterion D)
OCO-021	Artifact Scatter & Agave Processing Area	40 m by 47 m	Eligible (Criterion D)
OCO-023	Artifact Scatter & Agave Processing Area	11 m by 44 m	Eligible (Criterion D)
OCO-024	Lithic Scatter	11 m by 44 m	Not Eligible
OCO-025	Lithic Scatter	289 m by 249 m	Not Eligible
OCO-026	Agave Processing Area	10 m by 25 m	Eligible (Criterion D)
OCO-AMC-001/H	Lithic Scatter, Rock Feature & Historic Refuse Scatter	53 m by 147 m	Not Eligible
OCO-AMC-003	Lithic Scatter	165 m (NE/SW) by 45 m (NW/SE)	Not Eligible
OCO-AMC-004	Ceramic Scatter	41 m by 41 m	Eligible (Criterion D)
OCO-AMC-005H	Historic Refuse Scatter	102 ft (NE/SW) by 36 ft (NW/SE)	Not Eligible

Table 3.4-1. Archaeological Resources Eligibility and Management Summary

Resource Designation	Site Type	Dimensions (N/S x E/W)	Recommended Eligibility
OCO-AMC-006	Ceramic Scatter	24 m by 38 m	Not Eligible
OCO-AMC-010H	Historic Refuse Scatter	150 ft (NW/SE) by 85 ft (NE/SW)	Not Eligible
OCO-AMC-027H	Historic Mining Site	213 ft by 217 ft	Not Eligible
OCO-AMC-028	Artifact Scatter & Agave Processing Area	198 m (NW/SE) by 353 m (NE/SW)	Eligible (Criterion D)
OCO-AMC-032	Lithic Scatter	52 m by 27 m	Not Eligible
OCO-AMC-035	Lithic Scatter	30 m by 30 m	Not Eligible
OCO-AMC-042	Lithic Scatter& Rock Features	186 m (NNW/SSE) by 500 m (NNE/SSW)	Eligible (Criterion D)
OCO-AMC-044/H	Artifact Scatter, Agave Processing Area & Historic Mining Site	281 m (NE/SW) by 154 m (NW/SE)	Eligible (Criterion D)
OCO-AMC-052	Lithic Scatter	54 m (NE/SW) by 23 m (NW/SE)	Not Eligible
OCO-AMC-053H	Historic Survey Marker & Rock Feature	7.5 ft (N/S) by 6 ft (E/W)	Not Eligible
OCO-AMC-054	Camp Site & Rock Features	636 m (NE/SW) by 215 m (NW/SE)	Eligible (Criterion D)
OCO-AMC-064	Lithic Scatter	176 m (NE/SW) by 55 m (NW/SE)	Eligible (Criterion D)
OCO-AMC-065	Lithic Scatter	5 m by 12 m	Not Eligible
OCO-AMC-066	Lithic Scatter & Rock Features	6 m by 24 m	Not Eligible
OCO-AMC-067	Lithic Scatter & Rock Features	6 m by 24 m	Not Eligible
OCO-AMC-068/H	Lithic scatter, Rock Features & Historic Mining Site	85 m (NW/SE) by 224 m (NE/SW)	Eligible (Criterion D)
OCO-AMC-069	Lithic Scatter	44 m (NE/SW) by 23 m (NW/SE)	Not Eligible
OCO-AMC-070	Lithic Scatter	86 m (NE/SW) by 10 m (NW/SE)	Not Eligible
OCO-AMC-072	Lithic Scatter & Rock Features	420 m (NE/SW) by 143 m (NW/SE)	Eligible (Criterion D)
OCO-AMC-076/H	Lithic Scatter, Historic Mining Site & Road	98 m by 27 m	Not Eligible
OCO-AMC-078	Lithic Scatter	10 m by 6 m	Not Eligible
OCO-AMC-083	Modern Redeposited Artifact Scatter	87 m by 145 m	Not Eligible
OCO-AMC-086	Lithic Scatter	220 m by 239 m	Eligible (Criterion D)
OCO-AMC-088	Lithic Scatter & Rock Features	433 m (NW/SE) by 297 m (NE/SW)	Eligible (Criterion D)
OCO-AMC-090	Artifact Scatter	246 m (NNE/SSW) by 234 m (ENE/WSW)	Eligible (Criterion D)
OCO-AMC-091	Artifact Scatter & Rock Features	357 m by 113 m	Eligible (Criterion D)
OCO-AMC-094	Agave Processing Area	16 m by 13 m	Eligible (Criterion D)
OCO-AMC-097	Artifact Scatter & Agave Processing Area	122 m by 122 m	Eligible (Criterion D)
OCO-AMC-100	Lithic Scatter & Agave Processing Area	72 m by 50m	Eligible (Criterion D)
OCO-AMC-102	Agave Processing Area	56 m by 27 m	Eligible (Criterion D)
OCO-AMC-125	Agave Processing Area	12 m by 21 m	Eligible (Criterion D)
OCO-AMC-126	Agave Processing Area	144 m (NE/SW) by 56 m (NW/SE)	Eligible (Criterion D)
OCO-AMC-129	Lithic Scatter	4 m by 13 m	Not Eligible
OCO-AMC-130	Lithic Scatter	13 m (NNE/SSW) by 37 m (ENE/WSW)	Not Eligible
OCO-AMC-500T	Trail & Rock Features	70 m by 0.40 m	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-AMC-501T	Trail	33 m by 0.50 m	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-BF-001	Camp Site	80 m by 193 m	Eligible (Criterion D)
OCO-BF-004H	Historic Mining Site	13 m (NNE/SSW) by 37 m (ENE/WSW)	Not Eligible
OCO-BF-005	Lithic Scatter & Rock Features	15 m (NE/SW) by 27 m (NW/SE)	Eligible (Criterion D)
OCO-BF-008	Lithic Scatter	37 m (NW/SE) by 95 m (NE/SW)	Eligible (Criterion D)

Table 3.4-1. Archaeological Resources Eligibility and Management Summary

Resource Designation	Site Type	Dimensions (N/S x E/W)	Recommended Eligibility
OCO-BF-009H	Historic Mining Site	230 ft by 125 ft	Not Eligible
OCO-BF-012	Lithic Scatter	167 m (NW/SE) by 216 m (NE/SW)	Eligible (Criterion D)
OCO-BF-013/H	Lithic Scatter, Rock Features & Survey Markers	85 m (NW/SE) by 90 m (NE/SW)	Eligible (Criterion D)
OCO-BF-017	Lithic Scatter & Rock Features	396 m by 625 m	Eligible (Criterion D)
OCO-BF-018/H	Lithic Scatter & Historic Mining Site	177 m (N/S) by 365 m (E/W)	Eligible (Criterion D)
OCO-BF-019/H	Lithic Scatter & Historic Mining Site	90 m by 435 m	Eligible (Criterion D)
OCO-BF-020	Lithic Scatter	46 m by 87 m	Not Eligible
OCO-BF-026/H	Lithic Scatter& Historic Mining Site	101 m (NW/SE) by 342 m (NE/SW)	Eligible (Criterion D)
OCO-BF-034	Lithic Scatter	61 m (NW/SE) by 161 m (NE/SW)	Not Eligible
OCO-BF-035	Lithic Scatter	18 m (NW/SE) by 46 m (NE/SW)	Not Eligible
OCO-BF-040	Artifact Scatter & Rock Features	300 m by 550 m	Eligible (Criterion D)
OCO-BF-041	Camp Site & Rock Features	43 m by 317 m	Eligible (Criterion D)
OCO-BF-042T	Trail	302 m long by 25 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-BF-044	Agave Processing Area	48 m (NE/SW) by 25 m (NW/SE)	Eligible (Criterion D)
OCO-BF-048	Lithic Scatter & Agave Processing Area	123 m by 45 m	Eligible (Criterion D)
OCO-BF-049	Agave Processing Area	14 m by 20 m	Eligible (Criterion D)
OCO-BF-050	Agave Processing Area	25 m by 21 m	Eligible (Criterion D)
OCO-BF-054	Agave Processing Area	13 m by 16 m	Eligible (Criterion D)
OCO-BF-055	Agave Processing Area	16 m by 14 m	Eligible (Criterion D)
OCO-BF-056	Agave Processing Area	24 m by 26 m	Eligible (Criterion D)
OCO-BF-057	Ceramic Scatter & Agave Processing Area	15 m by 52 m	Eligible (Criterion D)
OCO-BF-059	Lithic Scatter & Agave Processing Area	69 m by 163 m	Eligible (Criterion D)
OCO-BF-060	Artifact Scatter	14 m by 13 m	Not Eligible
OCO-BF-061	Agave Processing Area	23 m by 13 m	Eligible (Criterion D)
OCO-CWB-001T	Trail	39 m long by 33 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-CWB-002T	Trail & Rock Feature	9.6 m long by 30-35 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-CWB-003T	Trail	33.2 m long by 30-35cm	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-CWB-004T	Trail & Rock Features	518.7m long by 30-35 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-EAM-001	Camp Site	83 m (NE/SW) by 289 m (NW/SE)	Not Eligible
OCO-EAM-002	Artifact Scatter & Agave Processing Area	255 m by 90 m	Eligible (Criterion D)
OCO-EAM-005	Lithic Scatter	239 m by 298 m	Eligible (Criterion D)
OCO-EAM-010	Camp Site & Rock Features	470 m (NW/SE) by 900 m (NE/SW)	Eligible (Criterion D)
OCO-EAM-011	Artifact Scatter	11 m by 40 m	Not Eligible
OCO-EAM-012	Camp Site, Trail & Rock Features	120 m by 400 m	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-EAM-013	Lithic Scatter & Rock Features	250 m by 115 m	Eligible (Criterion D)
OCO-EAM-014	Lithic Scatter & Rock Features	260 m (NE/SW) by 170 m (NW/SE)	Eligible (Criterion D)
OCO-EAM-015	Lithic Scatter & Rock Features	190 m (NNW/SSE) by 400 m (NNE/SSW)	Eligible (Criterion D)

Table 3.4-1. Archaeological Resources Eligibility and Management Summary

Resource Designation	Site Type	Dimensions (N/S x E/W)	Recommended Eligibility
OCO-EAM-017	Artifact Scatter	67 m (NE/SW) by 11 m (NW/SE)	Not Eligible
OCO-EAM-018H	Historic Mining Site	69 ft (NE/SW) by 125 ft (NW/SE)	Not Eligible
OCO-EAM-019	Camp Site	80 m by 92 m	Not Eligible
OCO-EAM-020	Artifact Scatter	70 m (NE/SW) by 22 m (NW/SE)	Not Eligible
OCO-EAM-023	Lithic Scatter & Rock Feature	71 m (NE/SW) by 49 m (NW/SE)	Not Eligible
OCO-EAM-024	Lithic Scatter	21 m (NE/SW) by 11 m (NW/SE)	Not Eligible
OCO-EAM-025	Lithic Scatter	27 m by 45 m	Not Eligible
OCO-EAM-026	Lithic Scatter & Rock Feature	35 m by 63 m	Not Eligible
OCO-EAM-027	Lithic Scatter	57 m by 44 m	Not Eligible
OCO-EAM-028	Lithic Scatter	33 m (NE/SW) by 23 m (NW/SE)	Not Eligible
OCO-EAM-030	Lithic Scatter	13 m by 8 m	Not Eligible
OCO-EAM-031	Artifact Scatter & Agave Processing Area	55 m (N/S) by 86 m (E/W)	Eligible (Criterion D)
OCO-EAM-032	Lithic Scatter	100 m (N/S) by 56 m (E/W)	Not Eligible
OCO-EAM-033H	Historic Mining Site	55 ft by 114 ft	Not Eligible
OCO-EAM-034	Agave Processing Area	9 m by 9 m	Eligible (Criterion D)
OCO-EAM-035	Lithic Scatter	9 m by 18 m	Not Eligible
OCO-EAM-036	Lithic Scatter	1 m by 1 m	Not Eligible
OCO-EAM-037	Lithic Scatter	70 m NE/SW by 29 m NW/SE	Not Eligible
OCO-EAM-038	Lithic Scatter	11 m (NE/SW) by 18 m (NW/SE)	Not Eligible
OCO-EAM-039	Lithic Scatter	33 m (NW/SE) by 22 m (NE/SW)	Not Eligible
OCO-EAM-040	Lithic Scatter	17 m by 13 m	Not Eligible
OCO-EAM-042	Camp Site & Agave Processing Area	154 m by 112 m	Eligible (Criterion D)
OCO-EAM-043	Lithic Scatter	1 m by 1 m	Not Eligible
OCO-EAM-044	Lithic Scatter	112 m (N/S) by 68 m (E/W)	Not Eligible
OCO-EAM-046	Agave Processing Area	30 m by 31 m	Eligible (Criterion D)
OCO-EAM-047	Lithic Scatter	63 m (NE/SW) by 21 m (NW/SE)	Not Eligible
OCO-EAM-048H	Historic Mining Site	110 ft (NW/SE) by 55 ft (NE/SW)	Not Eligible
OCO-EAM-049	Agave Processing Area	1 m by 1 m	Not Eligible
OCO-EAM-050	Lithic Scatter	154 m (NNW/SSE) by 87 m (NNE/SSW)	Not Eligible
OCO-EAM-052	Lithic Scatter	149 m (NE/SW) by 60 m (NW/SE)	Not Eligible
OCO-EAM-053	Lithic Scatter & Rock Feature	100 m (NE/SW) by 36m (NW/SE)	Not Eligible
OCO-EAM-054	Artifact Scatter	18 m (NE/SW) by 3 m (NE/SW)	Not Eligible
OCO-EAM-055	Lithic Scatter	61 m (NW/SE) by 161 m (NE/SW)	Not Eligible
OCO-EAM-056T	Trail	430 m long by 20-30 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-EAM-057	Lithic Scatter	90 m (NW/SE) by 305 m (NE/SW)	Not Eligible
OCO-EAM-058	Camp Site & Agave Processing Area	498 m by 706 m	Eligible (Criterion D)
OCO-EAM-061	Artifact Scatter	216 m by 204 m	Not Eligible
OCO-EAM-062	Lithic Scatter	563 m by 132 m	Eligible (Criterion D)
OCO-EAM-064	Rock Feature	2 m by 2 m	Not Eligible
OCO-EAM-065	Lithic Scatter	8 m by 8 m	Not Eligible
OCO-EAM-067/H	Lithic Scatter, Rock Features & Historic Mining Site	185 m (NE/SW) by 134 m (NW/SE)	Not Eligible
OCO-EAM-068	Agave Processing Area	7 m by 6 m	Eligible (Criterion D)
OCO-EAM-069	Lithic Scatter	10 m (NW/SE) by 18 m (NE/SW)	Not Eligible
OCO-EAM-070	Lithic Scatter	7 m by 8 m	Not Eligible
OCO-EAM-071	Lithic Scatter & Rock Feature	80 m by 80 m	Not Eligible
OCO-EAM-072	Lithic Scatter & Rock Features	255 m by 90 m	Eligible (Criterion D)

Table 3.4-1. Archaeological Resources Eligibility and Management Summary

Resource Designation	Site Type	Dimensions (N/S x E/W)	Recommended Eligibility
OCO-EAM-074	Camp Site & Rock Feature	120 m by 100 m	Eligible (Criterion D)
OCO-EAM-075/H	Artifact Scatter, Rock Features & Historic Refuse Scatter	286 m by 160 m	Eligible (Criterion D)
OCO-EAM-076	Lithic Scatter & Rock Feature	15 m by 43 m	Not Eligible
OCO-EAM-077	Camp Site & Rock Features	120 m by 190 m	Eligible (Criterion D)
OCO-EAM-078	Lithic Scatter	19 m by 28 m	Not Eligible
OCO-EAM-079	Lithic Scatter	32 m (NE/SW) by 18 m (NW/SE)	Not Eligible
OCO-EAM-081	Lithic Scatter & Cremation Site	62 m by 36 m	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-EAM-082	Artifact Scatter	41 m by 65 m	Not Eligible
OCO-EAM-083	Artifact Scatter	7 m by 9 m	Not Eligible
OCO-EAM-084	Artifact Scatter & Rock Features	64 m by 111 m	Not Eligible
OCO-EAM-085	Agave Processing Area	10 m by 17 m	Eligible (Criterion D)
OCO-EAM-087	Lithic Scatter	18 m by 50 m	Not Eligible
OCO-EAM-088	Artifact Scatter	10 m by 38 m	Not Eligible
OCO-EAM-089	Agave Processing Area	3 m by 2 m	Not Eligible
OCO-EAM-100	Lithic Scatter & Agave Processing Area	206 m (NW/SE) by 98 m (NE/SW)	Eligible (Criterion D)
OCO-EAM-101	Lithic Scatter & Agave Processing Area	66 m (NE/-SW) by 27 m (NW/-SE)	Eligible (Criterion D)
OCO-EAM-102	Lithic Scatter & Agave Processing Area	98 m (NNW/SSE) by 36 m WSW/ENE)	Eligible (Criterion D)
OCO-EAM-103	Lithic Scatter & Agave Processing Area	40 m (NE/SW) by 20 m (NW/SE)	Eligible (Criterion D)
OCO-EAM-104	Lithic Scatter	20 m by 13 m	Not Eligible
OCO-EAM-106	Lithic Scatter & Agave Processing Area	95 m by 55 m	Eligible (Criterion D)
OCO-EAM-107	Lithic Scatter & Agave Processing Area	31 m (NNE/SSW) by 13 m (WNW/ESE)	Eligible (Criterion D)
OCO-EAM-108	Lithic Scatter & Agave Processing Area	104 m (NNE/SSW) by 71 m (WNW/ESE)	Eligible (Criterion D)
OCO-EAM-109	Lithic Scatter & Agave Processing Area	151 m (NNW/SSE) by 70 m (ENE/WSW)	Eligible (Criterion D)
OCO-EAM-110	Artifact Scatter & Agave Processing Area	65 m by 32 m	Eligible (Criterion D)
OCO-EAM-111	Artifact Scatter & Agave Processing Area	112 m by 72 m	Eligible (Criterion D)
OCO-EAM-112	Lithic Scatter & Agave Processing Area	23 m (NE/SW) by 15 m (NW/SE)	Not Eligible
OCO-EAM-113	Lithic Scatter & Geoglyph	8 m by 12 m	Eligible (Criteria C & D); contributor to identified TCP (Criterion A)
OCO-EAM-114	Lithic Scatter	70 m by 66 m	Not Eligible
OCO-EAM-151	Lithic Scatter	55 m by 68 m	Not Eligible
OCO-EAM-152	Camp Site & Rock Features	145 m by 110 m	Eligible (Criterion D)
OCO-EAM-200T	Trail	15.5 m (SW/NE) long by 50 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-EAM-300H	Historic Mining Site & Refuse Scatter	210 ft by 145ft	Not Eligible
OCO-JLU-173/H	Artifact Scatter & Historic Mining Site	460 m by 1,200 m	Eligible (Criterion D)
OCO-KAM-001T	Trail	317 m (NE/SW) long by 1.2 m wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-KRM-001	Lithic Scatter & Rock Features	31 m by 81 m	Not Eligible
OCO-KRM-003	Artifact Scatter	82 m by 52 m	Not Eligible
OCO-KRM-004	Lithic Scatter	22 m by 56 m	Not Eligible
OCO-KRM-005	Lithic Scatter	141 m by 125 m	Not Eligible

Table 3.4-1. Archaeological Resources Eligibility and Management Summary

Resource Designation	Site Type	Dimensions (N/S x E/W)	Recommended Eligibility
OCO-KRM-006	Artifact Scatter & Rock Features	177 m by 436 m	Not Eligible
OCO-KRM-007	Lithic Scatter	12 m (NW/SE) by 34 m (NE/SW)	Not Eligible
OCO-KRM-008	Lithic Scatter	28 m (NW/SE) by 167 m (NE/SW)	Not Eligible
OCO-KRM-009	Lithic Scatter	7 m (NW/SE) by 34 m (NE/SW)	Not Eligible
OCO-KRM-020	Ceramic Scatter	22 m (WSW/ENE) by 32 m (NNW/SSE)	Not Eligible
OCO-KRM-022	Artifact Scatter	32 m (WSW/ENE) by 2 m (NNW/SSE)	Not Eligible
OCO-KRM-023	Artifact Scatter	45 m (NNE/SSW) by 4 m (ENE/WSW)	Not Eligible
OCO-KRM-024	Artifact Scatter	88 m by 40 m	Not Eligible
OCO-KRM-025	Artifact Scatter	22 m (NE/SW) by 20 m (NW/SE)	Not Eligible
OCO-KRM-026	Artifact Scatter	54 m (NE/SW) by 25 m (NW/SE)	Not Eligible
OCO-KRM-032	Artifact Scatter	2 m by 4 m	Not Eligible
OCO-KRM-033	Ceramic Scatter	61 m (NW/SE) by 25 m (NE/SW)	Not Eligible
OCO-KRM-037	Lithic Scatter	45 m by 102 m	Not Eligible
OCO-KRM-044	Lithic Scatter	45 m by 80 m	Not Eligible
OCO-KRM-048T	Trail	70 m long by 30-35 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-KRM-051	Camp Site & Rock Features	237 m (NE/SW) by 74 m (NW/SE)	Eligible (Criterion D)
OCO-KRM-052/H	Lithic & Historic Refuse Scatter	139 m (NNE/SSW) by 60 m (WNW/ESE)	Not Eligible
OCO-KRM-053	Lithic Scatter	111 m by 39 m	Not Eligible
OCO-KRM-059/H	Artifact Scatter, Rock Features & Survey Markers	144 m by 143 m	Eligible (Criterion D)
OCO-KRM-065T	Trail	Total length of the four segments is 108 m	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-KRM-066T	Trail	20m long	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-KRM-067	Camp Site & Rock Features	437 m (NE/SW) by 207 m (NW/SE)	Eligible (Criterion D)
OCO-LPM-001	Artifact Scatter	20 m by 10 m	Not Eligible
OCO-LPM-002	Lithic Scatter	23 m by 12 m	Not Eligible
OCO-LPM-004	Lithic Scatter & Agave Processing Area	6 m by 12 m	Not Eligible
OCO-LPM-006	Artifact Scatter & Agave Processing Area	24 m by 33 m	Not Eligible
OCO-LPM-007	Lithic Scatter	9 m by 14 m	Not Eligible
OCO-LPM-008	Lithic Scatter	16 m by 25 m	Not Eligible
OCO-LPM-009	Camp Site & Agave Processing Area	435 m by 785 m	Eligible (Criterion D)
OCO-LPM-010	Camp Site & Agave Processing Area	80 m (NE/SW) by 45 m (NW/SE)	Eligible (Criterion D)
OCO-LPM-011T	Trail	494m by 60 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-LPM-012	Agave Processing Area	61 m (NE/SW) by 56 m (NW/SE)	Eligible (Criterion D)
OCO-LPM-013	Agave Processing Area	65 m by 20 m	Eligible (Criterion D)
OCO-MD-001T	Trail	102 m long by 50 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-MD-002T	Trail	46 m long by 50 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)

Table 3.4-1. Archaeological Resources Eligibility and Management Summary

Resource Designation	Site Type	Dimensions (N/S x E/W)	Recommended Eligibility
OCO-MD-003T	Trail	33 m long by 50-75 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-MHN-001T	Trail	61 m long by 40 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-MOW-001H	Historic Refuse Scatter	178 ft (NW/SE) by 428 ft (NE/SW)	Not Eligible
OCO-MOW-002	Artifact Scatter	68 m by 85 m	Not Eligible
OCO-MOW-004H	Historic Refuse Scatter	23 m by 40 m	Not Eligible
OCO-MOW-005	Lithic Scatter	48 m by 30 m	Not Eligible
OCO-MOW-010	Ceramic Scatter	43 m (NE/SW) by 10 m (NW/SE)	Not Eligible
OCO-MOW-011	Ceramic Scatter	54 m (NE/SW) by 22 m (NW/SE)	Not Eligible
OCO-MOW-012/H	Artifact Scatter& Historic Mining Site & Refuse Scatter	109 ft by 286 ft	Not Eligible
OCO-MOW-013/H	Lithic Scatter, Rock Feature, Historic Refuse Scatter & Survey Marker	50 m (NE/SW) by 300 m (NW/SE)	Not Eligible
OCO-MOW-014	Artifact Scatter	32 m By 52 m	Not Eligible
OCO-MOW-016	Artifact Scatter	28 m (NE/SW) by 12 m (NW/SE)	Not Eligible
OCO-MOW-022/H	Artifact Scatter & Historic Mining Site	42 m by 145 m	Not Eligible
OCO-MOW-026H	Historic Mining Site	52 ft by 197 ft	Not Eligible
OCO-MOW-027H	Historic Mining Site	31 ft by 25 ft	Not Eligible
OCO-MOW-028	Artifact Scatter	47 m (NE/SW) by 29 m (NW/SE)	Not Eligible
OCO-MOW-029H	Historic Mining Site	43 m by 19 m	Not Eligible
OCO-MOW-032	Lithic Scatter	110 m (NE/SW) by 40 m (NW/SE)	Not Eligible
OCO-MOW-037H	Historic Mining Site & Survey Marker	256 ft by 116 ft	Not Eligible
OCO-MOW-038	Artifact Scatter	68 m by 55 m	Not Eligible
OCO-MOW-039	Artifact Scatter	17 m (NW/SE) by 31 m (NE/SW)	Not Eligible
OCO-MOW-040H	Historic Mining Site	96 ft (NE/SW) by 56 ft (NW/SE)	Not Eligible
OCO-MOW-042	Artifact Scatter	179 m (NW/SE) by 139 m (NE/SW)	Not Eligible
OCO-MOW-043/H	Ceramic & Historic Refuse Scatter	131 m (NW/SE) by 112 m (NE/SW)	Not Eligible
OCO-MOW-045H	Historic Mining Site	100 ft (NW/SE) by 90 ft (NE/SW)	Not Eligible
OCO-MOW-046H	Historic Mining Site	105 ft by 72 ft	Not Eligible
OCO-MOW-047H	Historic Mining Site & Survey Marker	109 ft (NE/SW) by 40 ft (NW/SE)	Not Eligible
OCO-MOW-048H	Historic Mining Site & Survey Marker	352 ft (NE/SW) by 292 ft (NW/SE)	Not Eligible
OCO-MOW-049H	Historic Refuse Scatter	106 ft by 173 ft	Not Eligible
OCO-MOW-050H	Historic Refuse Scatter	126 ft (NW/SE) by 350 ft (NE/SW)	Not Eligible
OCO-MOW-051	Lithic Scatter	10 m by 10 m	Not Eligible
OCO-MOW-052/H	Ceramic Scatter & Historic Mining Site	173 ft (NW/SE) by 95 ft (NE/SW)	Not Eligible
OCO-MOW-054	Artifact Scatter	99 m by 178 m	Not Eligible
OCO-MOW-055	Camp Site & Rock Features	171 m by 58 m	Eligible (Criterion D)
OCO-MOW-059H	Historic Refuse Scatter	413 ft by 364 ft	Not Eligible
OCO-MOW-064/H	Artifact Scatter & Historic Mining Site & Refuse Scatter	288 m by 500 m	Not Eligible
OCO-MOW-065H	Historic Mining Site	331 ft (NE/SW) by 195 ft (NW/SE)	Not Eligible
OCO-MOW-066	Artifact Scatter	52 m (NE/SW) by 28 m (NW/SE)	Not Eligible
OCO-MOW-067H	Historic Mining Site & Survey Marker	142 ft (NE/SW) by 94 ft (NW/SE)	Not Eligible
OCO-MOW-068	Lithic Scatter & Rock Features	57 m (NW/SE) by 144 m (NE/SW)	Not Eligible
OCO-MOW-069	Lithic Scatter	47 m (NW/SE) by 155 m (NE/SW)	Not Eligible
OCO-MOW-070	Lithic Scatter	60 m by 440 m	Not Eligible
OCO-MOW-071	Lithic Scatter	52 m (NE/SW) by 28 m (NW/SE)	Not Eligible

Table 3.4-1. Archaeological Resources Eligibility and Management Summary			
Resource Designation	Site Type	Dimensions (N/S x E/W)	Recommended Eligibility
OCO-MOW-072	Lithic Scatter	32 m (NE/SW) by 12 m (NW/SE)	Not Eligible
OCO-MOW-073H	Historic Mining Site	37 m (NE/SW) by 18 m (NW/SE)	Not Eligible
OCO-MOW-074	Lithic Scatter	13 m by 19 m	Not Eligible
OCO-MOW-200T	Trail	237 m long by 30-35 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-MOW-201T	Trail	171 m long by 30-35 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-MTE-006/H	Camp Site & Historic Mining Site	107 m By 275 m	Eligible (Criterion D)
OCO-SAC-003	Artifact Scatter & Agave Processing Area	660 m (NW/SE) by 320 m (NE/SW)	Eligible (Criterion D)
OCO-SAC-100T	Trail & Rock Features	174 m long by 40 cm wide	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-VAP-023	Artifact Scatter & Cremation Site	20 m (NW/SE) by 48 m (NE/SW)	Eligible (Criterion D); contributor to identified TCP (Criterion A)
OCO-VAP-025	Artifact Scatter	56 m by 811 m	Eligible (Criterion D)
P-13-012210	Road	10560 ft by 12 ft	Not Eligible

In addition to the 287 documented archaeological sites, 28 previously recorded sites and isolates could not be relocated during the survey. Sites that were not relocated but whose previous locations are mapped as falling within a larger site boundary (as defined by Tierra during the survey) were subsumed under the larger site. Sites that were not relocated and whose previous locations are not within a larger site are not addressed further.

Regarding prehistoric resources, high concentrations of lithic procurement sites and knapping stations were documented by the current effort, and it is clear that the project area was an important area for lithic procurement and reduction activities during the prehistoric period. As well, the northwest portion of the project area contains a large number of agave processing areas as evidenced by an extensive number of agave roasting pits/platforms. It should be noted that stands of agave are currently present in this portion of the project area.

Of the 287 sites within the project area, a total of 125 contain lithic scatters and include approximately 20,000 knapping stations. A total of 59 sites contain artifact scatters (generally with a combination of lithics, ceramics, and/or groundstone), and a total of 55 sites contain agave processing areas. A total of 23 prehistoric camp sites were also recorded in the project area.

Nine sites contained ceramic scatters, with both brownware and buffware ceramics represented in the project area. One site contained decorated ceramic sherds. Two of the sites contain prehistoric ceramics that appear to be the result of the re-deposition of a private collection.

Fifty-six sites contain rock features, three sites contain prehistoric geoglyphs, and one site contains a modern geoglyph. A total of 24 trail segments and three historic roads were recorded.

The primary historic-era use of the project area is associated with mining. Most historic-era resources are mining prospects/claims, mines, spoil piles, and associated refuse scatters. The only historically

documented mining operation in the project area is locally known as the Sugarloaf Mine, site CA-IMP-8806H, located on Sugarloaf Mountain.

A total of 36 sites with historic mining features and 22 sites with historic refuse scatters were documented in the project area. Eleven survey markers were noted during the survey.

Five sites containing human remains were identified during the survey; however, two of the sites are located in areas that have since been removed from the project area and these two sites are not considered further in this analysis.

A summary of the sites by type is presented in Table 3.4-2.

Table 3.4-2. Summary of Sites by Type

Prehistoric Sites	Count	% of Prehistoric Sites
Agave Processing Area	20	8.734%
Artifact Scatter	30	13.100%
Artifact Scatter & Agave Processing Area	10	4.367%
Artifact Scatter & Cremation Site	1	0.437%
Artifact Scatter & Rock Feature	5	2.183%
Artifact Scatter, Agave Processing Area & Geoglyph	1	0.437%
Camp Site	5	2.183%
Camp Site & Agave Processing Area	4	1.747%
Camp Site & Rock Feature	9	3.930%
Camp Site, Rock Feature & Modern Geoglyph	1	0.437%
Camp Site, Trail & Rock Features	1	0.437%
Ceramic Scatter	6	2.620%
Ceramic Scatter & Agave Processing Area	1	0.437%
Lithic Scatter	70	30.568%
Lithic Scatter & Agave Processing Area	17	7.424%
Lithic Scatter & Cremation Site	1	0.437%
Lithic Scatter & Geoglyph	1	0.437%
Lithic Scatter & Rock Feature	23	10.044%
Lithic Scatter &Trail / Geoglyph	1	0.437%
Rock Feature	1	0.437%
Trail	17	7.424%
Trail & Rock Feature	4	1.747%
Subtotal of Prehistoric Sites	229	100%
Historic Sites	**Count**	**% of Historic Sites**
Historic Mining Site	15	51.720%
Historic Mining Site & Refuse Scatter	1	3.450%
Historic Mining Site & Survey Marker	4	13.790%
Historic Refuse Scatter	7	24.140%
Historic Survey Marker & Rock Feature	1	3.450%
Road	1	3.450%
Subtotal of Historic Sites	29	100%
Multi-Component Sites	**Count**	**Not Applicable**
Artifact Scatter & Historic Mining Site	3	10.344%
Artifact Scatter & Historic Mining Site & Refuse Scatter	1	3.448%
Artifact Scatter & Historic Refuse Scatter	1	3.448%
Artifact Scatter& Historic Mining Site & Refuse Scatter	2	6.896%
Artifact Scatter, Agave Processing Area & Historic Mining Site	1	3.448%
Artifact Scatter, Rock Features & Historic Mining Site	1	3.448%
Artifact Scatter, Rock Features & Historic Refuse Scatter	2	6.900%
Artifact Scatter, Rock Features & Survey Markers	1	3.448%
Camp Site & Historic Mining Site	1	3.448%

Table 3.4-2. Summary of Sites by Type		
Prehistoric Sites	Count	% of Prehistoric Sites
Camp Site, Agave Processing Area, Rock Features & Historic Refuse Scatter	1	3.448%
Camp, Cremation, Trail & Historic Refuse Scatter	1	3.448%
Ceramic & Historic Refuse Scatter	1	3.448%
Ceramic Scatter & Historic Mining Site	1	3.448%
Lithic & Historic Refuse Scatter	1	3.448%
Lithic Scatter & Historic Mining Site	2	6.900%
Lithic Scatter, Historic Mining Site & Road	1	3.448%
Lithic Scatter, Historic Refuse & Road	1	3.448%
Lithic Scatter, Rock Feature & Historic Refuse Scatter	1	3.448%
Lithic Scatter, Rock Feature, Historic Refuse Scatter & Survey Marker	1	3.448%
Lithic Scatter, Rock Features & Historic Mining Site	2	6.896%
Lithic Scatter, Rock Features & Survey Markers	1	3.448%
Lithic Scatter, Rock Features, Historic Foundations & Refuse Scatter	1	3.448%
Lithic Scatter, Trail & Historic Mining Site	1	3.448%
Subtotal of Multi-Component Sites	29	100%
Total Site Types	287	N/A

Source: Tierra, 2012a – Table 4.2

Archaeological Resource Significance Recommendations

Based on surface manifestations of the 287 archaeological sites documented within the project area, a total of 127 sites are recommended eligible for inclusion in the NRHP and a total of 160 are recommended not eligible for inclusion in the NRHP. A total of 127 sites are recommended eligible under Criterion D for their potential to answer regional research questions. Regional research questions were developed by Tierra in the *Final Class II & III Inventory and Research Design and Work Plan for the Ocotillo Express Wind Energy Proejct* (Tierra, 2010) for the purpose of evaluating archaeological resources under Criterion D for their relation to regional research issues. Research questions that could be addressed by the majority of these sites include questions related to prehistoric lithic technology, settlement patterns, and site formation processes. Some sites could also address questions related to prehistoric subsistence and land use strategies, ceramic technology, chronology, and inter- and intra-site variability, trade, and ceremonial/religious practices. One multi-component site (CA-IMP-103/H) is also recommended eligible for its potential to address research questions related to historic mining practices.

Three sites that include prehistoric geoglyphs (CA-IMP-6920, CA-IMP-6988, and OCO-EAM-113) are also recommended eligible under Criterion C for their distinctive characteristic of a type and for high artistic value. Twenty-eight sites (with trails, cremations, and/or geoglyphs) are recommended eligible as contributors to the TCP as identified by the Tribes under Criterion A.

During Section 106 consultation, some parties have suggested that the archaeological resources recorded within the project area should be considered together as a district. Districts are significant concentrations, linkages, or continuities of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development. Districts derive their importance from being unified entities based on the interrelationships of various individual resources. Examples of districts include business districts, canal or irrigation systems, estates and farms, industrial complexes, rural villages, transportation networks, residential areas, rural historic districts, and groups of habitation sites. According to the US Department of the Interior, National Park Service Cultural Resources, NRHP Bulletin 15, *How to Apply the National Register Criteria for Evaluation*, a district "must be a definable geographic area that can be distinguished

from surrounding properties by changes such as density, scale, type, age, style of sites, buildings, structures, and objects or by documented differences in patterns of historic development or associations."

The Archaeological Survey Report (Tierra, 2012a) prepared for the project did not identify the archaeological resources recorded in the proposed OWEF as constituting or contributing to a district. The BLM acknowledges that future research may be relevant to the relationship between the project area and previously identified districts, such as the In-ko-pah Gorge Discontiguous District; Earth Figures of the California-Arizona Colorado River Basin Thematic Group; or the Yuha Basin Discontiguous District. The BLM also acknowledges that future research may also be relevant to the possibility that other districts exist. The BLM has carefully reviewed all available information and concurs with the above eligibility recommendations.

3.4.1.5 Built Environment

Two studies prepared for the project (*The Historical Resources Reconnaissance Survey and Evaluation for the Ocotillo Express Wind Energy Project* [Tierra, 2012b] and *Historical Resources Evaluation and Impact Analysis for the Ocotillo Express Wind Energy Project* [Moomjian, 2012]) identified those historic buildings, structures, sites, objects, and districts located within the the APE: (1) that may be over forty-five years of age; (2) have the potential to be considered either historically and/or architecturally significant; (3) and possess a sufficient degree of original integrity. The APE for built-environment resources was defined as the project area and a 1-mile radius around it, but also includes the community of Nomirage and the Desert View Tower, because of possible visual impacts to these resources.

In May 2011, a *Preliminary Historical Resources Reconnaissance Survey and Evaluation for the Ocotillo Express Wind Energy Project, Imperial County, California* ("Preliminary Survey/Evaluation") was prepared (Tierra, 2011a). This study identified 186 potential historic-period buildings or structures in the APE, the majority of which were historic-period residential structures in the community of Ocotillo.

Subsequent to the preparation of the Preliminary Survey/Evaluation, it was determined that the community of Nomirage, which is located approximately six miles southeast of Ocotillo, should also be evaluated and analyzed to identify the presence of any potential historic-period resources. A second reconnaissance survey was undertaken and approximately 57 potential historic-period resources were found to exist within the Nomirage community. In sum, therefore, a total of approximately two hundred forty-five (245) total potential historic-period resources were identified and evaluated as part of these studies.

The *Historical Resources Evaluation and Impact Analysis for the Ocotillo Express Wind Energy Project* report ("Evaluation/Impact Analysis") (Moomjian, 2012) summarized the results of the reconnaissance surveys and conducted detailed research and evaluation of all potentially eligible built-environment resources.

Built Environment Survey Results and Eligibility Recommendations

As a result of the 2011 Preliminary Survey/Evaluation, the majority (177) of the potential historic-period resources in Ocotillo and all 57 potential historic-period resources in Nomirage were evaluated and recommended as not historically and/or architecturally significant under NRHP or CRHR Criteria.

Of these non-significant resources, the majority consist of Modern style, single-family residential homes or prefabricated/mobile homes, constructed from the 1950s-1980s. Many of these structures, however, do not appear to embody the distinctive characteristics of a type, period, or method of Modern residential construction to be considered historically and/or architecturally significant under NRHP or CRHR Criteria. Overall, while these structures appear to be largely Modern in style, they tend to lack a number of important, character-defining features of a type, period, and method of Modern style construction. In addition, the majority of structures identified within the project area feature additions, modifications, and alterations associated with improvements over the years. In many instances, while some of the resources may possess such original integrity elements as location and setting, they lack original design, materials, workmanship, feeling, and association. Thus, in addition to a lack of original character-defining features, many of the structures lack a sufficient degree of overall integrity to justify further study. No continuity among these resources in terms of shared history, architecture, property type, or year of construction was identified to justify the presence of any potential or actual historic district.

As a result of the 2011 Preliminary Survey/Evaluation, a total of nine resources were identified as potentially significant. The nine resources included the Desert View Tower (1 In Ko Pah Road, Jacumba; P-13-008044); Old Highway 80 (portions of which are included in the project area; P-13-008418); the San Diego Eastern & Arizona Railroad, Desert Line (portions are included in the project area; P-13-009302); Miller's Garage/Restaurant Complex (298 West Highway 80); Weaver's Service Station (14 West Highway 80); Desert Haven Restaurant/Ocotillo Trading Post (Northwest corner of Evan Hewes Highway/Imperial Highway); Original Ocotillo Post Office Buildings (near Northeast corner of Evan Hewes/Imperial Highway); Current Ocotillo Post Office (1153 North Imperial Highway); and a Single-Family Residence (1212 North Imperial Highway).

After further research and evaluation, as documented in the Evaluation/Impact Analysis, three of these nine potentially significant historic built environment resources were recommended as designation-eligible historical resources:

- **The Desert View Tower** (P-13-008044) (which includes the building itself and stone sculptures on the property), is listed on both the NRHP and CRHR as one of eleven California resources which represent twentieth century environmental folk art, with a period of significance from the 1920s-1950s. It is also California Historical Landmark no. 939. The Tower is located approximately 10 miles from the project location. Both the Tower and the surrounding rock sculptures comprise the resource and convey its significance (Selway, Furtado and Hart 1978; P-13-008044). Although not expressly stated in the NRHP Nomination documentation, the Desert View Tower is presumed to have retained its original integrity (Location, Design, Setting, Materials, Workmanship, Feeling, and Association) from its period of significance. This property, therefore, is an historical resource under CEQA and a historic property by virtue of its inclusion in the NRHP and CRHR.
- **Old Highway 80** (P-13-008418) was previously determined eligible for listing on the NRHP and CRHR as part of the Sunrise Powerlink Project in 2007 under Criterion A for its association with early transcontinental highway development, and for its early designation and continued use, providing Imperial Valley's essential east and west vehicular connections, with a period of significance from 1926-1972. Based upon the information contained in the survey form, the present study concurs with the conclusion of historical significance. The survey documentation

expressly states that the resource has retained most of its original integrity (Location, Design, Feeling, Setting, and Association) from its period of significance. This resource is considered an historical resource under CEQA due to the fact that it has been previously recommended eligible for listing in the CRHR, and was identified as significant in an historical resource survey. It was found eligible as part of the Sunrise Powerlink Project by consensus determination.

- **The San Diego Eastern & Arizona Railroad, Desert Line** (P-13-00-9302), was also previously determined eligible for listing on the NRHP and CRHR as part of the Sunrise Powerlink Project in 2007 under Criterion A (Event) for its extremely important role in the development and economy of sections of Imperial County from the 1920s to the present, and under Criterion C (Design/Construction) for its intact roadbed, track engineering. Based upon the information contained in the survey form, the present study concurs with the conclusion of historical significance. The survey documentation indicates that the integrity of the resource appears unchanged and possesses its Location, Design, Setting, Materials, Workmanship, Feeling, and Association from its period of significance. The resource is considered an historical resource under CEQA due to the fact that it has been previously recommended eligible for listing in the CRHR, and was identified as significant in an historical resource survey. It was found eligible as part of the Sunrise Powerlink Project by consensus determination.

The remaining six resources, including Miller's Garage/Restaurant Complex, Weaver's Service Station, the Desert Haven Restaurant/Ocotillo Trading Post, the Original Ocotillo Post Office Buildings, the Current Ocotillo Post Office, and a Single-Family Residence at 1212 North Imperial Highway, were evaluated and recommended as not historically or architecturally significant. The BLM has concurred with the above recommendations.

3.4.2 Applicable Regulations, Plans, and Standards

The applicable federal, State and local regulations, plans, and standards are discussed below and presented in Table 3.4-3. As the NEPA lead agency, the BLM is responsible for compliance with NEPA and Section 106 of the NHPA, and as the CEQA lead agency, Imperial County is responsible for compliance with applicable State and local regulations.

Federal

There are numerous federal regulations, executive orders, and policies that direct management of cultural resources on federal lands and by federal agencies. These include the National Historic Preservation Act (NHPA), the Archaeological Resources Protection Action, the Native American Graves Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act (AIRFA), the Antiquities Act and Executive Order 13007 (Indian Sacred Sites). The following is a discussion of the most pertinent laws affecting the proposed project.

The material expressions of past human activities and the types of areas used by people vary across the project region, where cultural resources are managed in accordance with laws, regulations, and guidelines. The principal federal law addressing cultural resources is the NHPA, as amended (16 USC. Section 470). Section 106 of the NHPA requires a federal agency with jurisdiction over a proposed project (referred to as an undertaking under the NHPA) to evaluate the effect of the undertaking on historic properties included on, or eligible for, the NRHP, in consultation with Indian tribes, local

government and other interested parties. The implementing regulations (36 CFR, Part 800) describe the process for identifying and evaluating historic properties, for assessing the effects of federal undertakings on historic properties, and for consulting with interested parties, including the State Historic Preservation Office (SHPO) and Indian tribes, to develop measures that would avoid, reduce, or minimize adverse effects. The federal lead agency also consults with Indian tribes on a government-to-government level in accordance with several authorities, including NEPA, the NHPA, AIRFA, and Executive Order (EO) 13007.

Federal agencies must also provide the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the effects of the proposed project to those properties. The 1992 amendments to the NHPA strengthened tribal involvement in the process (see 5.2.3). The term "historic properties" refers to districts, sites, buildings, structures, objects or cultural resources that are included in, or are eligible for inclusion in the NRHP.

In order to be eligible for the NRHP, historical or cultural resources are generally, but not always, at least 50 years old, have integrity, and meet at least one of the four criteria listed below. Integrity is the property's ability to convey its demonstrated historical significance through location, design, setting, materials, workmanship, feeling, and association. The four eligibility criteria set forth in 36 CFR, 60.4 are as follows:

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

B. Association with the lives of persons significant to our past;

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

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

The implementing regulations for Section 106 of the NHPA (36 CFR, Part 800) outline the procedures for identifying and evaluating eligible properties and assessing the effects of federal undertaking on those historic properties, in consultation with interested parties, and to identify ways to avoid, reduce, or minimize adverse effects on those properties. Eligible properties need not be formally listed on the NRHP. As part of the Section 106 process, agencies are required to consult with the SHPO, Indian tribes, local government and other interested parties. Section 106 does not require the preservation of historic properties, but it is designed to ensure that the decisions of federal agencies concerning the treatment of these places result from meaningful considerations of cultural and historic values and of the options available to protect the properties. The OWEF is an undertaking, as defined by 36 CFR 800.3, and therefore is subject to Section 106.

The BLM complies with its obligations under the NHPA through a National Programmatic Agreement (NPA) and a related 2007 State Protocol Agreement, as amended, specific to California. The protocol supplements the NPA with state-specific requirements for managing cultural resources on public lands in California and is used as the primary management guidance by BLM offices in the state for complying with the NHPA. This protocol allows BLM's cultural resource staff to act on the SHPO's behalf under

limited circumstances. The BLM may define APEs and the required level of inventory efforts and may determine NRHP eligibility and the effects of undertakings without consulting with the SHPO. However, when undertakings are found to affect historic properties under Section 106 of the NHPA, consultation with SHPO and other interested parties in accordance with 36 CFR 800, and the BLM Manual 8100 series is required. The Section 106 process specific to the OWEF is discussed futher in Chapter 5.

AIRFA establishes a policy of federal protection for traditional American Indian religious freedoms. It seeks to correct federal policies and practices that could (a) deny access to sacred sites required in traditional religions, (b) prohibit use and possession of sacred objects necessary for religious ceremonies, and (c) intrude upon or interfere with religious ceremonies. The BLM complies with AIRFA by obtaining and considering the views of traditional religious practitioners as part of the NEPA compliance process and consultation under Section 106.

EO 13007 directs federal agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners. It requires federal agencies to avoid adversely affecting the physical integrity of sacred sites to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions. EO 13007 reinforces the purposes expressed in AIRFA. The BLM complies with EO 13007 through consulting with tribal governments and Indian religious practitioners as part of the NEPA compliance process and consultation under Section 106.

Requirements for responding to discoveries of Native American human remains and funerary objects, sacred objects, or objects of cultural patrimony on federal or tribal land are addressed under the NAGPRA (Public Law 101-601) and its implementing regulations found at Title 43 CFR Part 10. Whenever there is activity affecting or likely to affect Native American human remains, funerary objects, sacred objects, or objects of cultural patrimony on federal or tribal lands, a federal agency mus prepare a written Plan of Action (POA), in consultation with Indian tribes which outlines the planned treatment, care, handling, and disposition of human remains funerary objects, sacred objects, or objects of cultural patrimony. The BLM is currently preparing a POA. On public lands within the project area, the BLM will comply with the law and regulations by determining lineal descendants and culturally affiliated Indian tribes and by carrying out appropriate treatment and disposition of the discovered remains, including transfer of custody.

The BLM is also required to consider impacts on Indian trust assets, which are lands, natural resources, money, or other assets held by the federal government in trust or that are restricted against alienation for Indian tribes and individual Indians. The United States has a trust responsibility to protect and maintain trust assets reserved by or granted to Indian Tribes or Indian individuals by treaties, statutes, and executive orders.Trust responsibilities for the BLM are found in Department of the Interior Secretarial Order No. 3215 (Principles for the Discharge of the Secretary's Trust Responsibility), Departmental Manual Part 512, Chapter 2 (Departmental Responsibilities for Indian Trust Resources), and BLM Manual H-8120-1. However, because no Indian trust assets are within or near the project area, this resource is not analyzed here.

State

There are numerous state regulations and policies that direct management of cultural resources on state lands and by state agencies. The following is a discussion of the most pertinent laws affecting the proposed project and impact analysis from a state perspective.

Under CEQA (§21084.1), a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. The *CEQA Guidelines* (§15064.5) recognize that an historical resource includes: (1) a resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources; (2) a resource included in a local register of historical resources, as defined in PRC §5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC §5024.1(g); and (3) 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 by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record. The fact that a resource does not meet the three criteria outlined above does not preclude the lead agency from determining that the resource may be an historical resource as defined in PRC §5020.1(j) or 5024.1.

If a lead agency determines that an archaeological site is a historical resource, the provisions of §21084.1 of CEQA and §15064.5 of the *CEQA Guidelines* apply. If a project may cause a substantial adverse change (defined as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired) in the significance of an historical resource, the lead agency must identify potentially feasible measures to mitigate these effects (*CEQA Guidelines* §§15064.5(b)(1), 15064.5(b)(4)).

If an archaeological site does not meet the criteria for a historical resource contained in the *CEQA Guidelines*, then the site may be treated in accordance with the provisions of §21083, which is as a unique archaeological resource. As defined in §21083.2 of CEQA a "unique" archaeological resource is an archaeological artifact, object, or site, about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type; or,
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If an archaeological site meets the criteria for a unique archaeological resource as defined in §21083.2, then the site is to be treated in accordance with the provisions of §21083.2, which state that if the lead agency determines that a project would have a significant effect on unique archaeological resources, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place (§21083.1(a)). If preservation in place is not feasible, mitigation measures shall be required.

The *CEQA Guidelines* note that if an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment (*CEQA Guidelines* §15064.5(c)(4)).

A resource is considered eligible for inclusion in the CRHR, and therefore a historical resource under CEQA if the resource has been determined to be eligible by the State Historical Resources Commission, if it is at least 50 years old and meets at least one of the CRHR eligibility criteria, or it can be demonstrated that sufficient time has passed to understand its historical importance. Similar to the NRHP, the criteria for CRHR eligibility are as follows:

1. An association with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
2. An association with the lives of persons important to local, California, or national history.
3. An embodiment of the distinctive characteristics of a type, period, region, or method of construction, or a representation of the work of a master, or possesses high artistic values.
4. A resource that has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Impacts on Native American burials on non-federal land are considered under CCR, Title 14, Chapter 3, Section 15064.5(d)(1), Public Resource Code Section 5097.98, and Health and Safety Code Section 7050.5. When an agency identifies the existence of, or the probable likelihood of, Native American human remains on non-federal land within the project, the lead agency is required to work with the appropriate descendants, as identified by the Native American Heritage Commission. In the event of an accidental discovery, the procedures outlined in CCR, Title 14, Chapter 3, Section 15064.5(e) will be followed.

The County has determined that the BLM's assumptions about the existence of a TCP and its eligibility for the NRHP do not require that the County treat it as a historical resource for purposes of the CEQA analysis in this joint document. (As used here, "historical resource" encompasses "archaeological resource" pursuant to CEQA Guidelines Section 15064.5.) CEQA confirms the County's discretion to make a separate CEQA determination under the criteria set forth in the CEQA statute and Guidelines. The County has determined that the project site is not a historic resource under CEQA, and the following is a summary of the basis for the County's determination. The assumed TCP is not listed on the CRHR , and has not been determined by the State Historical Resources Commission to be eligible for such listing, so the site is not a mandatory historical resource under CEQA Guideline 15064.5(a)(1). The assumed TCP also has not formally been determined to be eligible for the National Register, although BLM is assuming such eligibility for the purposes of its NEPA analysis. The site is not included in a local register of historical resources, so the site is not a presumed historic resource under CEQA Guidelines 15064.5(a)(2). The project site also is not a site that is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, so the site is not a discretionary historic resource under CEQA Guideline 15064.5(a)(3).

In making the determination whether the assumed TCP is a historic resource, the County has reviewed the information relating to whether the site has traditional, religious, and cultural significance as well as other information. For purposes of the CEQA analysis, the County as lead agency has determined that substantial record evidence supports a determination that the site is not a historical resource under the definition set forth in CEQA

Guideline 15064.5(a)(3). The Tribes have not provided sufficient of tribal or ethnographic information about the use of this project site (historic or otherwise); in light of the paucity of information, the BLM has made a conservative assumption of eligibility as a TCP. In the County's view, the paucity of information supports a finding that the site is not a historic resource. The claim that there is a significant cultural association with the project site has only arisen in the last several years. Some such use may be in response to the proposed project. In addition, the use and status of the site may be compared to that of the Spoke Wheel Geoglyph, a significant historic resource in the project vicinity. Therefore, based on the County's review of the record, the County is making its discretionary determination as CEQA lead agency that the assumed TCP is not a historical resource for CEQA purposes.Local

The Imperial County General Plan addresses the management of cultural resources within the county in several sections. The following is a discussion of the most pertinent guidance in the Imperial County General Plan affecting the proposed project and impact analysis from a county perspective:

The Protection of Environmental Resources section of the Imperial County General Plan, Land Use Element, 2008 lists Goal 9 as identifying and preserving the significant natural, cultural, and community character resources and the County's air and water quality. The listed objective is to preserve as open space those lands containing watersheds, aquifer recharge areas, floodplains, important natural resources, sensitive vegetation, wildlife habitats, historic and prehistoric sites, or lands which are subject to seismic hazards and establish compatible minimum lot sizes.

The Preservation of Cultural Resources section of the Imperial County General Plan, Conservation and Open Space Element lists Goal 3 as preserving important prehistoric and historic resources to advance scientific knowledge and maintain the traditional historic element of the Imperial Valley landscape. The corresponding objective is to protect and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.

Consistency with these stated goals will reduce both direct and indirect impacts to the cultural resources in the project area. As currently designed, the proposed project is consistent with Goal 9 and Goal 3 described above.

In addition to the goals and objectives listed above, the Conservation and Open Space Element, Implementation Programs and Policies, Cultural Resources Conservation of the General Plan provides for the following programs:

- Imperial County will use the environmental impact report process to conserve cultural resources, stressing public awareness of cultural heritage. All information and artifactual resources recovered in this process will be stored in an appropriate institution and made available for public exhibit and scientific review.
- The use of open space easements in the conservation of high value cultural resources will be encouraged.
- Consider measures which would provide incentives to report archaeological discoveries immediately to the Imperial Valley College – Baker Museum.

- Coordinate with appropriate federal, state, and local agencies to provide adequate maps identifying cultural resource locations for use during development review. Newly discovered archaeological resources shall be added to the "Sensitivity Map for Cultural Resources."
- Discourage vandalism of cultural resources and excavation by persons other than qualified archaeologists. Imperial County shall study the feasibility of implementing policies and enacting ordinances toward the protection of cultural resources such as can be found in California Penal Code, Title 14, Point 1, Section 622 1/2.

Consistency with these programs will further public awareness of the local cultural heritage by making the information gathered by the applicant available for either public exhibit or scientific review.

Table 3.4-3. Applicable Regulations, Plans, and Standards

Applicable Law	Description
Federal	
National Historic Preservation Act of 1966, as amended, 16 USC 470(f)	Section 106 of the Act requires Federal agencies to take into account the effects of a proposed action on cultural resources (historic properties) and afford the Advisory Council on Historic Preservation the opportunity to comment.
36 CFR Part 800 (as amended August 5, 2004),	Implementing regulations of Section 106 of the National Historic Preservation Act
NEPA: Title 42, USC, section 4321-et seq.	This statute requires Federal agencies to consider potential environmental impacts of projects with Federal involvement and to consider appropriate mitigation measures.
Federal Land Policy and Management Act (FLPMA): Title 43, USC, section 1701 et seq.	This statute requires the Secretary of the Interior to retain and maintain public lands in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric water resource, and archaeological values [Section 1701(a)(8)]; the Secretary, with respect to the public lands, shall promulgate rules and regulations to carry out the purposes of this Act and of other laws applicable to public lands [Section 1740].
Federal Guidelines for Historic Preservation Projects, Federal Register 44739-44738, 190 (September 30, 1983)	The Secretary of the Interior has published a set of Standards and Guidelines for Archaeology and Historic Preservation. These are considered to be the appropriate professional methods and techniques for the preservation of archaeological and historic properties. The Secretary's standards and guidelines are used by Federal agencies, such as the Forest Service, the BLM, and the National Park Service. The California Office of Historic Preservation refers to these standards in its requirements for selection of qualified personnel and in the mitigation of potential impacts to cultural resources on public lands in California.
Executive Order 11593 May 13, 1971 (36 Federal Register 8921)	This order mandates the protection and enhancement of the cultural environment through providing leadership, establishing state offices of historic preservation, and developing criteria for assessing resource values.
American Indian Religious Freedom Act; Title 42, USC, Section 1996	Protects Native American religious practices, ethnic heritage sites, and land uses.
Native American Graves Protection and Repatriation Act (1990); Title 25, USC Section 3001, et seq.,	The stature defines "cultural items," "sacred objects," and "objects of cultural patrimony;" establishes an ownership hierarchy; provides for review; allows excavation of human remains, but stipulates return of the remains according to ownership; sets penalties; calls for inventories; and provides for the return of specified cultural items.
BLM, the California Desert Conservation Area (CDCA) Plan 1980 as amended – Cultural Resources Element Goals	1. Broaden the archaeological and historical knowledge of the CDCA through continuing efforts and the use of existing data. Continue the effort to identify the full array of the CDCA's cultural resources.
	2. Preserve and protect representative sample of the full array of the CDCA's cultural resources.
	3. Ensure that cultural resources are given full consideration in land use planning and management decisions, and ensure that BLM-authorized actions avoid inadvertent impacts.
	4. Ensure proper data recovery of significant (National Register of Historic Places-quality) cultural resources where adverse impacts can be avoided.

Table 3.4-3. Applicable Regulations, Plans, and Standards	
Applicable Law	Description
State	
CEQA, Sections 21000 et seq. of the Public Resources Code (PRC) with Guidelines for implementation codified in the California Code of Regulations (CCR), Title 14, Chapter 3, Sections 15000 et seq.	CEQA requires that state and local public agencies to identify the environmental impacts of the proposed discretionary activities or projects, determine if the impacts will be significant, and identify alternatives and mitigation measures that will substantially reduce or eliminate significant impacts to the environment. Historical resources are considered a part of the environment and a project that may cause a substantial adverse effect on the significance of a historical resource is a project that may have a significant effect on the environment. The definition of "historical resources" is contained in Section 15064.5 of the CEQA Guidelines.
AB 4239, 1976	Established the Native American Heritage Commission (NAHC) as the primary government agency responsible for identifying and cataloging Native American cultural resources. The bill authorized the Commission to act in order to prevent damage to and insure Native American access to sacred sites and authorized the commission to prepare an inventory of Native American sacred sites located on public lands.
Public Resources Code 5097.97	No public agency, and no private party using or occupying public property, or operating on public property, under a public license, permit, grant, lease, or contract made on or after July 1, 1977, shall in any manner whatsoever interfere with the free expression or exercise of Native American religion as provided in the United States Constitution and the California Constitution; nor shall any such agency or party cause severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property, except on a clear and convincing showing that the public interest and necessity so require.
Public Resources Code 5097.98 (b) and (e)	Requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the Native American Heritage Commission-identified Most Likely Descendents (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reinter the remains elsewhere on the property in a location not subject to further disturbance.
California Health and Safety Code, Section 7050.5	This code makes it a misdemeanor to disturb or remove human remains found outside a cemetery. This code also requires a project owner to halt construction if human remains are discovered and to contact the county coroner.
Government Code §65352.3 (SB-18)	Prior to the adoption or any amendment of a city or county's general plan, proposed on or after March 1, 2005, the city or county shall conduct consultations with California Native American tribes that are on the contact list maintained by the Native American Heritage Commission for the purpose of preserving or mitigating impacts to places, features, and objects described in Sections 5097.9 and 5097.993 of the Public Resources Code that are located within the city or county's jurisdiction.
Local	
Imperial County General Plan, Land Use Element, 2008, Protection of Environmental Resources, Goal 9, Objective 9.1, Page 42	Goal: Identify and Preserve the significant natural, cultural, and community character resources and the County's air and water quality. Objective: Preserve as open space those lands containing watersheds, aquifer recharge areas, floodplains, important natural resources, sensitive vegetation, wildlife habitats, historic and prehistoric sites, or lands which are subject to seismic hazards and establish compatible minimum lot sizes.
Imperial County General Plan, Conservation and Open Space Element, Goals and Objectives, Preservation of Cultural Resources, Page 48	Goal 3: Important prehistoric and historic resources shall be preserved to advance scientific knowledge and maintain the traditional historic element of the Imperial Valley landscape. Objective 3.1: Protect and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.

Table 3.4-3. Applicable Regulations, Plans, and Standards	
Applicable Law	Description
Imperial County General Plan, Conservation and Open Space Element, Implementation Programs and Policies, Cultural Resources Conservation, Pages 57–58	Programs: The County will use the environmental impact report process to conserve cultural resources. Public awareness of cultural heritage will be stressed. All information and artifactual resources recovered in this process will be stored in an appropriate institution and made available for public exhibit and scientific review. Encourage the use of open space easements in the conservation of high value cultural resources. Consider measures which would provide incentives to report archaeological discoveries immediately to the Imperial Valley College – Baker Museum. Coordinate with appropriate federal, state, and local agencies to provide adequate maps identifying cultural resource locations for use during development review. Newly discovered archaeological resources shall be added to the "Sensitivity Map for Cultural Resources." Discourage vandalism of cultural resources and excavation by persons other than qualified archaeologists. The County shall study the feasibility of implementing policies and enacting ordinances toward the protection of cultural resources such as can be found in California Penal Code, Title 14, Point 1, Section 622-1/2.

3.5 Environmental Justice

On February 11, 1994, President Clinton issued an "Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (Executive Order 12898, 1994). This Order is designed to focus federal attention on environmental and human health conditions in minority communities and low-income communities. The Order is further intended to promote non-discrimination in Federal Programs substantially affecting human health and the environment and to provide for information access and public participation relating to such matters.

The approach in this EIS/EIR is to achieve compliance with the letter and spirit of the President's Executive Order by addressing the question of whether and how the impacts of the Proposed Action and alternatives may disproportionately affect minority and low-income populations. This section provides demographic information for the analysis of the distributional patterns of minority populations and low-income populations on a regional basis and characterizes the distribution of such populations adjacent to the proposed OWEF site.

3.5.1 Environmental Setting

As defined by the "Final Guidance for Incorporating Environmental Justice Concerns" contained in the Guidance Document of United States EPA's NEPA Compliance Analysis (EPA, 1998), minority and low-income populations are identified where either:

- The minority or low-income population of the affected area is greater than 50 percent of the affected area's general population; or
- The minority or low-income population percentage of the affected area is meaningfully greater (50 percent or greater per EPA Guidance Document) than the minority or low-income population percentage in the general population of the jurisdiction or other appropriate unit of geographic analysis (i.e., County or Native American Indian Reservation) where the affected area is located.

The "affected area" for determining environmental justice impacts for the proposed OWEF includes all jurisdictions within one-half mile (0.5 mile) of the proposed OWEF site. While some types of impacts, such as visual impacts or certain air and water quality impacts, would affect a greater area, using an affected area of one-half mile for environmental justice impacts, rather than 1 or 2 miles, identifies localized impacts of the project. By looking at the localized impacts, as opposed to impacts that would affect everyone residing in a region equally (such as at a scale of 1 or more miles), disproportionate project-specific impacts to minority and low-income populations are identified. Impacts that affect areas outside of one-half mile, such as visual impacts and certain air and water quality impacts would affect the greater region. Thus looking at such a wide area would not identify any disproportionate impacts to minority or low-income populations. By setting the "affected area" at one-half mile for environmental justice, the analysis will focus on the project impacts specific to the populations within the vicinity of the project route rather than the region as a whole.

The proposed OWEF site is located in Census Tract 123.01 in Census Tract Block Groups 1 and 2 in Imperial County. The only other Census Tract Block Groups within one-half mile of the proposed OWEF site are Census Tract Block Groups 3 and 4 within Census Tract 210 in San Diego County.

3.5.1.1 Minority Population

In 1997, the President's Council on Environmental Quality issued Environmental Justice Guidance that defines "minorities" as individuals who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black not of Hispanic origin; or Hispanic (without double-counting non-white Hispanics falling into the Black/African-American, Asian/Pacific Islander, and Native American (Indian) categories).

The total minority population for each census tract, for the purposes of this analysis, has been calculated as follows:

- Total minority population = Black/African-American + Hispanic + Asian/Pacific Islander + Native American (without double-counting non-white Hispanics falling into the Black/African-American, Asian/Pacific Islander, and Native American (Indian) categories)

Table 3.5-1 lists the jurisdictions within one-half mile of the proposed OWEF site, along with the minority percentage of the population of each jurisdiction. As shown in Table 3.5-1, Ocotillo and Census Tract 123.01 Block Group 2 both have substantially lower minority percentages than Imperial County as a whole and are both well below 50 percent. Census Tract 123.01 Block Group 1, in Imperial County, however, with a 2010 minority population of 84 percent, was above 50 percent, but comparable to Imperial County's overall 84 percent. Census Tract 210 Block Groups 3 and 4 were also below 50 percent and below San Diego County's overall 47 percent minority population, although only slightly in the case of Block Group 4.

Table 3.5-1. Population Characteristics of Communities within One-Half Mile of the Proposed Action

Jurisdiction	2000 Minority Percentage	2010 Minority Percentage	2000 Low-Income Percentage	2010 Low-Income Percentage
County of Imperial	51	83	23	22
County of San Diego	34	47	12	15
Ocotillo	5	21	17	31
Census Tract 123.01 Block Group 1 (Imperial County)	76	84	17	20*
Census Tract 123.01 Block Group 2 (Imperial County)	5	24	14	20*
Census Tract 210 Block Group 3 (San Diego County)	30	34	27	12*
Census Tract 210 Block Group 4 (San Diego County)	1	43	25	12*

* 2010 low-income percentages for Imperial County Census Tract 123.01 Block Groups 1 and 2 and San Diego County Census Tract 210 Block Groups 3 and 4 are not available, however, 2009 low-income data is available for Imperial County Census Tract 123.01 and San Diego County Census Tract 210, but not for the Block Groups. The 2009 data is included here.

Source: U.S. Census Bureau, 2000a; U.S. Census Bureau, 2010c; U.S. Census Bureau, 2010d; U.S. Census Bureau, 2010e; U.S. Census Bureau, 2010f; U.S. Census Bureau, 2010g; U.S. Census Bureau, 2010h.

3.5.1.2 Low-Income Population

In 1997, the President's Council on Environmental Quality issued Environmental Justice Guidance that defines "low-income populations" as populations with mean annual incomes below the annual statistical poverty level. Table 3.5-1, above, lists the jurisdictions within one-half mile of the proposed OWEF site, along with the low-income percentage of the population for each jurisdiction. While 2000 U.S. Census Data for poverty is available for all the jurisdictions within one-half mile of the proposed OWEF site, no 2010 data for income or poverty are currently available. The Census Bureau's 2010 American Community Survey has poverty data available for Imperial and San Diego Counties, but not for Ocotillo or at the Block Group level. Similarly, the 2009 American Community Survey does not have data at the

Block Group level, but does include income and poverty data for Ocotillo and at the Census Tract level. As shown above, in 2009, Census Tract 123.01 Block Groups 1 and 2 both had poverty populations lower than Imperial County's overall low-income population of 23 percent. Ocotillo, however, had a greater percentage of people in poverty compared to Imperial County's overall low-income population, but was still well below 50 percent and less than 50 percent greater than Imperial County. Poverty in Census Tract 210 Block Groups 3 and 4 decreased between 2000 and 2009 from more than twice the low-income percentages than San Diego County's overall 2000 low-income population of 12 percent to less than San Diego County's 2010 low-income population of 15 percent. In both cases, Census Tract 210's low-income population was still below 50 percent.

3.5.2 Applicable Regulations, Plans, and Standards

3.5.2.1 Federal

Title VI of the Civil Rights Act of 1964 (Public Law 88-352, 78 Stat.241) prohibits discrimination on the basis of race, color, or national origin in all programs or activities receiving federal financial assistance.

Executive Order 12898, "Federal Actions to address environmental justice in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission (59 Fed. Reg. 7629 (Feb. 16, 1994)). The order requires the US Environmental Protection Agency (USEPA) and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

The Council on Environmental Quality (CEQ) has oversight responsibility for the Federal Government's compliance with Executive Order 12898 and NEPA. The CEQ, in consultation with the USEPA and other agencies, has developed guidance to assist Federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed. According to the CEQ's "Environmental Justice Guidance Under the National Environmental Policy Act," agencies should consider the composition of the affected area to determine whether minority populations or low-income populations are present in the area affected by the proposed action, and if so whether there may be disproportionately high and adverse environmental effects (CEQ, 1997).

BLM Land Use Planning Handbook, H-16010-1, Appendix D, Section IV (Environmental Justice Requirements) provides guidance for assessing potential impacts on population, housing, and employment as they relate to environmental justice. It also describes variables such as lifestyles, beliefs and attitudes, and social organizations with respect to environmental justice. These variables were not evaluated in this analysis, as they cannot be quantified readily for the purposes of impact assessment and do not provide any additional analytical value in terms of evaluating potential environmental justice impacts.

3.5.2.2 State and Local

No State or local regulations, plans or standards related to environmental justice would be applicable to the Proposed Action.

3.6 Lands and Realty

This section describes existing land use conditions in the OWEF project area. Land use can be assessed by analyzing current land activities, land ownership, zoning (where applicable), and land use designations in adopted land use plans and policies. An assessment of land use must also consider legal guarantees or limitations on land use such as those provided by easements, deeds, ROW, claims, leases, licenses, and permits. BLM-administered lands are not zoned, but they may be encumbered by easements, ROWs, mining claims, and permits.

On February 3, 2012, the Applicant submitted a letter to Imperial County indicating that it would no longer be seeking approval for the single wind turbine located on private property. Because this was the only proposed turbine location not located on BLM-administered land, it was the only location that required approval only from Imperial County. Without this turbine location, the project no longer requires a General Plan amendment or zone change to be approved by Imperial County. The Final EIS/EIR has been revised to reflect the fact that a General Plan amendment and zone change are no longer required. For most issue areas, the impact analysis still includes the turbine on private property; however, revisions have been made to the environmental setting associated with Lands and Realty regarding compliance with the County's land use documents.

3.6.1 Environmental Setting

3.6.1.1 General Characteristics

The proposed OWEF would be located almost entirely on BLM-administered lands in the southwest corner of Imperial County (see to Figure 1-1). The site currently consists of vacant and undeveloped desert land. Development in the surrounding area includes the rural communities of Ocotillo and Nomirage, and the United States Gypsum Corporation's wallboard and gypsum manufacturing facility (known as Plaster City) to the east. The western boundary of the site is bordered by the Anza-Borrego Desert State Park, which is managed by the California State Parks.

3.6.1.2 Land Ownership/Management

Figure 3.6-1 shows the current land ownership in the project area. Most of the Proposed Action would be on land that is under the jurisdiction of the BLM, and small portions of the OWEF site would overlap private land under the jurisdiction of Imperial County. BLM land use designations established in the California Desert Conservation Area (CDCA) Plan and the Western Colorado (WECO) OHV Routes of Travel Designation Plan would apply to the majority of the OWEF site that is located on BLM-administered land. The Imperial County General Plan designations and zoning would apply to the portion of the project located on private land.

BLM Land Use Designations

The BLM's CDCA Plan establishes four multiple use classes (MUCs); MUC guidelines; and plan elements for specific resources or activities, such as motorized vehicle access, recreation, and vegetation harvesting. The MUCs include the following: Class C (Controlled), which includes areas recommended as suitable for a wilderness designation; Class L (Limited Use) are lands that are managed for generally lower intensity uses for the purpose of protecting sensitive natural, scenic, ecological, and cultural

resource values; Class M (Moderate Use) provides for a wide variety of present and future uses including mining, livestock grazing, recreation, energy, and utility development; Class I (Intensive Use) provides for concentrated use of lands and resources to meet human needs, where reasonable protection is provided for sensitive natural and cultural resources; and Unclassified lands consist of scattered and isolated parcel in the CDCA Plan that have not been place within a MUC and are managed on a case-by-case basis. The majority of the proposed OWEF site (approximately 12,500 acres) is located within the "Limited Use" category of the BLM's CDCA Plan. Figure 3.6-2 shows the MUCs assigned to BLM-administered land in the project area, as designated in the CDCA Plan (BLM, 1980). The MUCs are defined and impacts related to the Proposed Action are analyzed in Section 4.8 of this EIS/EIR.

Imperial County General Plan Land Use Designations

The County's General Plan Land Use Element includes Urban Area and Community Area designations, which provide for a range of permitted land uses within specific geographic areas of the County. The proposed OWEF site and surrounding areas are within the Community Area designation of the General Plan, which assigns the Ocotillo/Nomirage Community Area Plan as the presiding land use planning document. As shown in Figure 3.6-3a, the majority of the OWEF site is within the Open Space designation with small areas within the Floodway and Desert Residential designations. Figure 3.6-3a shows State land along Imperial Highway surrounded by the proposed OWEF site, which is under the jurisdiction of the State Lands Commission. The State land adjacent to the western boundary of the proposed OWEF site is the Anza-Borrego Desert State Park, which is under the jurisdiction of the California State Parks.

Imperial County Zoning Designations

General provisions for the zoning areas are defined in the Imperial County Land Use Ordinance, Title 9 Division 5. Site 2 of the OWEF site is designated as Government/Special (G/S) by the County's Land Use Ordinance (see Figure 3.6-3b). The purpose of the G/S zone is to designate areas that allow for the development of governmental facilities and special public facilities. This zone also allows for special public uses such as security facilities, jails, solid and/or hazardous wastes facilities and other similar special public benefit uses.

3.6.1.3 Existing Uses

The proposed OWEF would be located on 12,500 acres of open desert land in Imperial County that is currently used for recreation activities. Based on a site visit in May 2010, recreation activities include camping, off-highway vehicle (OHV) use, and target shooting.

A new high-voltage transmission line designed to foster development of renewable resources, known as the Sunrise Powerlink (SPL), has been approved by the BLM and other regulatory agencies. The SPL crosses the proposed OWEF site (Figure 2.1-2), facilitating interconnection of the Proposed Action and transmission of its renewable energy output to key load centers in southern California. In addition to the SPL, the existing and approved utilities in the project area include the following: SDG&E 500-kV transmission line, AT&T telecommunication line, San Diego & Arizona Eastern (SD&AE) Railway, Interstate 8, State Route 98, and County roads (Burns & McDonnell, 2010).

As stated in a Corridor Conflict Analysis (CCA) prepared for the Proposed Action, approximately 9,794 acres of the project area lie within two utility corridors, the CDCA Designated Utility Corridor N and the

Section 368 Utility Corridor 115-238. The purpose of the designated CDCA utility corridors is to implement a network of joint-use planning corridors to meet the projected utility needs and concentrate the effects of energy related projects and utilities in manageable locations. (Burns & McDonnell, 2010)

As noted in Section 3.8 (Mineral Resources), a sand and gravel surface mine (the Ocotillo Plant) is located on the project site, and numerous open and closed mines are within two miles of the proposed wind turbines.

The project site is not located within an airport land use plan or within two miles of a public or public use airport. The closest public airport is the Jacumba Airport located 7.3 miles southwest from the OWEF site. Emory Ranch Airport is a private airport located along County Highway S2 approximately 0.25 mile north and south of the project boundary, which consists of a single asphalt runway (identified as 04/22) that is 2,400 feet in length and 40 feet in width (Airport-Data.com, 2011). This is an unattended, family-owned airport with very low use levels (Emory, 2011). For the past two years (2009-2010), the airport has averaged less than 100 aircraft operations (take-off and landing) per year, averaging approximately one aircraft operation every three days (Emory, 2011). However, a Conditional Use Permit is in the final stages of approval which would extend the runway to 4,000 feet and allow for subdivision of the properties north of the runway creating a "fly-in home community," which Mr. Emory anticipates will result in a considerable increase in the use of the airport (Emory, 2011).

3.6.2 Applicable Regulations, Plans, and Standards

3.6.2.1 Federal

Federal Land Policy and Management Act (FLPMA) of 1976

The FLPMA establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. FLPMA Title V, Section 501, establishes BLM's authority to grant ROWs for generation, transmission, and distribution of electrical energy (FLPMA, as amended, 2001). BLM is responsible for responding to requests regarding the development of energy resources on BLM-administered lands in a manner that balances diverse resource uses and takes into account the long-term needs for renewable and non-renewable resources for future generations.

California Desert Conservation Area Plan

The CDCA encompasses 25 million acres in southern California designated by Congress in 1976 through the FLPMA. The BLM manages about 10 million of those acres. Congress directed the BLM to prepare and implement a comprehensive long-range plan for the management, use, development, and protection of public lands within the CDCA. The CDCA Plan, as amended, is based on the concepts of multiple-use, sustained yield, and maintenance of environmental quality. The CDCA Plan provides overall regional guidance for BLM-administered lands in the CDCA and establishes long-term goals for protection and use of the California desert.

The CDCA Plan establishes four multiple-use classes (MUC); MUC guidelines; and plan elements for specific resources or activities, such as motorized vehicle access, recreation, and vegetation. The MUCs are described in Section 3.9, and an analysis of the Proposed Action's compliance with the MUCs is presented in Section 4.8 (BLM, 1980).

Western Colorado (WECO) OHV Routes of Travel Plan

The WECO Plan is an amendment to the CDCA Plan, which modifies previous route designations and existing routes in approximately 475,000 acres of off-road vehicle (OHV) limited areas within Imperial County. Approximately 27 designated OHV routes would be directly or indirectly affected by the proposed OWEF.

3.6.2.2 State

No State regulations associated with lands and realty are applicable to the proposed project.

3.6.2.3 Local

Imperial County General Plan, Land Use Element

Imperial County covers an area of 4,597 square miles within the southeastern portion of the State of California. Approximately 50 percent of Imperial County lands are undeveloped and under federal ownership and jurisdiction. Currently, 20 percent of the nearly 3 million acres of Imperial County is irrigated for agricultural purposes, most notably the central area known as Imperial Valley. The Imperial County General Plan (Imperial County, 2008b) consists of nine elements that serve as the primary policy statement by the Board of Supervisors for implementing development policies and land uses in Imperial County.

The primary purpose of the Land Use Element is to identify the goals, policies, and standards of the General Plan that will guide the physical growth of Imperial County. The Land Use Element describes existing land uses within the county and the facilities and services which provide the public infrastructure to support these uses. Also stated are goals and objectives for future growth, expansion of public facilities, environmental resource protection, and policies and programs to guide such future growth. In particular, the goals and objectives are intended to serve as long-term principles and policy statements representing ideals which have been determined by the citizens as being desirable and deserving of community time and resources to achieve. These goals and objectives, therefore, are important guidelines for land use decision making. (Imperial County, 2008b)

Applicable land use goals and objectives set forth in the Imperial County General Plan, Land Use Element, are as follows:

> Goal 3: Achieve balanced economic and residential growth while preserving the unique natural, scenic, and agricultural resources of Imperial County.
>
> > Objective 3.2 Preserve agriculture and natural resources while promoting diverse economic growth through sound land use planning.
> >
> > Objective 3.6 Recognize and coordinate planning activities as applicable with the BLM, and the California Desert Conservation Plan.
> >
> > Objective 3.8 Utilize non-agricultural land as a resource to diversify employment opportunities and facilitate regional economic growth. Uses must be consistent with each site's resource constraints, the natural environment, and the County Conservation and Open Space Element

Goal 4: Preserve and enhance distinctive historic desert towns and newer communities.

Objective 4.3 Maintain and require compatible land uses within the existing communities.

Objective 4.4 Limit the establishment of non-residential uses in predominantly residential neighborhoods and require effective buffers when appropriate non-residential uses are proposed.

Goal 6: Promote orderly industrial development with suitable and adequately distributed industrial land.

Goal 8: Coordinate local land use planning activities among all local jurisdictions and state and federal agencies.

Objective 8.8 Ensure that the siting of future facilities for the transmission of electricity, gas, and telecommunications is compatible with the environment and County regulation.

Objective 8.9 Require necessary public utility rights-of-way when appropriate.

Imperial County General Plan, Conservation and Open Space Element

The Conservation and Open Space Element identifies goals and policies to insure the managed use of environmental resources. The goals and policies are also designed to prevent limiting the range of resources available to future generations (Imperial County, 2006).

The purpose of the Conservation and Open Space Element is to:

- promote the protection, maintenance, and use the county's natural resources with particular emphasis on scarce resources and resources that require special control and management;
- prevent the wasteful exploitation, destruction, and neglect of the State's natural resources;
- recognize that natural resources must be maintained for their ecological value as well as for the direct benefit to the public; and
- protect open space for the preservation of natural resources, the managed production of resources, outdoor recreation, and public health and safety.

Applicable land use goals and objectives are as follows:

Goal 6: The County shall seek to achieve maximum conservation practices and maximum development of renewable alternative sources of energy.

Objective 6.6: Encourage compatibility with National and State energy goals and city and community general plans.

Ocotillo/Nomirage Community Area Plan

The Ocotillo/Nomirage Community Area Plan designates the proposed distribution, general location and extent of the uses of land for housing, business, industry, open space, including natural resources, recreation and enjoyment of scenic beauty, education, public buildings and grounds, solid waste disposal facilities and other categories of public and private uses of land. (Imperial County, 1994)

Applicable land use policies in the Ocotillo/Nomirage Community Area Plan are as follows:

> IV. Implementation Program and Policies
>
> B. Land Use Designations and Standards
>
> 1. Desert Residential
>
> The Desert Residential category represents very low density residential land uses in the outlying areas of the Ocotillo/Nomirage Community Area where water and sewer service is limited or nonexistent. Residential units may consist of a single family dwelling or mobile home. A second dwelling may be allowed upon approval of a conditional use permit. The keeping and raising of farm animals for domestic use is permitted under restrictions defined in the Zoning Ordinance.
>
> Industrial Development Standards:
>
> Manufacturing/industrial zoning and land uses are not permitted in this category.

Imperial County Land Use Ordinance, Title 9, Division 5

Title 9 of the Imperial County Land Use Ordinance contains the comprehensive land use regulations for all unincorporated areas of Imperial County. These regulations are adopted to promote and protect the public health, safety, and general welfare through the orderly regulation of land uses throughout the unincorporated areas of the county. Division 5 includes the regulations and standards for the established zoning areas.

Applicable zoning regulations are as follows:

> Chapter 20: G/S (Government/Special Public Zone)
>
> § 90520.00 Purpose and Application
>
> The purpose of the G/S zone is to designate areas that allow for the construction, development and operation of governmental facilities and special public facilities; primarily this zone allows for all types of government owned and/or government operated facilities, be they office or other uses. It also allows for special public uses such as security facilities, jails, solid and/or hazardous wastes facilities and other similar special public benefit uses.
>
> § 90520.07 Height Limit
>
> Buildings or structures in the G/S zone shall not exceed six (6) stories or 80 feet, except communication towers which are 100 feet.

3.7 Livestock Grazing

Currently and historically, livestock grazing has been and continues to be a significant use of renewable resources on public land in the California Desert. The Federal Land Policy and Management Act (FLPMA) and the Public Rangelands Improvement Act of 1978 recognize livestock grazing as a principal use for the production of food and fiber (BLM, 1980). Laws that apply to the BLM's management of public lands grazing include the Taylor Grazing Act of 1934, the NEPA of 1969, the Endangered Species Act of 1973, the FLPMA of 1976, and the Public Rangelands Improvement Act of 1978.

According to the 2010 Geocommunicator on the BLM website, there are no livestock grazing allotments located within or adjacent to the proposed OWEF site or ROW application area (BLM, 2010). The McCain Valley rangeland allotment is located approximately 3 miles southwest of the proposed OWEF site, in San Diego County (BLM, 2010). As such, the proposed OWEF site would not contain or traverse any established grazing land.

3.8 Mineral Resources

This section presents a discussion of mineral resources relevant to the proposed OWEF. Baseline geologic information was collected from the U.S. Geological Survey (USGS, 2010), the Natural Resources Conservation Service, the BLM, the California Department of Conservation, the County of Imperial, the proposed OWEF Applicant (Ocotillo Express LLC), and the Preliminary Geotechnical Investigation prepared for the proposed OWEF by Neil O. Anderson & Associates, Inc. The study area addressed in this section includes lands that may be affected directly and/or indirectly) by construction and operation of the proposed OWEF.

3.8.1 Environmental Setting

Mineral resources found throughout Imperial County include gold, gypsum, sand, gravel, lime, clay, and stone. In addition, industrial materials found throughout the county include kyanite, mineral fillers (clay, limestone, sericite, mica, and tuff), salt, potash, calcium chloride, manganese, and sand. The managed use of the valuable mineral deposits is important for regional economic stability. It is also important to ensure that adequate deposits remain for future generations. As described by Imperial County, two issues which surround mineral extraction include land use conflicts and environmental impacts. As a function of geologic factors, mining operations are restricted to specific suitable areas. The Conservation and Open Space Element of the County's General Plan (see Figure 5, Mining Resources, page 26) indicates that mining areas are present in the vicinity of the proposed OWEF site. (Imperial County, 2006)

The BLM groups minerals on federal lands into three distinct categories: (1) Locatable resources (subject to the General Mining Law of 1872, as amended); (2) Leasable resources (subject to various Mineral Leasing Acts); and (3) Salable resources (subject to mineral materials disposed of under the Materials Act of 1947, as amended) (BLM, 2010a). Locatable minerals include hardrock resources that are typically metals with a unique or special use, such as gold and silver. Leasable minerals include those which are typically found in bedded deposits, such as oil, gas, and geothermal resources. Salable minerals include common variety of materials such as sand, stone, and gravel. Local BLM Field Offices are responsible for the selling of mineral materials on public lands; for lands in the vicinity of the proposed OWEF site, the El Centro Field Office has this responsibility. (BLM, 2010b)

- **Locatable Minerals.** There are no active mining claims for locatable minerals within the proposed OWEF area, and there is no locatable minerals activity within the boundaries of the proposed OWEF site. Based on the geological environment and historical trends, the potential for occurrence of locatable minerals is considered low in this area.
- **Leasable Minerals.** The Plan of Development for the proposed OWEF indicates that no oil, gas, or geothermal fields are located in the vicinity of the project site, although approximately one to ten active mineral claims have been made at the project site (OE, 2010). This area is prospectively valuable/medium potential for geothermal resources, and may also be valuable for sodium and potassium.
- **Saleable Minerals / Mineral Materials.** Sand and gravel deposits are common throughout Imperial County, including the proposed OWEF site and vicinity. Construction of the proposed OWEF would require a source of sand and gravel, and it is anticipated that up to three, 15-acre locations within or near the proposed OWEF site would be utilized. Approximately 510,000 pounds of sand, 800,000 pounds of gravel and 240,000 pounds of cement would be needed for each turbine site. Based on a maximum of 158 turbines for the Proposed Action, approximately 32,754 tons of sand, 79,800 tons

of gravel, and 15,785 tons of cement would be required for turbine construction, with additional sand, gravel, and cement required for construction of the substation, utility switchyard, and O&M facilities.

The Mineral Resources Database System (MRDS), administered by the U.S. Geological Survey (USGS), indicates that an active sand and gravel production site called "Ocotillo Plant" is located within the Proposed Action site boundary. The data shows the Ocotillo Plant roughly in the middle of the Proposed Action site, directly east of the Rail Unloading Area, and directly south of the Batch Plant. However, based on detailed biological field surveys conducted by HELIX Environmental Planning, there are no active mines within the project boundaries (HELIX, 2011).

The Plan of Development for the proposed OWEF indicates that no oil, gas, or geothermal fields are located in the vicinity of the project site; however, approximately one to ten active mineral claims have been made at the project site (OE, 2010). The MRDS provides data to describe metallic and nonmetallic mineral resources, including deposit name, location, commodity, deposit description, geologic characteristics, production, reserves, resources, and references (MRDS, 2010). The MRDS online database was reviewed for the vicinity of the proposed OWEF, and records of surface mines, closed mines, occurrences/prospects, and unknown/undefined resources at the project site and in the immediate vicinity are provided below in Table 3.8-1.

Table 3.8-1. Mineral Resources in the Proposed OWEF Area

Name/Record Number	Operation Type	Ore Minerals or Materials	Mineral Deposit Model	Commodities	Proximity to Turbines	Proximity to Ocotillo
Unnamed	Unknown Occurrence	-	-	Sand and Gravel; Construction	Adjacent to N-NW border	~4.9 miles NW
White Christmas (100234742)	Past Producer / Closed Mine	Diatomite	222: Lacustrine diatomite	Silica, Diatomite	~1.16 miles S and ~1.74 miles W	~2.2 miles SW
White Christmas Deposit (10139638)	Surface Occurrence	-	-	Diatomite	~1.3 miles S	~2.3 miles SW
Stone Quarry (10261084)	Surface / Past Producer	-	-	Stone	~1.7 miles S	~3 miles SW
White Hope Limestone Deposit (10023475)	Unknown / Occurrence	Limestone	-	Limestone, General	~0.5 mile W	~2 miles SW
Weaver (10062391)	Unknown / Past Producer	-	-	Stone, Crushed / Broken	~0.25 miles S	~2.25 miles S
Red Schist Prospect (10062390)	Unknown / Occurrence	Gold	273: Low-sulfide Au-quartz vein	Gold	~0.5 mile S	~2.5 miles S
Ocotillo Material Site (10188258)	Surface Producer	-	-	Sand and Gravel, Construction	~0.7 mile N	~2.25 miles NW
Merrill Ocotillo (10115378)	Surface Producer	-	-	Sand and Gravel, Construction	~0.8 mile N	~2.8 miles NW
Ocotillo Pit (10285385)	Surface Producer	-	-	Sand and Gravel, Construction	~0.3 mile N	~1.8 miles N-NW

Table 3.8-1. Mineral Resources in the Proposed OWEF Area

Name/Record Number	Operation Type	Ore Minerals or Materials	Mineral Deposit Model	Commodities	Proximity to Turbines	Proximity to Ocotillo
Ocotillo Pit (10139178)	Surface / Past Producer	-	-	Sand and Gravel, Construction	~0.75 mile N	~2.25 N-NW
Shell Canyon Pit (10115058)	Surface Producer	-	-	Sand and Gravel, Construction	~0.6 mile N	~2.15 N-NW
Ocotillo Material Pit (10114912)	Surface Producer	-	-	Sand and Gravel, Construction	~0.4 mile N	~1.5 miles N
Raley Deposit (10064339)	Unknown / Past Producer	-	-	Sand and Gravel, Construction	~0.6 mile N	~1.8 miles N
O'Callahan Deposit (10115245)	Surface / Past Producer	-	-	Clay	~0.7 mile N	~1.9 miles N
Mountain Spring Deposit (10260523)	Surface Occurrence	-	-	Limestone, General	~1.3 miles S and ~3.9 miles W	~4 miles SW
Mountain Spring (10023473)	Unknown / Past Producer	Limestone	-	Limestone (primary); Tungsten (tertiary)	~1.3 miles S	~4 miles SW
Red Desert Mine (10115207)	Unknown Occurrence	-	-	Feldspar	~1.5 miles S	~4.9 miles SW

Source: USGS, 2010

The MRDS data provided above in Table 3.8-1 indicates that there are numerous closed and current mineral resources and operations in the vicinity of the proposed OWEF site, as well as one operational mine within the proposed OWEF site, and that most of these occurrences are characterized as "Sand and Gravel, Construction."

In addition to BLM and USGS MRDS data on mineral resource locations, the California Department of Conservation identifies areas of known and likely mineral deposits, and classifies these areas into Mineral Resource Zones (MRZ). Please see Section 3.8.2.2, below, for a description of this mineral classification and designation system. In the case of Imperial County, no MRZ classification or designation has occurred.

As described in Section 2.1.3.2.4 (Gravel, Aggregate, Concrete Needs and Sources) of this EIS/EIR, appropriate sources of sand and gravel in proximity to the proposed OWEF site would be identified by a construction contractor and permitted through the BLM, and would include up to three 15-acre locations within or near the proposed OWEF site.

3.8.2 Applicable Regulations, Plans, and Standards

3.8.2.1 Federal

Mining and Mineral Policy Act of 1970. This act declared that the federal government policy is to encourage private enterprise in the development of a sound and stable domestic mineral industry and in orderly and economic development of mineral resources, research, and reclamation methods.

California Desert Conservation Area Plan. The California Desert Conservation Area (CDCA) Plan defines multiple-use classes for BLM-managed lands within the CDCA, which includes land area encompassing the proposed OWEF site. With respect to geological resources, the CDCA Plan aims to maintain the availability of mineral resources on public lands for exploration and development.

3.8.2.2 State

State Surface Mining and Reclamation Act (SMARA) of 1975. The Surface Mining and Reclamation Act of 1975 (SMARA) mandated the initiation by the State Geologist of mineral land classification in order to help identify and protect mineral resources in areas within the State subject to urban expansion or other irreversible land uses which would preclude mineral extraction. SMARA also allowed the State Mining and Geology Board (SMGB), after receiving classification information from the State Geologist, to designate lands containing mineral deposits of regional or statewide significance. Mineral lands are mapped according to jurisdictional boundaries (i.e., counties), mapping all mineral commodities at one time in the area, using the California Mineral Land Classification System. (DOC, 2000)

The objective of classification and designation processes is to ensure, through appropriate lead agency policies and procedures, that mineral deposits of statewide or of regional significance are available when needed. The SMGB, based on recommendations from the State Geologist and public input, prioritizes areas to be classified and/or designated. Areas which are generally given highest priority are those areas within the State which are subject to urban expansion or other irreversible land uses which would preclude mineral extraction. (DOC, 2000)

Classification is completed by the State Geologist in accordance with the SMGB's priority list, into MRZs, as defined below. Classification of these areas is based on geologic and economic factors without regard to existing land use and land ownership. The following MRZ categories are used by the State Geologist in classifying the State's lands:

- **MRZ-1**—Areas where adequate geologic information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence. This zone is applied where well developed lines of reasoning, based on economic-geologic principles and adequate data, indicate that the likelihood for occurrence of significant mineral deposits is nil or slight.
- **MRZ-2a**—Areas underlain by mineral deposits where geologic data show that significant measured or indicated resources are present. Areas classified MRZ-2a contain discovered mineral deposits that are either measured or indicated reserves as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information. Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits.
- **MRZ-2b**—Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Areas classified MRZ-2b contain discovered deposits that are either inferred reserves or deposits that are presently sub-economic as determined by limited sample analysis, exposure, and past mining history.
- **MRZ-3a**—Areas containing known mineral deposits that may qualify as mineral resources. Further exploration work within these areas could result in the reclassification of specific localities into the MRZ-2a or MRZ-2b categories. MRZ-3a areas are considered to have a moderate potential for the discovery of economic mineral deposits.
- **MRZ-3b**—Areas containing inferred mineral deposits that may qualify as mineral resources. Land classified MRZ- 3b represents areas in geologic settings which appear to be favorable environments

for the occurrence of specific mineral deposits. MRZ-3b is applied to land where geologic evidence leads to the conclusion that it is plausible that economic mineral deposits are present.

- **MRZ-4**—Areas where geologic information does not rule out either the presence or absence of mineral resources. It must be emphasized that MRZ-4 classification does not imply that there is little likelihood for the presence of mineral resources, but rather there is a lack of knowledge regarding mineral occurrence.

If new information becomes available for a MRZ, such as through sampling or mining exploration, re-classification of that MRZ can occur. For example, a MRZ-4 classification could be re-classified to any of the other MRZ classifications. (DOC, 2000)

3.8.2.3 Local – Imperial County

County of Imperial General Plan. The Conservation and Open Space Element of the County of Imperial General Plan contains a goal and objectives to preserve mineral resources in the County. Also, Figure 5 (Mineral Resources) of the Conservation and Open Space Element indicates the general location of known mineral resources in the County.

3.9 Multiple-Use Classes

The following discussion addresses existing Multiple-Use Classes (MUC) at the proposed OWEF site. The affected environment for this analysis describes "baseline" conditions or existing environmental conditions at the time of publishing the Draft EIS/EIR. For the purposes of this analysis, the study area has been defined as the proposed OWEF site. This is an appropriate study area for MUCs as the consistency analysis for MUC designations is site-specific.

3.9.1 Environmental Setting

The CDCA Plan developed a classification system that places BLM-administered public lands in the CDCA into one of four MUCs based on the sensitivity of the resources and types of uses for each geographic area. The CDCA lands in the proposed OWEF site are within 12,500 acres of the Limited Use designation (refer to Appendix A, Figure 3.6-2). The site consists of vacant and undeveloped desert land that is currently used for recreation activities. Based on a site visit in May 2010, recreation activities include camping, off-highway vehicle (OHV) use, and target shooting. Development in the surrounding area includes the rural communities of Ocotillo and Nomirage, and the United States Gypsum Corporation's wallboard and gypsum manufacturing facility (known as Plaster City) to the east. The western boundary of the site is bordered by the Anza-Borrego Desert State Park, which is managed by the California State Parks.

Descriptions of the multiple-use classes are as follows:

Class C: Multiple-Use Class C (Controlled) has two purposes. First, it shows those areas which are being "preliminarily recommended" as suitable for wilderness designation by Congress. This process is explained in the Wilderness Element of the CDCA Plan. Second, it will be used in the future to show those areas formally designated as "wilderness" by Congress.

The Class C Guidelines are different from the guidelines for other classes. They summarize the kinds of management likely to be used in these areas when and if the areas are formally designated wilderness by Congress. These guidelines will be considered in the public process of preparing the final Wilderness Study Reports. However, the final management decisions depend on Congressional direction in the legislation that makes the formal designation.

Class L: Multiple-Use Class L (Limited Use) protects sensitive natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed to provide for generally lower intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished.

Class M: Multiple-Use Class M (Moderate Use) is based upon a controlled balance between higher-intensity use and protection of public lands. This class provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Class M management is also designed to conserve desert resources and to mitigate damage to those resources which permitted uses may cause.

Class I: Multiple-Use Class I is an "Intensive use" class. Its purpose is to provide for concentrated use of lands and resources to meet human needs. Reasonable protection will be provided for

sensitive natural and cultural values. Mitigation of impacts on resources and rehabilitation of impacted areas will occur insofar as possible.

Unclassified Lands: Scattered and isolated parcels of public land in the CDCA that have not been placed within multiple-use classes are "unclassified" land. These parcels will be managed on a case-by-case basis, as explained in the Land Tenure Adjustment Element of the CDCA Plan.

Plan Elements: The CDCA Plan Elements provide specific application of the multiple-use class guidelines for specific resources or activities about which the public has expressed significant concern.

3.10 Noise

The following discussion addresses existing environmental conditions in the affected area, both regionally and specific to the proposed OWEF site. In addition, existing laws and regulations relevant to noise are described. In some cases, compliance with these existing laws and regulations would serve to reduce or avoid certain impacts that might otherwise occur with implementation of the proposed OWEF.

Data collection was conducted through review of Pattern Energy's Permit Application (Pattern, 2010). The study area was defined as the proposed OWEF site and areas within approximately one mile of the proposed OWEF site (see Figure 2.1-4 in Appendix A). Roadways accessing the project area were also included, such as Interstate 8 (I-8), Evan Hewes Highway, Highway 98 (SR-98), and Imperial Highway (County Highway S2). The current noise conditions in this study area were used as the baseline against which to compare potential impacts of the proposed OWEF.

Section 3.10.1 presents the environmental setting for the proposed project relevant to noise, including general information about noise fundamentals, and Section 3.10.2 presents the regulatory setting. Section 4.9 presents the noise impacts of the proposed OWEF, including the WTGs, electrical collection system, substation and switchyard, and operations and maintenance (O&M) facility, and lists mitigation measures that would minimize impacts to the extent feasible.

3.10.1 Environmental Setting

General Information on Noise

Noise is defined as unwanted sound. Noise can be described in terms of three variables: amplitude (loud or soft), frequency (pitch), and time pattern (variability), and its potential effects can be described in terms of a noise generating source, a propagation path, and a receiver (FTA, 2006). The ambient sound level of a region is defined by the total noise generated within the specific environment and is usually composed of sound emanating from natural sources (birds, leaves, etc.) and from human activities (yard maintenance, vehicles, talking, etc.). Ambient sound levels vary with time of day, wind speed and direction, and level of human activity. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Excessive noise exposure has been shown to cause interference with human activities at home, work, or recreation; community annoyance, hearing loss, and affect people's health and well-being. Even though hearing loss is the most clearly measurable health hazard, noise is also linked to other psychological, sociological, physiological, and economical effects, either temporary or permanent (EPA, 1974). Potential human annoyance and health effects associated with noise may vary depending on factors such as: (1) the difference between the new noise and the existing ambient noise levels; (2) the presence of tonal noise, noticeable or discrete continuous sounds, such as hums, hisses, screeches, or drones; (3) low frequency noise (frequency range of 8 to 1,000 Hertz [Hz]); (4) intermittent or periodic sounds, such as a single vehicle passing by, backup alarms, or machinery that operates in cycles; and (5) impulsive sounds from impacts or explosions (Brüel and Kjaer, 2000).

To describe environmental noise and to assess impacts on areas sensitive to community noise, a frequency weighting measure that simulates human perception is customarily used. The frequency weighting scale known as A-weighting best reflects the human ear's reduced sensitivity to low frequencies and correlates

well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. In general, a difference of more than 3 dBA is a perceptible change in environmental noise, while a 5 dBA difference typically causes a change in community reaction. An increase of 10 dBA is perceived by people as a doubling of loudness, and almost certainly causes an adverse community response. However, at many wind project sites on BLM-administered lands, large fluctuations in broadband noise are common, and even a 10 dB increase would be unlikely to cause an adverse community response (BLM, 2005). Alternatively, noise containing discrete tones (tonal noise) is much more noticeable and more annoying at the same relative loudness level than other types of noise, because it stands out against background noise (BLM, 2005).

People experience a wide range of sounds in the environment. Typical noise levels of indoor/outdoor environments are shown in Figure 3.10-1. Excessive noise cannot only be undesirable but may also cause physical and/or psychological damage. The amount of annoyance or damage caused by noise is dependent primarily upon the amount and nature of the noise, the amount of ambient noise present before the intruding noise, and the activity of the person working or living in the area. Environmental and community noise levels rarely are of sufficient intensity to cause irreversible hearing damage, but disruptive environmental noise can interfere with speech and other communication and be a major source of annoyance by disturbing sleep, rest, and relaxation.

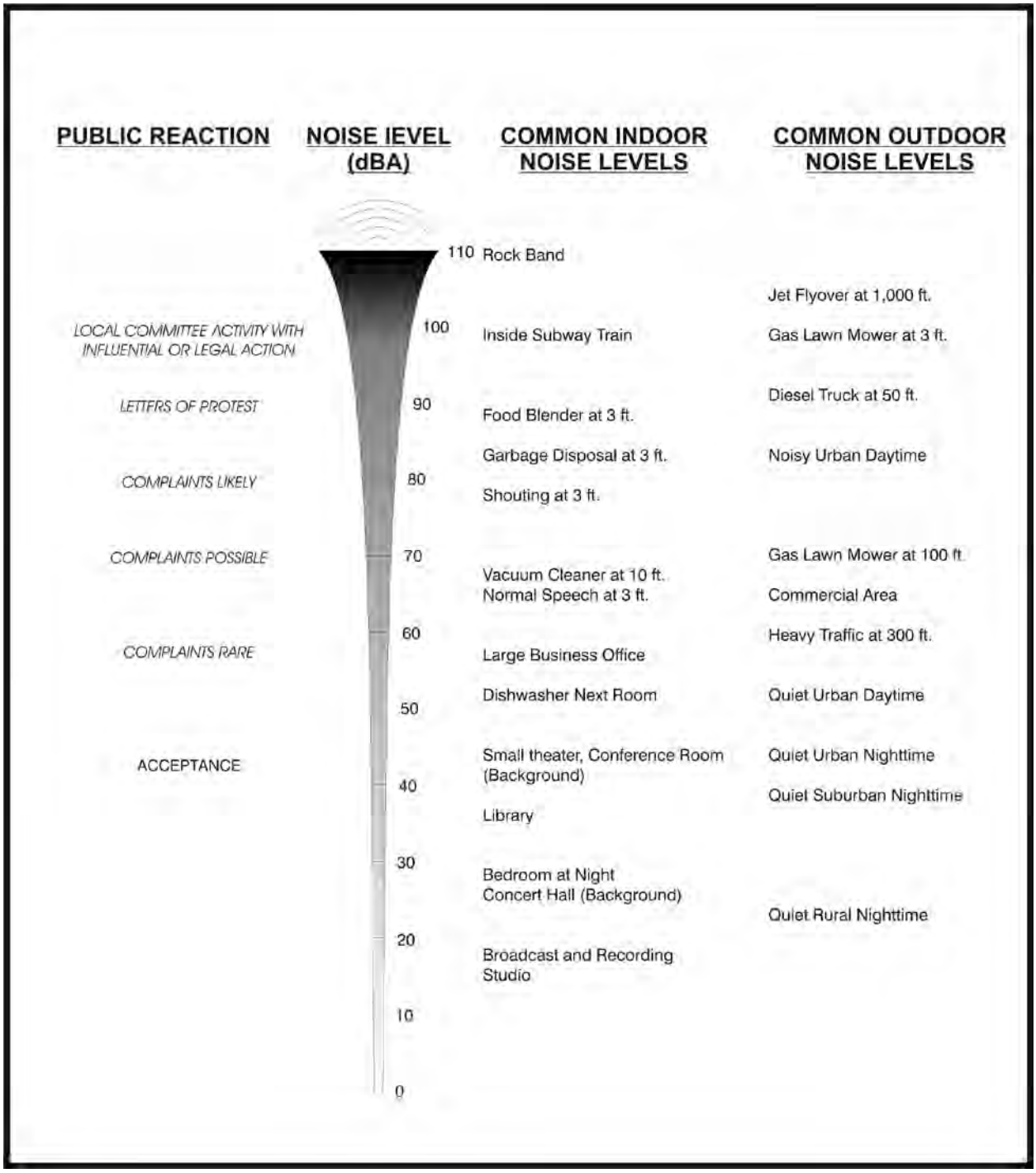
Decibels are logarithmic units[1] that conveniently compare the wide range of sound intensities to which the human ear is sensitive. Therefore, the cumulative noise level from two or more sources will combine logarithmically, rather than linearly (i.e., simple addition). For example, if two identical noise sources produce a noise level of 50 dBA each, the combined noise level would be 53 dBA, not 100 dBA.

Sound is generally propagated by spherical spreading according to the "inverse square law"[2]. For noise, the sound energy decreases with the square of the distance. As such, the sound pressure level would be reduced by 6 dB per doubling of distance from a ground-level stationary or point source. For a noise source which is relatively long, such as a constant stream of highway traffic (line source), the sound pressure spreads at a rate of 3 dB per doubling of distance. The drop-off rate also varies with both terrain conditions and the presence of obstructions in the sound propagation path. At very large distances, beyond several hundred feet, wind and temperature gradients influence sound propagation. Changes in noise levels due to wind are generally short-term without persistent directional winds, where some hours may be a decibel or two louder than others within the margin of precision of such an assessment.

[1] The logarithm of a number to a given base is the exponent by which the base has to be raised to produce that number. For example, the logarithm of 1000 to base 10 is 3, because 1000 is 10 to the power 3 ($1000 = 10^3 = 10 \times 10 \times 10$). A logarithmic scale is a scale of measurement using the logarithm of a physical quantity (i.e., logarithmic unit) instead of the quantity itself. A simple example is a chart whose vertical axis increments are labeled 1, 10, 100, 1000, instead of 1, 2, 3, 4. Each unit increase on the logarithmic scale thus represents an exponential increase in the underlying quantity for the given base (10, in this case). Presentation of data on a logarithmic scale can be helpful when the data cover a large range of values.

[2] The inverse square law is any physical law stating that a specified physical quantity is inversely proportional to the square of the distance from the source of that physical quantity.

Figure 3.10-1. Noise Levels of Common Sounds



The community noise environment and the consequences of human activities cause noise levels to be widely variable over time. For simplicity, sound levels are usually best represented by an equivalent level over a given time period (Leq) or by an average level occurring over a 24-hour period. The Leq, or equivalent sound level, is a single value for any desired duration, which includes all of the time-varying sound energy in the measurement period, usually one hour. Since the sensitivity to noise increases during evening and nighttime hours when people are trying to sleep, 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time sounds. The Community Noise Equivalent Level, CNEL, is a measure of the day-night noise exposure, with a 5 dB penalty added to evening sounds (7:00 p.m. - 10:00 p.m.) and a 10 dB addition to nighttime sounds (10:00 p.m. - 7:00 a.m.). The day-night average sound level or Ldn, is equal to the 24-hour equivalent sound level with a 10 dBA penalty applied to nighttime sounds occurring between 10:00 p.m. and 7:00 a.m.

Community noise levels are closely related to the intensity of human activity and land use. Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. In wilderness areas, the Ldn noise levels can be below 35 dBA. In small towns or wooded and lightly used residential areas, the Ldn is more likely to be around 50 or 60 dBA. Levels around 75 dBA are more common in busy urban areas (e.g., downtown Los Angeles), and levels up to 85 dBA occur near major freeways and airports. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, they nevertheless are considered to be adverse to public health.

The surrounding land uses dictate what noise levels would be considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than what would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding daytime levels. In rural areas away from roads and other human activity, the day-to-night difference can be considerably less. Areas with full-time human occupation that are subject to nighttime noise are often considered objectionable because of the likelihood of disrupting sleep. Noise levels above 45 dBA at night can result in the onset of sleep interference effects. At 70 dBA, sleep interference effects become considerable (EPA, 1974).

General Information on Wind Turbine Noise

Earlier wind turbines were generally downwind devices containing low-frequency noise; however, modern wind turbines have the rotor blades upwind and the noise is typically broadband in nature (Pedersen and Waye, 2004). There are two main types of noise sources generated by an upwind turbine: mechanical noise and aerodynamic noise. Mechanical noise is mainly generated from rotating components in the nacelle, including the gearbox and generator, and to a lesser extent, cooling fans, pumps, and compressors, and may contain discrete tone components which are known to be more annoying than noise without tones (Pedersen and Waye, 2004). Aerodynamic noise from wind turbines has a broadband character. It originates mainly from the flow of air over the turbine blades; therefore, the sound pressure levels (SPLs) increase with tip speed. Aerodynamic noise is typically the dominant component of wind turbine noise, as manufacturers have been able to reduce the mechanical noise to a level below the aerodynamic noise. Typical sound power levels of a modern wind turbine range from 98 to 104 dBA at a wind speed of 8 meters/second (m/s), which result in 33 to 44 dBA at a dwelling 1,640 feet (500 meters) away, though this depends on meteorological and ground conditions (Pederson and Waye, 2007).

International field studies of annoyance from wind turbines have generally found a weak relationship between annoyance and the equivalent A-weighted SPL (Pedersen and Waye, 2004). Different sound properties, which are not fully described by the equivalent A-weighted level, are of importance for perception and annoyance for wind turbine noise. Support for such a hypothesis was given in an experimental study where reported perception and annoyance for five recorded wind turbine noises were different, although the equivalent A-weighted SPL were the same (Pedersen and Waye, 2004). The results from that study and subsequent experiences suggest that the presence of sound characteristics subjectively described as lapping, swishing, and whistling were responsible for the differences in perception and annoyance between the sounds (Pedersen and Waye, 2004). These sound characteristics are of relevance for perception and annoyance, especially at low background levels.

It has been suggested that the perception of wind turbine noise could be masked by wind-generated noise; however, most of the wind turbines operating today have a stable rotor speed where the rotor blades generate an aerodynamic noise even if the wind speed is slow and the ambient noise is low (Pedersen and Waye, 2004). Furthermore, noise from wind turbines comprises modulations with frequency that corresponds to the blade passage frequency and is usually poorly masked by ambient noise in rural areas (Pedersen and Waye, 2004).

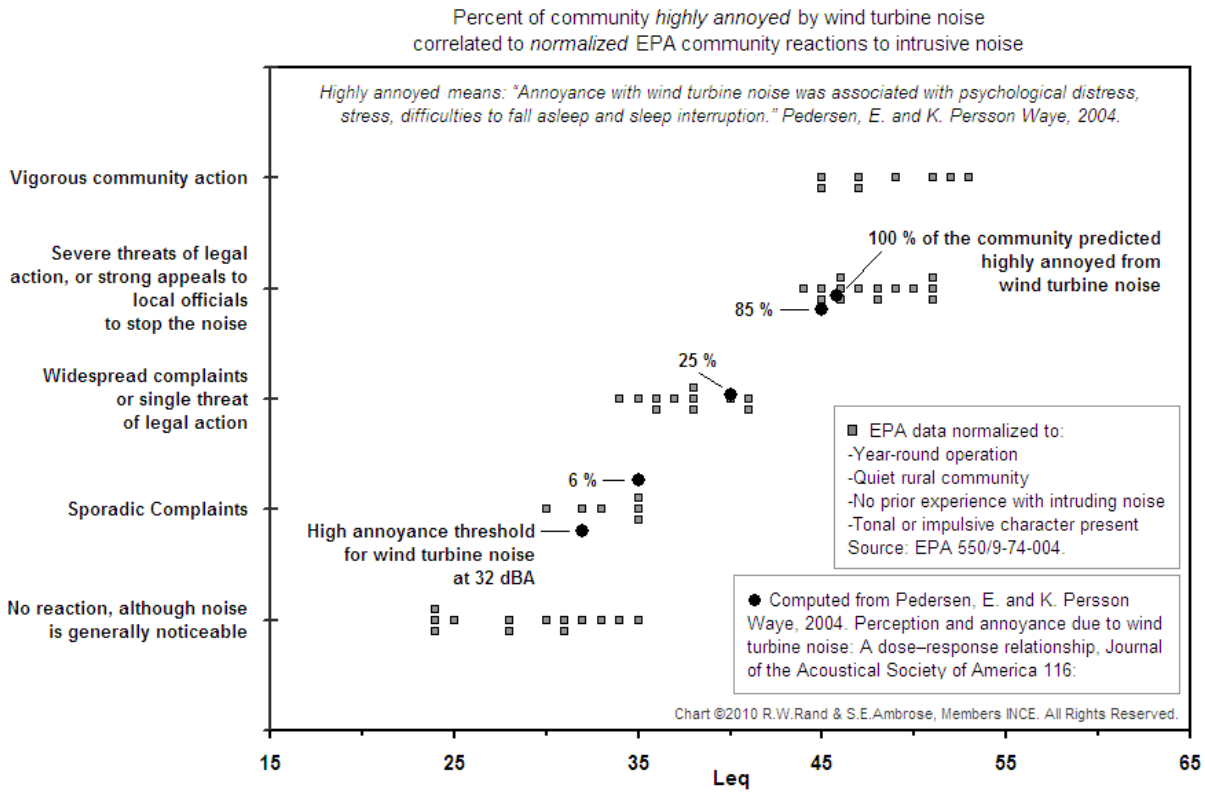
A series of surveys around wind farms in Scandinavia were conducted in recent years to understand the effects of wind farm noise on local residences. The first survey was done in Sweden in 2000 with 351 people located in a rural area participating (Pedersen and Waye, 2004); the second in Sweden in 2005 with 754 people participating mostly located in a suburban area (Pedersen and Waye, 2007); and the third survey in the Netherlands in 2007 with 725 people in a mostly rural area participating (Pederson et. al., 2009). In these surveys the wind farms were generally comprised of smaller turbines in the 500-800 kW range, 131 to 197 feet (40-60 meters) tall. Based on the results of all three Scandinavian studies one clear pattern emerges, and that is annoyance is notably higher in rural settings than in more built up areas (Cummings, 2010). Above 40 dBA "very" or "rather" annoyed increases to 25 percent of the rural population, whereas at 35-40 dBA annoyance drops to 15 to 20 percent (not including "slightly" annoyed, which at 30-40 dBA generally doubles the percentages) (Cummings, 2010). Moderate wind farm noise seems to trigger more than twice the annoyance cause by other typical noise sources (Cummings, 2010). There are, however, factors to consider in these annoyance trends. Annoyance does not imply constant plague; for many the annoyance is occasional and temporary. Of the 5 to 40 percent who reported annoyance at various sound exposures, half were disturbed just once or twice a week; a quarter were disturbed daily or nearly daily; roughly half were only bothered outside, the other half were also bothered inside; and a third or less of those annoyed report physical/health effects including sleep disruption (Cummings, 2010).

Community noise studies have shown that public annoyance increases substantially when there is a noise source with unpredictable variability and usual sounds. The USEPA's 1974 "Levels Document" (EPA, 1974) presents a community reaction prediction methodology, which includes annoyance correction factors for seasonal operation, background sound level, and prior experience with the noise and tone. Utilizing this methodology, correction factors would be applied to the measured Ldn, including 0 dB for summer or year-round operation, +10 dB for quiet suburban or rural community, +5 dB for no prior experience with the intruding noise, and +5 dB for having a tonal or impulsive sound character (EPA, 1974 – Table D-7). The graph showing normalized EPA community reactions is shown in Figure 3.10-2.

This graph includes the results of independent wind turbine annoyance research by Pedersen and Waye in 2004 (Pedersen and Waye, 2004). Figure 3.10-2 clearly shows that there is a predictable adverse community response for wind turbine noise levels above 32 dBA (Ambrose and Rand, 2010).

Wind turbine noise levels below 35 dBA may be audible, but will result in community reactions ranging from "no reaction, although noise is generally noticeable" to "sporadic complaints"; whereas from 35-45 dBA, there is a predicted adverse community response ranging from "widespread complaints or single threat of legal action" to "severe threats of legal action or strong appeals to local officials to stop the noise" (Ambrose and Rand, 2010). Similarly, the Pedersen and Waye 2004 data predicts 6 to 85 percent of the community will be highly annoyed, with the associated adverse health effects of "psychological distress, stress, difficulties to fall asleep and sleep interruption." Wind turbine noise levels higher than 45 dBA will result in the highest negative community response of "vigorous community action". The Pedersen and Waye 2004 data predicts "100 percent of the community highly annoyed from wind turbine noise" with the associated adverse health effects already noted. To account for the noise level variability and tonal sound content in wind turbine noise, a limit of 35 dBA would be consistent with the EPA noise level prediction for no more than "sporadic complaints" and, the Pedersen and Waye prediction for community reaction would be reduced to just above the "high annoyance threshold for wind turbine noise" (Ambrose and Rand, 2010).

Figure 3.10-2. Percent of Community Highly Annoyed by Wind Turbine Noise



In general, the current understanding of wind turbine noise is that the vast majority of wind farm noise issues occur within a half-mile (sometimes more), although even in this area, half to two-thirds of

residents are either totally or usually unbothered (Cummings, 2010). However, in especially quiet rural areas with residents located within a half-mile or so, noise issues often become more than rare exceptions, and fairly often affect a third to half of this nearby population (Cummings, 2010). Very few noise issues occur beyond three-quarters of a mile (Cummings, 2010).

General Information on Vibration

Vibration is a phenomenon related to noise, where common sources include trains, buses on rough roads, and construction activities such as blasting, pile-driving, and operating heavy earth-moving equipment (FTA, 2006). Vibration is an oscillatory motion through a solid medium, in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the affect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.

The groundborne energy of vibration has the potential to cause structural damage and annoyance; it can be felt outdoors, but the perceived intensity of vibration effects are much greater indoors due to the shaking of structures. Several land uses are sensitive to vibrations, and include hospitals, libraries, residential areas, schools, and churches; in particular, vibration-sensitive uses include research and manufacturing where vibration-sensitive equipment is used (e.g., electron microscopes and high resolution lithographic equipment), concert halls, TV recording studios, theaters, as well as cultural and historic resources. For residential uses, the background vibration velocity level is usually 50 VdB or lower, which is well below the 65 VdB threshold of perception for humans (FTA, 2006). Although the perceptibility threshold is 65 VdB, human response to vibration is not usually significant unless the vibration exceeds 70 VdB (FTA, 2006). Rapid transit or light rail systems typically generate vibration levels of 70 VdB or more near their tracks; however, buses and trucks rarely create vibration that exceeds 70 VdB unless there are bumps in the road (FTA, 2006). If there is unusually rough road or track, wheel flats, geologic conditions that promote efficient propagation of vibration, or vehicles with very stiff suspension systems, the vibration levels from any source can be 10 decibels higher than typical (FTA, 2006). Typically, groundborne vibration generated by heavy equipment or traffic on rough roads attenuates rapidly with distance from the source of the vibration so that potential impact areas are usually confined within short distances (i.e., 200 feet or less) from the source (FTA, 2006).

3.10.1.1 Regional Setting

The proposed OWEF would be located in the Imperial Valley in southwestern Imperial County north, west, and south of the unincorporated community of Ocotillo (see Figure 1-1 in Appendix A). Noise sources in the general project area include the new Sunrise Powerlink transmission line, which bisects the project site, as well as several major roadways that traverse the project site (between Site 1 and Site 2), including Imperial Highway (County Highway S2), Interstate 8 (I-8), and State Route 98 (SR-98) (see Figure 2.1-7 in Appendix A). The Evan Hewes Highway is located immediately east of the project site. Emory Ranch Airport (private) is located approximately 0.25 mile from the boundary of Site 1

(northwestern site) of the project. In addition, Special Use Airspace (SUA) and ground ranges consisting of over 241 square nautical miles of restricted airspace is located northeast of the project site.

3.10.1.2 Project Setting

The proposed OWEF would be located on approximately 12,500 acres separated into two smaller sites bisected by the I-8. The northwestern site (Site 1) would be comprised of 11,300 acres generally north of I-8 and the southeastern site (Site 2) would be comprised of 1,200 acres south of I-8. Of the approximate 12,500 acres, 26 acres are private lands leased by the Applicant. Current and historical uses of the site include off-road recreational vehicle activities, hunting, hiking, camping, and use as range land.

Sensitive Receptors. One residence is located within the project boundary on the private lands leased by the Applicant; this residence is not considered a sensitive receptor as they have accepted the construction and operation of the project as part of the agreement in leasing their lands to the Applicant. As such, the nearest sensitive receptors to the proposed OWEF site are located immediately south of the northeastern portion of the project site in the unincorporated community of Ocotillo; and east of the southeastern portion of the project site in the Nomirage development. The closest residence to the project site is location L1 shown on Figure 3.10-3 (provided in Appendix A), and is located approximately 2,640 feet (0.5 miles) from the closest proposed wind turbine and on-site road (located northwest of L1). The Ocotillo Community Park (Figure 3.10-3, location L2), is the closest sensitive receptor to County-owned lands to be developed as part of the project. The park's property line is located approximately 2,960 feet (0.56 miles) from the nearest wind turbine. Other sensitive areas in proximity to the project site include the Jacumba Wilderness Area, which is located approximately 2,400 feet (0.45 miles) south of the nearest proposed wind turbine, and the Anza-Borrego State Park, which is approximately 1,760 feet (0.33 miles) west of the nearest turbine.

Existing Ambient Noise Conditions. The OWEF site is located in a rural environment, which is used for dispersed recreation and grazing with clusters of rural residences, namely in Ocotillo and the Nomirage development. Noise levels would occasionally be elevated due to aircraft over flights associated with the Emory Ranch Airport and the R-2510 complex operations (US Naval Reservation), as well as traffic along the local roadways (Imperial Highway, I-8, Evans Hewes Highway, and SR-98), and off-highway vehicle (OHV) use.

Short-term ambient noise measurements were taken on January 6 and 7, 2011. The noise measurement locations, denoted as N2 through N6, are shown on Figure 3.10-3 and are described as follows:

(1) N1: Residence at 1380 Shell Canyon Road (closest receptor to project boundary)

(2) N2: Ocotillo Community Park along Imperial Highway

(3) N3: Just north of residence at 1119 Via de Anza, just north of Evan Hewes Highway

(4) N4: Residence located at 175 E SR-98

(5) N5: Approximately 100 feet south of residence located on Clark Lane, just south of SR-98

(6) N6: Second to last residence on Imperial Place east of Imperial Highway

Table 3.10-1 summarizes the ambient noise measurements at these six locations.

Table 3.10-1. Summary of Ambient Noise Levels

Measurement Location	20-Minute Measurements, dBA			Time of Measurement	Noted Noise Sources
	Leq	Lmax	Lmin		
N1: Residence at 1380 Shell Canyon Road	40.8	54.8	33.5	1/6/2011 4:05 to 4:25 p.m.	None
N2: Ocotillo Community Park along Imperial Highway	52.4	72.8	33.8	1/6/2011 4:30 to 4:50 p.m.	4 vehicles passed by; 4 vehicles pulled into the parking lot.
N3: Just north of residence at 1119 Via de Anza	47.1	61.1	35.6	1/7/2011 9:17 to 9:37 a.m.	1 vehicle drove by and stopped approx. 500 feet away; dogs barking; 1 vehicle drove by twice at a very slow speed.
N4: Residence at 175 E SR-98	67.7	86.0	35.7	1/6/2011 3:27 to 3:47 p.m.	32 vehicles passed along State Highway 98.
N5: Clark Lane just south of residence, south of SR-98	48.5	65.6	35.2	1/7/2011 10:20 to 10:40 a.m.	1 vehicle passed by on Clark Lane.
N6: Near second to last residence on Imperial Place east of Imperial Highway	45.5	60.3	35.2	1/7/2011 9:49 to 10:09 a.m.	7 vehicles passed by on Imperial Place.

Source: Aspen, 2011.

The Imperial County Noise Element (Table 3) lists the interstate and state highways in Imperial County, and shows the vehicle volumes, mixes and calculated noise levels. Traffic volumes are from the Circulation/Scenic Highway Element; vehicle mixes are from Caltrans 1990 data. Those road segments which would have the potential to be impacted by the OWEF are presented in Table 3.10-2.

Table 3.10-2. Imperial County Interstate and State Highway Traffic and Noise Data

Road Segment	Traffic					Reference CNEL dB	Distance to ___ dB (feet)		
	Volume (x 10^3)	Speed (mph)	Vehicle Mix (%)				70 dB	65 dB	60 dB
			Auto	Medium	Heavy				
Existing Conditions (1990)									
I-8 w/o Ocotillo	10.7	65	84	4.8	11.2	76	180	565	1605
I-8 e/o Ocotillo	8.6	65	84	4.8	11.2	75	145	455	1355
I-8 e/o SR-98	8.7	65	80	4.4	15.6	75	170	530	1505
SR-98 e/o Ocotillo	1.8	55	89	4.6	6.4	65	*	55	175
SR-98 w/o I-8	0.9	55	77	2.3	20.7	65	*	50	160
Future/Year 2015 Conditions									
I-8 w/o Ocotillo	26.1	65	84	4.8	11.2	79	440	1300	2600
I-8 e/o Ocotillo	18.3	65	84	4.8	11.2	78	310	970	2150
I-8 e/o SR-98	13.9	65	80	4.4	15.6	77	275	865	2010
SR-98 e/o Ocotillo	6.1	55	89	4.6	6.4	71	59	187	590
SR-98 w/o I-8	1.1	55	77	2.3	20.7	66	*	61	193

Source: Imperial County, 1993 – Tables 3 and 4. e/o = east of; w/o = west of.
Notes:
(1) Contour lies within the ROW indicated by an "*".
(2) All calculations assume flat hard terrain with no obstructions; actual conditions

As discussed in Section 3.17 (Transportation and Public Access), existing average daily traffic (ADT) volume counts were completed by LLG Engineers on December 7, 2010, for specific street segments within the project area. Because project construction would not commence until 2012 and to account for potential cumulative project traffic increases that may occur between 2010 (existing) and that time, a five percent growth factor was applied to all existing 2010 traffic volumes. Baseline traffic volumes in the study area are presented in Table 3.10-3 along with the calculated ambient noise levels (see Appendix H for detailed calculations).

Table 3.10-3. Existing Traffic-Generated Noise Levels

Road Segment	Speed	Existing (2010) ADT	Construction (2012) ADT	Existing Noise Level, CNEL, 50 feet from road centerline
W. Evan Hewes Highway, East of Imperial Highway	55 mph	250	260	58 dBA
Imperial Highway, I-8 EB Ramps to SR-98 Yuha Cutoff	55 mph	240	250	60 dBA
SR-98 Yuha Cutoff, West of Imperial Highway	55 mph	1,140	1,200	67 dBA

Source: LLG Engineers, 2010 – see Appendix H.

As shown in Table 3.10-1, sampled background noise levels in the project area range from approximately 41 to 68 dBA Leq during daytime hours. For those measurements located away from the major highways, including Evan Hewes Highway and SR-98 (N1, N2, and N6), the noise levels would range from approximately 41 dBA to 53 dBA Leq; along the highways (N3, N4, and N5) noise levels are noticeably higher, ranging from 47 to 68 dBA Leq, which is in line with the calculated roadway noise levels presented in Table 3.10-3. Nighttime noise levels away from the highways would be expected to be approximately 30 dBA, which is typical for a rural environment (BLM, 2005). However, for those residences located near or adjacent to the I-8, Evan Hewes Highway, or SR-98, noise levels would be substantially higher, as shown in Table 3.10-3. In addition, corona noise, which sounds like crackling or hissing, can be heard at levels of approximately 50 dBA along the existing Southwest Powerlink transmission line (OE, 2010).

3.10.2 Applicable Regulations, Plans, and Standards

Regulating environmental noise is generally the responsibility of local governments. The U.S. Environmental Protection Agency (EPA), however, has published guidelines on recommended maximum noise levels to protect public health and welfare, and the State of California maintains recommendations for local jurisdictions in the General Plan Guidelines published by the Governor's Office of Planning and Research. The following summarizes the federal and State recommendations and local requirements.

3.10.2.1 Federal

Under the Occupational Safety and Health Act of 1970 (OSHA) (29 U.S.C. §651 et seq.), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) adopted regulations (29 CFR §1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list limits on noise exposure levels as a function of the amount of time during which the worker is exposed, as shown in Table 3.10-4. The regulations further specify requirements for a hearing conservation program (§1910.95(c)), a monitoring program (§1910.95(d)), an audiometric testing

program (§1910.95(g)), and hearing protection (§1910.95(i)). There are no federal laws governing community noise.

Although no federal noise regulations exist, the EPA has promulgated noise guidelines (EPA, 1974). The EPA guideline recommends an Ldn of 55 dBA to protect the public from the effect of broadband environmental noise outdoors in residential areas and farms, and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use (EPA, 1974). However, using the assumption that the noise is of broadband character can lead to errors of 5 to 10 dB by which the risk of the sound exposure is underestimated (EPA, 1974). This could lead to greater possible errors if a substantial portion of the exposure is to noise with intense pure tone components, such as those generated by wind turbines.

California Desert Conservation Area Plan

The California Desert Conservation Area (CDCA) Plan (BLM, 1980) contains provisions for public land-use management in the California Desert District under the BLM's jurisdiction. Since its first date of publication in 1980, the CDCA Plan has been amended in order to incorporate public concerns and congressional mandates in regard to the use of desert resources, such as the provisions of the California Desert Protection Act of 1994.

Table 3.10-4. OSHA-Permissible Noise Exposure Standards

Duration of Noise (hours/day)	A-Weighted Noise Level (dBA)
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25 or less	115

Source: EPA, 1974. 29 CFR §1910.95, Table G-16

In particular, noise-related guidelines established in the CDCA Plan include long-term monitoring of effects of vehicle noise on wildlife (Chapter 3, Wildlife Element) and implementation of land use compatibility standards with limited (vehicle use) areas in order to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands (Chapter 3, Motorized-Vehicle Access Element). The CDCA Plan also identifies energy and utility corridors and power plant sites within the California Desert District (Chapter 3, Energy Production and Utility Corridors Element).

3.10.2.2 State

California Government Code §65302 encourages each local government entity to implement a noise element as part of its general plan. In addition, the California Governor's Office of Planning and Research has developed guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure. These recommendations have been incorporated into the Imperial County Noise Element (see below).

The California Occupational Safety and Health Administration has promulgated Occupational Noise Exposure Regulations (California Code of Regulations, Title 8, Section 5095-5099) that set employee noise exposure limits. These standards are equivalent to the Federal OSHA standards.

3.10.2.3 Imperial County

County General Plan

The Noise Element of the Imperial County General Plan provides a program for incorporating noise issues into the land use and planning process, with a goal of minimizing adverse noise impacts to sensitive noise receptors. The Noise Element establishes goals, objectives and procedures to protect the public from noise intrusion. The Noise Element is applicable to lands owned or zoned by the County. Lands regulated by the State or federal government, such as the BLM lands which comprise the majority of the OWEF site, are not subject to local land use policy (Imperial County, 1993).

The Noise Element of the Imperial County General plan defines sensitive receptors as areas of habitation where the intrusion of noise has the potential to adversely affect the occupancy, use or enjoyment of the environment. Sensitive receptors include residences, schools, hospitals, parks, office buildings, as well as non-human species, such as riparian bird species which are sensitive to excessive noise.

Section IV, Part B, defines the Noise Impact Zones, which are areas that are likely to be exposed to noise greater than 60 dB CNEL or 75 dB Leq (1-hour). The purpose of the Noise Impact Zone is to define areas and properties where an acoustical analysis of a proposed project is required to demonstrate compliance with the land use compatibility requirements and other applicable noise standards. Any property located within the distances denoted below to the identified noise source would be defined as being in a Noise Impact Zone (Imperial County, 1993):

- Interstate – 1,500 feet from centerline
- State Highway or Prime Arterial – 1,100 feet from centerline
- Major Arterial – 750 feet from centerline
- Secondary Arterial – 450 feet from centerline
- Collector Street – 150 feet from centerline
- Railroad – 750 feet from centerline
- Farmland in an agricultural zone – 0.25 mile (1,320 feet)

The Imperial County General Plan Noise Element, Section IV(C), provides the land use compatibility guidelines, as shown in Table 3.10-5. These guidelines provide the criteria for environmental impact findings and conditions of project approval. These guidelines are similar to the recommendations established by the Office of Planning and Research (OPR).

The Imperial County General Plan Noise Element, Section IV(C)(2) provides property line noise limits, as shown in Table 3.10-6, that apply to noise generation from one property to an adjacent property, where the adjacent or receiving property is a sensitive receptor. In the absence of a sensitive receptor, an exception or variance to the standards may be appropriate. These standards do not apply to construction noise.

Table 3.10-5. Guidelines for Land Use Compatibility

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE – Ldn or CNEL (dB)						
	50	55	60	65	70	75	80
Residential							
Transient Lodging - Motels, Hotels							
Schools, Libraries, Churches, Hospitals, Nursing Homes							
Auditorium, Concert Hall, Amphitheaters							
Sports Arena, Outdoor Spectator Sports							
Playgrounds, Neighborhood Parks							
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business Commercial and Professional							
Industrial, Manufacturing, Utilities, Agriculture							

	Normally Acceptable. Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
	Conditionally Acceptable. New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.
	Normally Unacceptable. New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
	Clearly Unacceptable. New construction or development should generally not be undertaken.

Source: Imperial County, 1993. Table 7 – Noise/Land Use Compatibility Guidelines.

Table 3.10-6. Property Line Noise Limits		
Zone	Time	Applicable Limit One-hour Average Sound Levels (dB)
Residential (R-1)	7 a.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45
Multi-residential (R-2, R-3, R-4, and all other residential)	7 a.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
Commercial	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	55
Light Industrial/Industrial Park (manufacturing, all other industrial, including agricultural and extraction)	Anytime	70
General Industrial	Anytime	75

Source: Imperial County, 1993, Table 9; Imperial County, 1998.

Note: When the noise-generating property and the receiving/adjacent property have different uses, the more restrictive standard shall apply. When the ambient noise level is equal to or exceeds the Property Line noise standard, the increase of the existing or proposed noise shall not exceed 3 dB Leq.

The Imperial County General Plan Noise Element, Section IV(C)(3), provides the following construction noise standards to reduce the potential for noise impacts (Imperial County, 1993):

- Construction noise from a single piece of equipment or a combination of equipment shall not exceed 75 dB Leq, when averaged over an eight-hour period and measured at the nearest sensitive receptor. This standard assumes a construction period, relative to an individual sensitive receptor, of days or weeks.
- In cases of extended length construction times, the above standard may be tightened so as not to exceed 75 dB Leq when averaged over a one-hour period.
- Construction equipment operation shall be limited to the hours of 7 a.m. to 7 p.m., Monday through Friday, and 9 a.m. to 5 p.m. Saturday. No commercial construction operations are permitted on Sunday or holidays.

The Imperial County General Plan Noise Element, Section IV(C)(4) provides limits on the increase of noise levels compared to ambient noise levels. The Noise/Land Use Compatibility Guidelines (see Table 3.10-5, above) are not intended to allow the increase of ambient noise levels up to the maximum without consideration of feasible noise reduction measures. The following are guidelines for the evaluation of significant noise impacts (Imperial County, 1993):

- If the future noise level with implementation of the project will be within the "normally acceptable" noise levels shown in Table 3.10-5, above, but will result in an increase of 5 dB CNEL or greater, the project will have a potentially significant noise impact and mitigation measures must be considered.
- If the future noise level with implementation of the project will be greater than "normally acceptable" noise levels shown in Table 3.10-5, above, a noise increase of 3 dB CNEL or greater shall be considered a potentially significant noise impact and mitigation measures must be considered.

County Ordinances

Noise generating sources in Imperial County are regulated under the County of Imperial Codified Ordinances, Title 9, Division 7, Noise Abatement and Control. Noise limits are provided in Chapter 2

§90702.00 of this ordinance, and are the same as those established in the County's General Plan, as identified in Table 3.10-6, above (Imperial County, 1998). In addition, Chapter 2 §90702.01, Motor Vehicles, states that it is unlawful to operate any motor vehicle of any type on any site, other than a public street or highway as defined in the California Vehicle Code, in any manner so as to cause noise in excess of the noise levels permitted for on-highway motor vehicles (Imperial County, 1998).